FULL SYLLABUS TEST [FST-03]

(ALL INDIA FULL SYLLABUS TEST SERIES-UG)-2022

(Do not open this Test Booklet until you are asked to do so.)

Please read the instructions carefully :

- The Test pattern of NEET (UG)-2021 comprises of two Sections.

  Each subject will consist of two sections. Section A will consist of 35 Questions and Section B will have 15 questions, out of these 15 Questions, candidates can choose to attempt any 10 Questions.

  The pattern for the NEET (UG)-2021 Examination for admission in the Session 2021-22 is as follows:

Sr. No.	Subject(s)	Section(s)	No. Of Question(s)	Mark(s)* *(Each Question Carries 04 (Four) Marks)*	Type Of Question(s)
1.	PHYSICS	SECTION A	35	140	*MCQ (Multiple Choice Questions).*
		SECTION B	15	40	
2.	CHEMISTRY	SECTION A	35	140	
		SECTION B	15	40	
3.	BOTANY	SECTION A	35	140	
		SECTION B	15	40	
4.	ZOOLOGY	SECTION A	35	140	
		SECTION B	15	40	
		TOTAL MARKS		720	

Note: Correct option marked will be given (4) marks and Incorrect option marked will be minus one (-1) mark. Unattempted/Unanswered Questions will be given no marks.

- The important points to note:

I. Each question carries 04 (four) marks and, for each correct answer candidate will get 04 (four) marks.

II. For each incorrect answer, 01(one) mark will be deducted from the total score.

III. To answer a question, the candidate has to find, for each question, the correct answer/ best option.

IV. However, after the process of the challenge of key, if more than one option is found to be correct then all/any one of the multiple correct/best options marked will be given four marks (+4).

- Any incorrect option marked will be given minus one mark (-1).
- Unanswered/Unattempted questions will be given no marks. In case, a question is dropped/ ignored, all candidates will be given four marks (+4) irrespective of the fact whether the question has been attempted or not attempted by the candidate.

INSTRUCTION

- The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your roll no. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
- Before attempting the question paper ensure that it contains all the pages and no question is missing.
- Each candidate must show on demand his/her Admission Card to the Invigilator.
- If any student is found to have occupied the seat of another student, both the students shall be removed from the examination and shall have to accept any other penalty imposed upon them.
- No candidate, without special permission of the Superintendent or Invigilator, would leave his/her seat.
- The candidates should not leave the Examination Hall without handing over their Answer Sheet to the Invigilator on duty and sign the Attendance Sheet twice. Cases where a candidate has not signed the Attendance Sheet second time will be deemed not to have handed over Answer Sheet and dealt with as an unfair means case.
- Use of Electronic/Manual Calculator is prohibited.
- The candidates are governed by all Rules and Regulations of the Board with regard to their conduct in the Examination Hall. All cases of unfair means will be dealt with as per Rules and Regulations of the Board.
- The candidates will write the Correct Test ID Code as given in the Test Booklet/Answer Sheet in the Attendance Sheet.

BEWARE OF NEGATIVE MARKING

TOPIC : Full Syllabus (XI-MODEL)

SECTION-A

1. If the position of the particle is given in the function of time as $x = 4 + t^2 - 4t$. Then find out distance covered by in 4 sec.

(1) 9 m

(2) zero

(3) 8 m

(4) 36 m

2. At t = 0 a particle is projected from point O on the ground with the speed 50 m/s at an angle 53° with the horizontal it just passes two points A and B each at height 75 m above the horizontal at time t_1 and t_2, then $t_1 + t_2$ equal to :

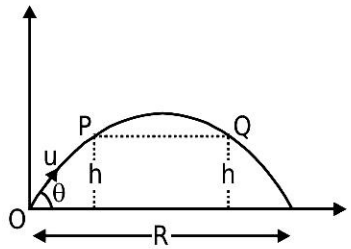
(1) 8 sec

(2) 4 sec

(3) 10 sec

(4) 6 sec

3. In the given figure find out average velocity between the points P and Q :



(1) $u \sin\theta$

(2) $u \cos\theta$

(3) $\dfrac{u^2 \sin 2\theta}{2g}$

(4) $\dfrac{u^2 \sin\theta}{\sin\theta}$

4. The effect of noise on the speed of sound in air :

(1) $v \propto \dfrac{1}{\text{intensity of noise}}$

(2) $v \propto$ intensity of noise

(3) independent of noise

(4) $v \propto \left(\dfrac{1}{\text{intensity of noise}}\right)^2$

SECTION-A

1. ;fn fdl hd.kdhlLFkr le; ds iQu esa x = 4 + t² - 4t gSrks 4 sls Mesapyhx; hrjhcrlb; %

(1) 9 m

(2) 'kqy

(3) 8 m

(4) 36 m

2. ;fn t = 0 ij ,d d.kdks{ks{ft ls 53° dkskij {ks{ft ls 50 m/s dsox l si z{ks r fd; kt kkgA ;fn d.kfcaq vkjSB t kfd lekuÅpkbZ 75 m ij gSdkle; t_1 vkjS t_2 ij lsA vkjSB xtqjrkgSrks $t_1 + t_2$ cjkcj gksk%

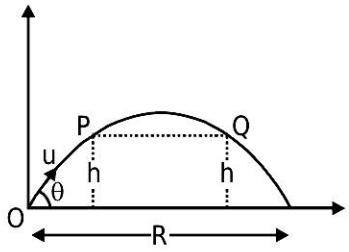
(1) 8 sec

(2) 4 sec

(3) 10 sec

(4) 6 sec

3. fn; sx; sfp=kesafcUnq vkjSQ dseè; vkSr ox gksk



(1) $u \sin\theta$

(2) $u \cos\theta$

(3) $\dfrac{u^2 \sin 2\theta}{2g}$

(4) $\dfrac{u^2 \sin\theta}{\sin\theta}$

4. èofu dhpky ij 'kkjs dhrhozkdkD, ki QZ Mkgs%

(1) $v \propto \dfrac{1}{\text{'kkjs dhrhozk}}$

(2) $v \propto$ 'kkjs dhrhozk

(3) 'kkjs dhrhozkdkdkbZ zhkoughi Mk

(4) $v \propto \left(\dfrac{1}{\text{'kkjs dhrhozk}}\right)^2$

5. **Action reaction pair of force always :**

(1) Cancelled each other

(2) Never cancelled each other

(3) May be cancel

(4) None of these

6. **A block moves down a smooth inclined plane of inclination θ. Its velocity on reaching the bottom is v. If it slides down a rough inclined plane of some inclination. Its velocity on reaching the bottom is $\frac{v}{n}$. The coefficient of friction is given by:**

(1) $\mu = \tan\theta\left(1-\frac{1}{n^2}\right)$

(2) $\mu = \cot\theta\left(1-\frac{1}{n^2}\right)$

(3) $\mu = \tan\theta\left(1-\frac{1}{n^2}\right)^{1/2}$

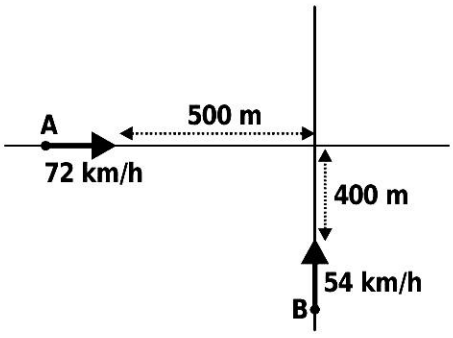
(4) $\mu = \cot\theta\left(1-\frac{1}{n^2}\right)^{1/2}$

7. **A bomb explodes in mid-air when it has a horizontal velocity of 20 ms^{-1}. It breaks into two pieces A and B having masses in ratio 1 : 2. If A goes vertically at speed 80 ms^{-1}, the speed of B will be :**

(1) 40 ms^{-1} (2) 50 ms^{-1}

(3) 60 ms^{-1} (4) 100 ms^{-1}

8. **Two cars A and B started their motion simultaneously with uniform velocity as shown in figure. Find the shortest distance between them :**



(1) 20 m (2) 40 m

(3) 100 m (4) 15 m

5. fØ;k vkSj izfrfØ;k cy gesa lnSo%

(1) ,d nwljs dk fujLr djrs gSa

(2) ,d nwljs dk fujLr dHkh&dHkh djrs gSa

(3) fujLr dj ldrs gSa

(4) mijksDr dksbZ ugha

6. ,d xqVdk {kSfrt ls n dks.k ij fpduus lery ij fQly jgk gS rFkk ry ij bldk osx v gSA ;fn ;g [kqjnjs lery ij fQlyrk gS rks bldk osx ry ij $\frac{v}{n}$ gks tkrk gSA [kqjnjs ry dk ?k"kZ.k xq.kkad gksxk%

(1) $\mu = \tan\theta\left(1-\frac{1}{n^2}\right)$

(2) $\mu = \cot\theta\left(1-\frac{1}{n^2}\right)$

(3) $\mu = \tan\theta\left(1-\frac{1}{n^2}\right)^{1/2}$

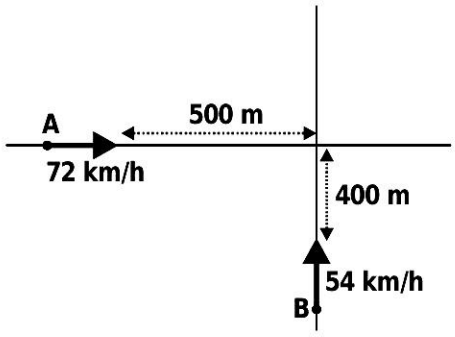
(4) $\mu = \cot\theta\left(1-\frac{1}{n^2}\right)^{1/2}$

7. ,d ce 20 eh@lsd{kSfrt osx lsxfr djrs gq, nks Hkkxksa A o B esa fo;qDr gks tkrk gSA tudsn~O;eku dk vuqikr 1 : 2 gSA ;fn A 80 eh@lsd pky ls ÅèokZ/kj Åij tkrk gS rc B dh pky gksxh%

(1) 40 ms^{-1} (2) 50 ms^{-1}

(3) 60 ms^{-1} (4) 100 ms^{-1}

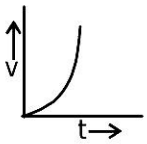
8. nks dkj A vkSj B ,d le; xfr lsa izkjEHk djrs gSa tSlk fd fp=k esa fn[kk;k x;k gSA rFkk muds chp esa U;wure nwjh gksxh%

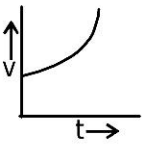


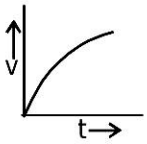
(1) 20 m (2) 40 m

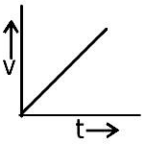
(3) 100 m (4) 15 m

9. **Which of the following figures represents the motion of a body moving in a straight line under constant acceleration :**

(1) 

(2) 

(3) 

(4) 

10. **Work done by centripetal force in a non-uniform circular motion is:**

(1) zero

(2) non-zero

(3) may be zero

(4) never zero.

11. **A child sits stationary at one end of a long trolley moving uniformly with a speed V on a smooth horizontal floor. If the child gets up and runs about on the trolley in any manner, what is the speed of the CM of the (trolley + child) system :**

(1) 2 V

(2) 4 V

(3) 0

(4) V

12. **The driver of a three-wheeler moving with a speed of 36 km/h sees a child standing in the middle of the road and brings his vehicle to rest in 4.0 s just in time to save the child. What is the average retarding force on the vehicle ? The mass of the three-wheeler is 400 kg and the mass of the driver is 65 kg:**

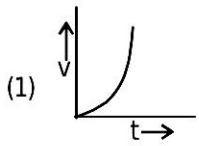
(1) 1.2×10^4 N

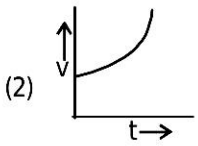
(2) 1.2×10^3 N

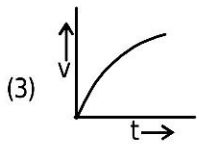
(3) 1.3×10^2 N

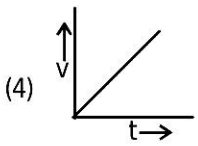
(4) 1.2×10^5 N

9. fu;r Roj.k ls lh/kh js[kk esa xfr djrs gq, d.k ds fy;s fdlh vkjs[k.k esa ls mi;qDr gS%

(1) 

(2) 

(3) 

(4) 

10. vleku o`Ùkkdkj xfr esa vfHkdsUnzh; cy }kjk fd;k x;k dk;Z%

(1) 'kwU; gksrk gS

(2) v'kwU; gksrk gS

(3) 'kwU; gks ldrk gS

(4) dHkh Hkh 'kwU; ugha gks ldrk gS

11. ,d cPpk ,d yEch VªkWyh ds fljs ij cSBk gqvk gS tks vpj osx ls fpduh {ks= esa ,d leku pky ls py jgh gS fdUrq cPpk [kM+k gks tkrk gS vkSj VªkWyh ij Hkkxrk gSA ;fn cPpk VªkWyh ds lkis{k eu pkgs tSlh xfr gks ldrh gS% rks bl fLFkfr esa ¼VªkWyh + cPpk½ fudk; ds nzO;eku dsUnz dh xfr gksxh%

(1) 2 V

(2) 4 V

(3) 0

(4) V

12. 36 fdeh@?kaVk dh pky ls py jgs ,d rhu igh;s okys okgu pkyd dks lM+d ds chp esa [kM+k ,d cPpk fn[kkbZ iM+rk gSA cPps dks cpkus ds fy, pkyd 4 lsd.M esa okgu dks jksd nsrk gSA pkyd dk eu rFkk rhu igh;s okys okgu dk nzO;eku Øe'k% 400 fdxzk rFkk 65 fdxzk gS% rks okgu ij yxus okyk vkSlr eafnjks/kh cy gksxk%

(1) 1.2×10^4 N

(2) 1.2×10^3 N

(3) 1.3×10^2 N

(4) 1.2×10^5 N

13. **A vibratory motion is represented by**

$$x = 2A\cos\omega t + A\cos\left(\omega t + \frac{\pi}{2}\right) + A\cos(\omega t + \pi) + \frac{A}{2}\cos\left(\omega t + \frac{3\pi}{2}\right)$$

The resultant amplitude of the motion is :

(1) $\frac{9A}{2}$ (2) $\frac{\sqrt{5}\,A}{2}$

(3) $\frac{5A}{2}$ (4) $2A$

14. **If $\vec{r}, \vec{\omega}, \vec{u}$ and $\vec{\alpha}$ are radius vector, angular velocity, linear velocity and angular acceleration of a particle executing circular motion. Which of the following relation is correct**

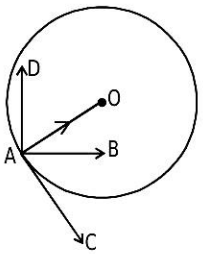
(1) $\vec{\omega} \cdot \vec{v} > 0$

(2) $(\vec{\omega}\times\vec{v})\cdot(\vec{\alpha}\times\vec{r}) = 0$

(3) $(\vec{\alpha}\times\vec{r})\cdot\vec{\omega} < 0$

(4) $(\vec{\omega}\times\vec{\alpha})\cdot(\vec{u}\times\vec{r}) > 0$

15. **A particle is moving on a vertical circular path of radius r about centre O shown in fig(Anticlockwise). The string connecting the particle and centre O has length r and is massless. The direction of acceleration of the particle when it is at A may be along**



(1) AO (2) AC

(3) AD (4) AB

16. **A solid sphere roles up a rough incline plane. The friction force is:**

(1) Acting down the incline

(2) Zero

(3) Acting up the incline

(4) Dependent on the speed

13.

$$x = 2A\cos\omega t + A\cos\left(\omega t + \frac{\pi}{2}\right) + A\cos(\omega t + \pi) + \frac{A}{2}\cos\left(\omega t + \frac{3\pi}{2}\right)$$

xfr dkvk;legksxk%

(1) $\frac{9A}{2}$ (2) $\frac{\sqrt{5}\,A}{2}$

(3) $\frac{5A}{2}$ (4) $2A$

14. ;fn $\vec{r}, \vec{\omega}, \vec{u}$ vkSj $\vec{\alpha}$ jSf[kd ,oa lfn'k dksf.kd osx] jSf[kd osx rFkk dksf.kd Roj.k gksa vkSj d.k o`Ùkh; xfr dj jgk gks] rks fuEu esa lsdkSu lk dFku lR; gS%

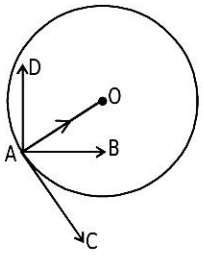
(1) $\vec{\omega} \cdot \vec{v} > 0$

(2) $(\vec{\omega}\times\vec{v})\cdot(\vec{\alpha}\times\vec{r}) = 0$

(3) $(\vec{\alpha}\times\vec{r})\cdot\vec{\omega} < 0$

(4) $(\vec{\omega}\times\vec{\alpha})\cdot(\vec{u}\times\vec{r}) > 0$

15. ,d d.k ÅèokZ/kj ry esa o`Ùkh; xfr dj jgk gS tks dk dsUnz o rFkk f=kT;k r gS] gd.k gS rFkk nzO;eku ugha gSA ;fn d.k dh fLFkfr 'A' ij d.k dk Roj.k fuEu esa lsfdl fn'kk esa gksxk%



(1) AO (2) AC

(3) AD (4) AB

16. ,d Bksl xksys dks,d [kqjnjs ry ij Åij dh vksj yq<+dk;k tkrk gS] bl ij ?k"kZ.k cy dh fn'kk gksxh%

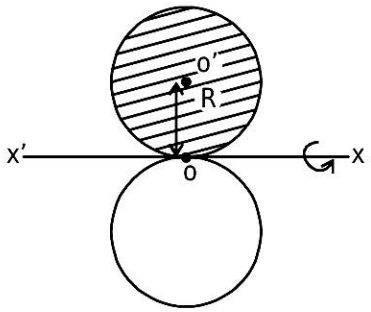
(1) vkur ry ij uhps dh vksj

(2) 'kwU;

(3) vkur ry ij Åij dh vksj

(4) xksys dh pky ij fuHkZj djsxk

17. **A disc of mass M and radius R is free to rotate in vertical plane about an axis xx' shown in fig. It is released from topmost position, its velocity of centre of mass at lowest position is:**



(1) $\sqrt{gR}$ (2) $\sqrt{\frac{16}{5}gR}$

(3) $\sqrt{\frac{8}{3}gR}$ (4) $\sqrt{8gR}$

18. **If a particle of mass 2 kg moves along a line $y = x + 2$ with the uniform velocity 2 m/s. Find its angular momentum about the origin :**

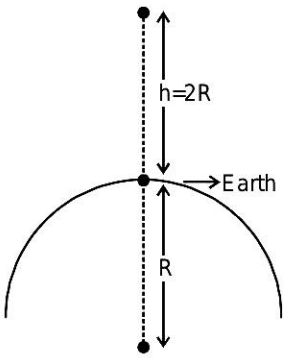
(1) $4\sqrt{2}$ kg m²/s

(2) $\frac{4}{\sqrt{2}}$ kg m²/s

(3) 4 kg m²/s

(4) 8 kg m²/s

19. **A body of mass m is dropped from 2R from the surface of earth. The speed of body just before hitting the earth's surface will be [R is radius of earth, g is acceleration due to gravity]:**

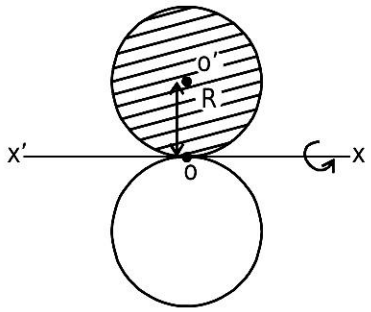


(1) $\sqrt{gR}$ (2) $2\sqrt{\frac{gR}{3}}$

(3) $\frac{\sqrt{gR}}{2}$ (4) $2\sqrt{gR}$

17. M R

kjry esa xx' v{k ds ifjr% ?kwe us ds fy, Lora= gS A ;fn bl fp=kuqlkj ge NksM+rs gSa rks c ;g fuEure fLFkfr ij vk, xk] rks bldh pky gksxh%



(1) $\sqrt{gR}$ (2) $\sqrt{\frac{16}{5}gR}$

(3) $\sqrt{\frac{8}{3}gR}$ (4) $\sqrt{8gR}$

18. ;fn 2 fdxzk ds nzO;eku dk, d d.k 2 m/s ds osx ls, d ljy js[kk y = x + 2 ds vuqfn'k xfr djrk gS rks ewy fcanq ds lkis{k bldk dks.kh; laos x gksxk%

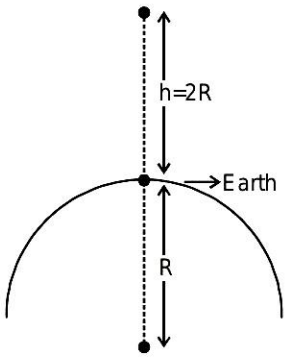
(1) $4\sqrt{2}$ kg m²/s

(2) $\frac{4}{\sqrt{2}}$ kg m²/s

(3) 4 kg m²/s

(4) 8 kg m²/s

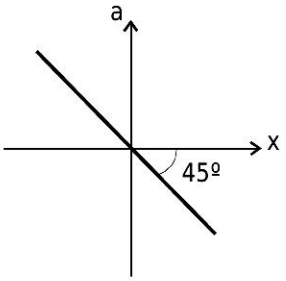
19. , d oLrq dks i Fohry ls 2R Å ph ls NksM+k tkrk gS A ;g i Fohry ls fdl pky ls xjsxh tc ;g i Fohd h f=T;k r Fkk g xq:Roh; Roj.k gS



(1) $\sqrt{gR}$ (2) $2\sqrt{\frac{gR}{3}}$

(3) $\frac{\sqrt{gR}}{2}$ (4) $2\sqrt{gR}$

20. **The acceleration (1) and displacement (x) graph is shown in the figure. The time period of oscillation is:-**



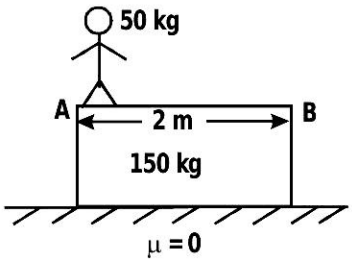
(1) 2π seconds

(2) 1 seconds

(3) 2 seconds

(4) $\frac{1}{2\pi}$

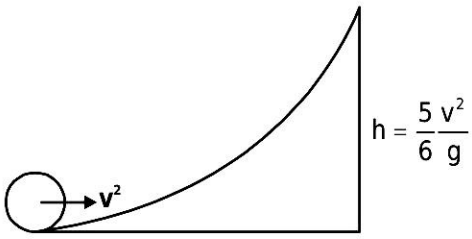
21. **A man of mass 50 kg is standing on a plank of length 2m and mass 150 kg, which is placed on a horizontal frictionless floor. If the man walked from end A to B, then actual (i.e. with respect to ground) displacement of the man is:**



(1) 2 m (2) 1.5 m

(3) 0.5 m (4) 1 m.

22. **In the given figure a body rolls without sliping on a curve path. If maximum height achieved by body is h, then shape of the body is :**



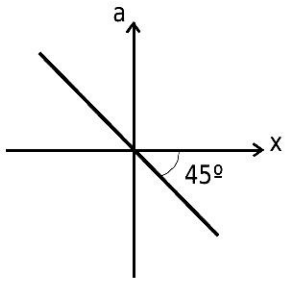
(1) solid sphere

(2) hollow sphere

(3) ring

(4) disc.

20. fdlh ljy vkorZxfr dk Roj.k (1) o fLFkfr (x) xzkQ fn;k x;k gSA vkorZdky dk eku gksxk%



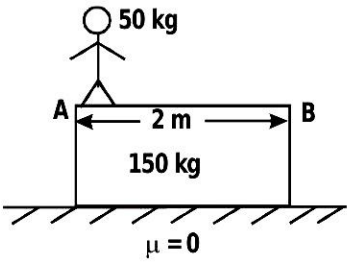
(1) 2π seconds

(2) 1 seconds

(3) 2 seconds

(4) $\frac{1}{2\pi}$

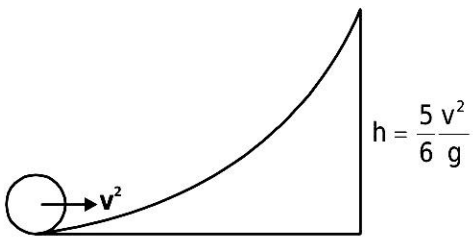
21. ,d O;fDr ftldk nzO;eku **50 kg** gS, d iVjsftldh yEckbZ **2m** rFkk nzO;eku **150 kg** gS j[kk gqvk gSA iVjs o QlZ ds chp ?k"kZ.k jfgr gS tc O;fDr **A** ls **B** rd pyrk gS rks O;fDr dk QlZ ds lkis{k fLFkkiu gksxk%



(1) 2 m (2) 1.5 m

(3) 0.5 m (4) 1 m.

22. fn;s x;s fp=k esa d oØ iFk ij yq<dus ds fcuk fQlyus okyh xsan dk xksyk gqvk gSA ij dh vf/dre ÅapkbZ d tkrh gSA xksyk dk vkÑfr gksxk%



(1) Bksl xksyk

(2) [kks[kyk xksyk

(3) oy;

(4) pdrh

23. A particle of mass 2 kg travels along a straight line with velocity $v = b\sqrt{x}$, where b is a constant. The work done by net force during the displacement of particle from x = 0 to x = 4m is :

(1) b^2

(2) $2b^2$

(3) $4b^2$

(4) $\sqrt{2}\, b^2$.

24. A body is dropped from rest from height 10 m on a horizontal floor. If coefficient of restitution between body and floor is $\frac{1}{\sqrt{2}}$ then maximum height attained after first collision is :

(1) 5 m

(2) 10 m

(3) 7.5 m

(4) 2.5 m.

25. Select the false statement:

(1) In elastic collision, Kinetic energy during the collision is not conserved.

(2) The coefficient of restitution for a collision between two steel balls lies between zero and one

(3) The momentum of a ball colliding elastically with the floor is conserved

(4) In an oblique inelastic collision between two identical bodies with initially one of them at rest, final velocities are perpendicular.

26. A steel meter scale is to be ruled so that millimeter intervals are accurate within about 5×10^{-5} m at a certain temperature. The maximum temperature variation allowable during the ruling is (Coefficient of linear expansion of steel = $10 \times 10^{-6}\ K^{-1}$) :

(1) 2°C

(2) 5°C

(3) 7°C

(4) 10°C

23. 2 kg

$v = b\sqrt{x}$, ds vu bjk x fr ek u gSd d.k i j yxus okys cyka }kjk x = 0 ls x = 4m esa fd; kx; kd k Zgks%

(1) b^2

(2) $2b^2$

(3) $4b^2$

(4) $\sqrt{2}\, b^2$.

24. , d oLrq dk i Fohry ls 10 m dh ÅpkbZ ls NkMk tk rk gSA ; fn oLrq vkSr y ds chp i Z, kLFkrk xq kd $\frac{1}{\sqrt{2}}$ gks rk i gyh VDdj ds ckn oLrq }kjk i kr ÅpkbZ gks%

(1) 5 m

(2) 10 m

(3) 7.5 m

(4) 2.5 m.

25. fuEufyf[kr esa ls lR, dFku pqfu; s%

(1) i wZ Z, kLFkVDdj ds nkSku xfrt Åt kZ vjf{kr ugh ngsh

(2) nks LVhy xsaks ds chp i Z, kLFkrk xq kd dk eku 0 ls 1 ds chp esa gks k

(3) fdl h xsa dk i Fohry ls VDdj esa j[k, l ax l jf{kr ugh gks k

(4) nks oLrq ks ds chp esa fn i wZ vi Z, kLFkfrj NhVDdj gks o nwjh oLrq VDdj ds i gys fo jkek oLFkk esa gks rk VDdj ks ds ckn nks ks oLrq ks ds ox yEcor ~gks t krs gS

26. , d LVhy dh e hVj Lds y dk sd i zdk j v'kk dr dj ukgSfd **किसी निश्चित तापक्रम पर मिलीमीटर अन्तराल 5×10^{-5} m** l hek rd l gh eku crk; sA v'kk dk u ds le; vf/ dre fdruk rk i fjorZ vuqr % gks k % (LVhy dk j[k, i zdk j xq kd = **$10 \times 10^{-6}\ K^{-1}$) :**

(1) 2°C

(2) 5°C

(3) 7°C

(4) 10°C

27. During illness an 80 kg man ran a fever of 102.2°F instead of normal body temperature of 98.6°F. Assuming that human body is mostly water, how much heat is required to raise his temperature by that amount :

(1) 100 kcal

(2) 160 kcal

(3) 50 kcal

(4) 92 kcal

28. A steel ball of mass 0.1 kg falls freely from a height of 10 m and bounces to a height of 5.4m from the ground. If the dissipated energy in this process is absorbed by the ball, the rise in its temperature is (Specific heat of steel = 460 Joule - kg^{-1} $^oC^{-1}$, g = 10 ms^{-2}) :

(1) 0.01°C

(2) 1°C

(3) 0.1°C

(4) 1.1°C

29. Suppose ideal gas equation follows VP^3 = constant. Initial temperature and volume of the gas are T and V respectively. If gas expand to 27V then its temperature will become :

(1) T

(2) 9T

(3) 27T

(4) T/9

30. The r.m.s. velocity of a gas at a certain temperature is $\sqrt{2}$ times than that of the oxygen molecules at that temperature. The gas can be :

(1) H_2

(2) He

(3) CH_4

(4) SO_2

31. One mole of a monoatomic ideal gas is mixed with one mole of a diatomic ideal gas. The molar specific heat of the mixture at constant volume is:

(1) 8

(2) 3/2 R

(3) 2R

(4) 2.5 R

27. ,d 80 kg ds cPps dks cq[kkj ds dkj.k 102.2°F rki gks x;k tcfd lkekU; 'kjhj rki 98.6°F gksrk gSA ;g ekurs gq, fd 'kjhj dk vf/kdka'k Hkkx ty gS] cPps dk rki lkekU; rki ls 102.2°F rd vkus esa fdruh Å"ek vo'kksf"kr djsxk%

(1) 100 kcal

(2) 160 kcal

(3) 50 kcal

(4) 92 kcal

28. 0.1 kg dh ,d LVhy xsan 10 m dh Å¡pkbZ ls Lora=rk iwoZd iFohry ij fxjrh gS] oa;q ls 5.4m Å¡pkbZ rd mNyrh gSA ;fn bl izfØ;k esa {kf; ÅtkZ dh lEiw.kZ jkf'k xsan }kjk vo'kksf"kr dj yh tkrh gS] rc bl dsrki esa o`f¼ gksus ij LVhy dh fof'k"V Å"ek = 460 Joule - kg^{-1} $^oC^{-1}$, g = 10 ms^{-2}) :

(1) 0.01°C

(2) 1°C

(3) 0.1°C

(4) 1.1°C

29. eku yhft;s vkn'kZ xSl lehdj.k dk:i VP^3 = fu;rkad gSA xSl dk izkjafHkd rki ,oa vk;ru Øe'k% T ,oa V gSA ;fn xSl dk vk;ru c<+kdj 27V gks tkrk gS] rc bl dk rki gksxk%

(1) T

(2) 9T

(3) 27T

(4) T/9

30. fdlh xSl dk oxZ&ekè; ewy oxZ mlh rki ij vkDlhtu ds oxZ ekè; ewy oxZ dk $\sqrt{2}$ xquk gSA xSl gks ldrh gS%

(1) H_2

(2) He

(3) CH_4

(4) SO_2

31. ,d ijek.kfod vkn'kZ xSl ds ,d eksy dks f}ijek.kfod vkn'kZ xSl ds ,d eksy ds lkFk feyk;k tkrk gS] rks vk;ru ij fefJr .kdhe ksyj fof'k"V Å"ek gksrh gS%

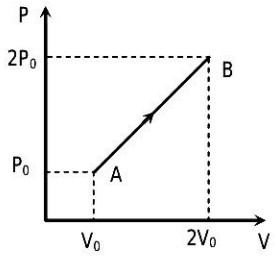
(1) 8

(2) 3/2 R

(3) 2R

(4) 2.5 R

32. The P-V diagram of 2 gm of helium gas for a certain process $A \rightarrow B$ is shown in the figure. what is the heat given to the gas during the process $A \rightarrow B$:



(1) $4P_0V_0$ (2) $6P_0V_0$

(3) $4.5P_0V_0$ (4) $2P_0V_0$.

33. A certain mass of gas at 273 K is expanded to 81 times its volume under adiabatic condition. If $\gamma = 1.25$ for the gas, then its final temperature is:

(1) –235°C

(2) –182°C

(3) –91°C

(4) –0°C

34. If a Carnot's engine functions at source temperature 127°C and at sink temperature 87°C, what is its efficiency :

(1) 10%

(2) 25%

(3) 40%

(4) 50%

35. In an adiabatic change, the pressure P and temperature T of a monoatomic gas are related by the relation $P \propto T^C$, where c equals :

(1) 5/3

(2) 2/5

(3) 3/5

(4) 5/2

SECTION-B

36. In a steady state of thermal conduction, temperature of the ends A and B of a 20 cm long rod are 100°C and 0°C respectively. What will be the temperature of the rod at a point at a distance of 6 cm from the end A of the rod :

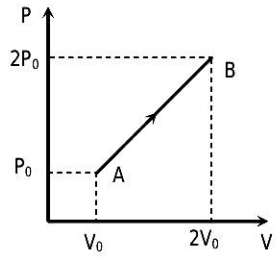
(1) –30°C

(2) 70°C

(3) 5°C

(4) 10°C

32. ,d izØe $A \rightarrow B$ ds fy, 2 xke ghfy;e xSl dk P-V vkjs[k fp=k esa n[kk;k x;k gSA izØe $A \rightarrow B$ esa xSl ds lkFk D;k Å"ek nh xbZ gS%



(1) $4P_0V_0$ (2) $6P_0V_0$

(3) $4.5P_0V_0$ (4) $2P_0V_0$.

33. :½ks"e izØe esa 273 K rki ij ,d xSl dh fuf'pr ek=kk viuh vk;ru ds 81 xquk rd izlkfjr gksrh gSA ;fn xSl ds fy, $\gamma = 1.25$ gks rc xSl dk vafre rki gS%

(1) –235°C

(2) –182°C

(3) –91°C

(4) –0°C

34. ,d dkuksZ ba;u ftldk L=ksr rki 127°C ,oa fl d rki 87°C ds lkFk dk;Z djrk gS] bldh {kerk gS%

(1) 10%

(2) 25%

(3) 40%

(4) 50%

35. :½ks"e izØe esa fjo.kZ xSl ds fy, nkc P rFkk rki T esa lEcU/ $P \propto T^c$ gSA ;gk¡ c dk eku gksxk%

(1) 5/3

(2) 2/5

(3) 3/5

(4) 5/2

SECTION-B

36. LFkk;h voLFkk esa NM+ ds fljksa dk rki 100°C ,oa 0°C gSA ;fn NM+ dh yEckbZ 20 cm gS rks xfr jsA ls 6 lseh dh nwjh ij NM+ dk rki gksxk%

(1) –30°C

(2) 70°C

(3) 5°C

(4) 10°C

37. **Four rods of silver, copper, brass and wood are of same shape. They are heated together after wrapping a paper on it, the paper will burn first on :**

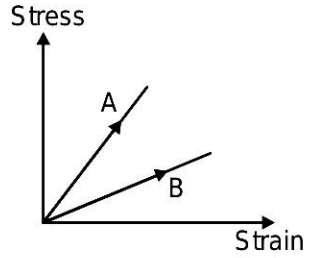
(1) Silver

(2) Copper

(3) Brass

(4) Wood

38. **In the given figure stress and strain curve is shown of material A and B, then the correct option is (T_A and T_B are the temperature of body):**



(1) $y_A > y_B$

(2) $T_A > T_B$

(3) $T_B > T_A$

(4) Both (1) and (3)

39. **In a resonance tube, the first resonance is obtained when the level of water in the tube is at 16cm from the open end. Neglecting end correction, the next resonance will be obtained when the level of water from the open end is :**

(1) 24 cm

(2) 32 cm

(3) 48 cm

(4) 64 cm

40. **A wave travelling along positive x-axis is given by $y = A\sin(\omega t - kx)$. If it is reflected from rigid boundary such that 80% amplitude is reflected, then equation of reflected wave is**

(1) $y = A\sin(\omega t + kx)$

(2) $y = -0.8A\sin(\omega t + kx)$

(3) $y = 0.8A\sin(\omega t + kx)$

(4) $y = A\sin(\omega t + 0.8\ \ kx)$

37. leku vkdkj okyh pkanh] rkack] ihry ,oa ydM+h dh NM+sa ,d lkFk xeZ dh tkrh gSaA bl ij dkxt yisVdj mUgsa ,d lkFk xeZ djus ij dkxt tYnh ls fdl inkFkZ ij tyus yxsxk\%

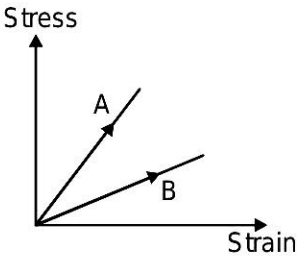
(1) pkanh ij

(2) rkacs ij

(3) ihry ij

(4) ydM+h ij

38. fn;s x;s fp=k esa nks inkFkksZ A vkSj B ds izfrcy rFkk fodfr dk oØ fn;k x;k gSA rks lgh dFku gksxk\% (T_A vkSj T_B oLrq dk rki gS)



(1) $y_A > y_B$

(2) $T_A > T_B$

(3) $T_B > T_A$

(4) nksuksa (1) vkSj (3)

39. ,d vuqukn uyh esa izFke vuqukn feyrk gS tc uyh esa ikuh dk Lrj [kqys fljs ls 16cm ij gSA vuqukn lq/kkj dks ux.; ekurs gq, vxyk vuqukn tc uyh esa ikuh dk Lrj [kqys fljs ls fdruh nwjh ij gksxk\%

(1) 24 cm

(2) 32 cm

(3) 48 cm

(4) 64 cm

40. /ukRed x-fn'kk esa xfreku rjax $y = A\sin(\omega t - kx)$ }kjk izn'kZr gSA ;fn ,d n`<+ fljs ls bl izdkj ijkofrZr gksrh gS fd 80% vk;ke gh ijkofrZr gksrk gSA ijkofrZr rjax dk lehdj.k gksxk\%

(1) $y = A\sin(\omega t + kx)$

(2) $y = -0.8A\sin(\omega t + kx)$

(3) $y = 0.8A\sin(\omega t + kx)$

(4) $y = A\sin(\omega t + 0.8\ \ kx)$

41. The frequency of the first harmonic of a string stretched between two points is 100 Hz. The frequency of the third overtone is :

(1) 200 Hz

(2) 300 Hz

(3) 400 Hz

(4) 600 Hz

42. A stretched wire of length 110 cm is divided into three segments whose frequencies are in ratio 1 : 2 : 3. Their lengths must be :

(1) 20 cm; 30 cm; 60 cm

(2) 60 cm; 30 cm; 20 cm

(3) 60 cm; 20 cm; 30 cm

(4) 30 cm; 60 cm; 20 cm

43. If n_1, n_2, n_3..... are the frequencies of segments of a stretched string, the frequency n of the composite string is given by

(1) $n = n_1 + n_2 + n_3 + ...$

(2) $n = \sqrt{n_1 \times n_2 \times n_3 \times .....}$

(3) $\frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} + ...$

(4) $n = n_1 \times n_2 \times n_3 \times .....$

44. The equation of stationary wave along a stretched string is given by $y = 5\sin\frac{\pi x}{3}\cos 40\pi t$ where x and y are in centimetre and t in second. The separation between two adjacent nodes is :

(1) 6 cm

(2) 4 cm

(3) 3 cm

(4) 1.5 cm

45. The number of beats produced per second by two vibrations: $x_1 = x_0 \sin 646\pi t$ and $x_2 = x_0 \sin 652\pi t$ is:

(1) 2

(2) 3

(3) 4

(4) 6.

41. nks fcUnqvksa ds chp rus gq, /kkjs ds izFke gkesZfud dh vko`fÙk 100 Hz gSA rhljs vf/Lojd dh vko`fÙk gS%

(1) 200 Hz

(2) 300 Hz

(3) 400 Hz

(4) 600 Hz

42. ,d rkuh gqbZ phaM+h dh yEckbZ 110 cm gSA ;g phaM+h rhu [kaMksa esa fdl vuqikr esa gksxh ftudh vko`fÙk;ksa dk vuqikr 1 : 2 : 3 gSA bu [kaMksa dh yEckbZ;ksa dk vuqikr gksxk%

(1) 20 cm; 30 cm; 60 cm

(2) 60 cm; 30 cm; 20 cm

(3) 60 cm; 20 cm; 30 cm

(4) 30 cm; 60 cm; 20 cm

43. ;fn fdlh rkuh gqbZ phaM+h ds [kaMksa dh vko`fÙk;k¡ n_1, n_2, n_3..... gSa rks D;k lgh gS%

(1) $n = n_1 + n_2 + n_3 + ...$

(2) $n = \sqrt{n_1 \times n_2 \times n_3 \times .....}$

(3) $\frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} + ...$

(4) $n = n_1 \times n_2 \times n_3 \times .....$

44. ,d rkuh gqbZ phaM+h esa izLFkkfir rjax dk lehdj.k $y = 5\sin\frac{\pi x}{3}\cos 40\pi t$ gSA ;gk¡ x rFkk y lsVhehVj esa rFkk t lsd.M esa gSA lehi ds nks fudVre uksM ksa ds chp dh nwjh gksxh%

(1) 6 cm

(2) 4 cm

(3) 3 cm

(4) 1.5 cm

45. nks dEiu $x_1 = x_0 \sin 646\pi t$ rFkk $x_2 = x_0 \sin 652\pi t$ }kjk izfr lsd.M mRiUu foLiUnksa dh la[;k gS%

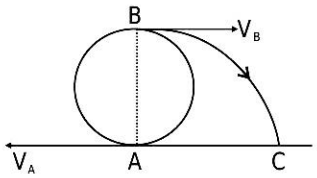
(1) 2

(2) 3

(3) 4

(4) 6.

46. **An object is tied to a string of length l and is revolved in a vertical circle at the minimum velocity. When the object reaches the uppermost point, the string breaks and it describes a parabolic path as shown in the figure under the gravitational force. The horizontal range AC in the plane of A would be:**



(1) l (2) 2l

(3) $\sqrt{2}l$ (4) $2\sqrt{2}l$

47. **Efflux velcoity does't depends upon :**

(1) Density if only single liquid filled

(2) Density if two immisible liquid are filled

(3) Depth of orfice from free surface

(4) Both (1) and (2)

48. **Motion under gravity of a particle is :**

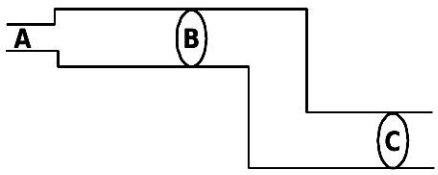
(1) a uniform motion

(2) non-uniform motion

(3) may be uniform

(4) non-uniform accelerated motion

49. **If an ideal liuqid flows through horizontal pipe as shown in figure (crossectional area of B = crossectional area of C)**



(1) $P_C > P_A > P_B$ (2) $P_C > P_B > P_A$

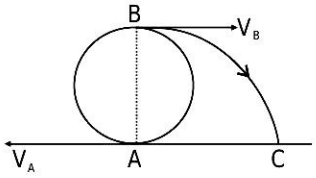
(3) $P_C = P_B > P_A$ (4) $V_C > V_B > V_A$

50. **Starting from rest, a particle rotates in a circle of radius R = $\sqrt{2}$ m with an angular accleration $\alpha = (\pi/4)$ rad/s². The magnitude of average velocity of the particle over the time it rotates quarter circle is :**

(1) 1.5 m/s (2) 2 m/s

(3) 1 m/s (4) 1.25 m/s

46. ,d oLrq dks lyaek Zdh Mksjh ls cka/kdj U;wure osx ls Å/okZ/kj o`Ùk esa?kqekbZ tkrh gSA tc oLrq mPpre fcUnq ij igqaprh gS rks Mksjh VwV tkrh gS ,oa oLrq iz{ksI; xq:Ro cy ds v/hu ijoy;h; ,d iFkjh; xfr djrh gSA AC dsry esa {ks=t ijkl gksxk



(1) l (2) 2l

(3) $\sqrt{2}l$ (4) $2\sqrt{2}l$

47. cfgLzo osx fuHkZj ugha djrk gS%

(1) ?kuRo ij ;fn ,d nzo Hkjk gks

(2) ?kuRo ij ;fn nks vfeJ.kh; nzo Hkjs gksa

(3) fNnz dh nzo dh Lora=k rjax ls xgjkbZ ij

(4) nksuksa (1) vkSj (2)

48. fdlh d.k dh xq:Rokd"kZ.k ds v/hu xfr%

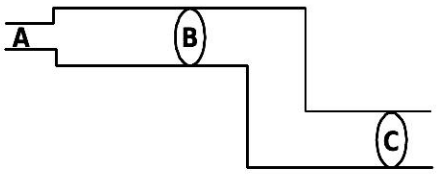
(1) ,dleku xfr gksrh gS

(2) vleku xfr gksrh gS

(3) ,dleku xfr gks ldrh gS

(4) vleku:Rofjr xfr gksrh gS

49. ;fn ,d vkn'kZ nzo fdlh {ks=t ikbi esa izokfgr gksrk gS tSlk fd fp=k esa gS (B dk vuqizLFk{ks=kQy = C dk vuqizLFk {ks=kQy)



(1) $P_C > P_A > P_B$ (2) $P_C > P_B > P_A$

(3) $P_C = P_B > P_A$ (4) $V_C > V_B > V_A$

50. ,d d.k fLFkj voLFkk ls R = $\sqrt{2}$ eh- f=kT;k dk o`Ùk esa dks.kh; Roj.k $\alpha = (\pi/4)$ jsfM;u@lSd.M² ls pyuk izkjaHk djrk gS] d pkSFkkbZ pDdj ds fy;s vkSlr osx gksxk%

(1) 1.5 m/s (2) 2 m/s

(3) 1 m/s (4) 1.25 m/s

TOPIC : Full Syllabus (XI-MODEL)

Atomic Masses : H=1, He=4, C=12, N=14, O=16, Na=23, Mg=24, P=31, S=32, Cl=35.5, K=39, Ca=40, Fe=56, Cu=63.5, Br=80, Ag=108, I=127, Ba=137, Au=197

SECTION-A

51. For the reaction,

$$\frac{1}{2}A_2 + \frac{1}{2}B_2 \rightarrow AB,\ \Delta H = -50\,kcal$$

If bond energies of A_2, B_2 and AB are respectively x, x/2 and x k cal, the value of x is :

(1) 50

(2) 100

(3) 200

(4) 400.

52. Enthalpy of combustion of a substance is always :

(1) > 0

(2) ≥ 0

(3) ≤ 0

(4) < 0.

53. When acetone react with hydroxylamine then product (oxime) will form which will show isomerism :

(1) Optical isomerism

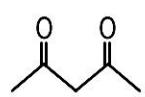
(2) Geometrical isomerism

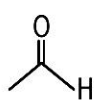
(3) Conformational isomerism

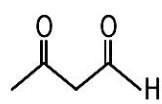
(4) None of these

54. Maximum enol content is in :

(1)

(2) 

(3) 

(4) 

55. Glycerol is purified by :

(1) steam distillation

(2) vaccum distillation

(3) sublimation

(4) simple distillation

SECTION-A

51. uhpsfn; sx; svfHkØ; kdsfy; s,

$$\frac{1}{2}A_2 + \frac{1}{2}B_2 \rightarrow AB,\ \Delta H = -50\,kcal$$

vxj **A_2, B_2** vkS **AB** dh cU/ Åt kZ Øe' k%**x, x/2** vkS **x** gSrks **x** dkeku D, kgksk%

(1) 50

(2) 100

(3) 200

(4) 400.

52. ngu m"ekdsfy; sfuEu esl sdkSu ge'kkl ghgS%

(1) > 0

(2) ≥ 0

(3) ≤ 0

(4) < 0.

53. t c , fl Vksu] gkbMkWhy , ehu l svfHkØ; kdjrkgSrks vkWbe mRk ncurkgSrks; gfdl izdkj fdl eko; ork izn'kZ djsxk%

(1) izdk'kh; l eko; ork

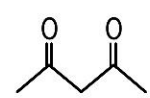
(2) T; kfefr; l eko; ork

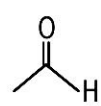
(3) / vkZl eko; ork

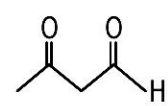
(4) mijkDr esdkbZugh

54. fdl esl cl sT; knkbukWdk'VSV gksk%

(1)

(2) 

(3) 

(4) 

55. fXyl jkWdk' kSu gksk%

(1) Hkkih; vkl ou

(2) fudkZ (oS, e) vkl ou

(3) m?oZkru fØ; k

(4) l k/kj.k vkl ou

56. If 0.2 g of an organic compound containing carbon, hydrogen and oxygen on combustion yielded 0.147 g CO_2 and 0.12 g water. What will be the content of oxygen in substance :

(1) 73.29%

(2) 78.45%

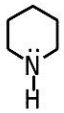
(3) 83.23%

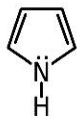
(4) 89.50%

57. Strongest base is :

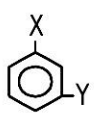
(1)

(2)

(3) 

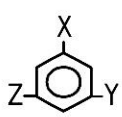
(4) 

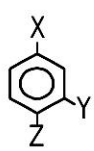
58. The compound

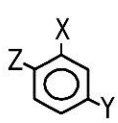


(Where X is an o-, p- directing group and y is a m-directing group)

is subjected to electrophilic substitution reaction for introduction of Z. The compound formed would be :

(1) 

(2) 

(3) 

(4) Both B and C

56. ,d dkZ/ud ;kSxd ds **0.2** xke dkngu djusij **0.147** xke **CO_2** vkSj **0.12** xke t y ikr gkskgSA dkZ/ud ;kSxd esa vkDlhtu dhi fr'kr ekk gksh%

(1) 73.29%

(2) 78.45%

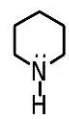
(3) 83.23%

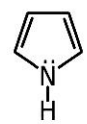
(4) 89.50%

57. izy {kj gS%

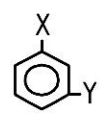
(1)

(2)

(3) 

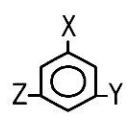
(4) 

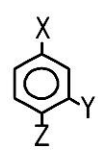
58. ;kSxd

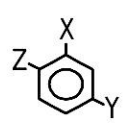


(tgkW o- vkSj p- funZkr leqwg vkSj Y m — funZkr leqwgS

dksukfHkdLughi fr LFkku vfHkfØ; kdsfy, **z** esa funZkr dj jgsgS; kSxd ikr gksl drkgS%

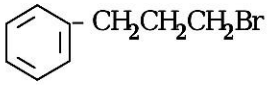
(1) 

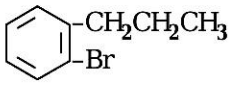
(2) 

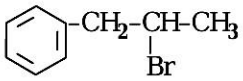
(3) 

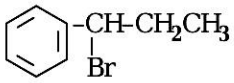
(4) nkSkB vkSj C

59. Propylbenzene reacts with bromine in presence of light or heat to give

(1) 

(2) 

(3) 

(4) 

60. Arrange the following carboxylic acids in the decreasing order of their acidities.

1. PhCOOH

2. o-$O_2NC_6H_4COOH$

3. p-$O_2NC_6H_4COOH$

4. m-$O_2NC_6H_4COOH$

(1) 2 > 4 > 3 > 1

(2) 2 > 4 > 1 > 3

(3) 2 > 3 > 4 > 1

(4) 1 > 2 > 3 > 4

61. Amongst the following compounds, the optically active alkane having lowest molecular mass is :

(1) n-butane

(2) Isopentane

(3) 3-methyl hexane

(4) 2-Cyclopropyl butane

62. A sealed tube which can withstand a pressure of 3 atmosphere is filled with air at 27°C and 760 mm pressure. The temperature, at which the tube will brust, will be :

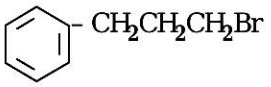
(1) 381°C

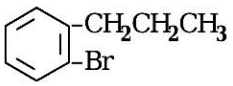
(2) 627°C

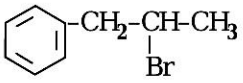
(3) 452°C

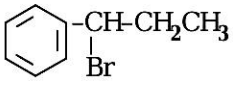
(4) 1173°C

59. iszkiyhu cSathu izdkk; kÅ"ekdh mifLFkfr esa dkSulk LFkk fØ;kdjd nsrk gS%

(1) 

(2) 

(3) 

(4) 

60. fuEu dkcksZfyd vEyksa dks mudh?kVrs gq,pvEyrk ds Øe esa;oafLFkr dhft ;s%

1. PhCOOH

2. o-$O_2NC_6H_4COOH$

3. p-$O_2NC_6H_4COOH$

4. m-$O_2NC_6H_4COOH$

(1) 2 > 4 > 3 > 1

(2) 2 > 4 > 1 > 3

(3) 2 > 3 > 4 > 1

(4) 1 > 2 > 3 > 4

61. fuEu;kSfxdksesa ls dsoy v.kqdk;dh,oa lfØ;,Dlsu gksxk%

(1) n-C;wVsu

(2) vkblksisaVsu

(3) 3-esfFky gSDlsu

(4) 2-lkbDyksizksfiy C;wVsu

62. ,d cUn uyhtksfd 3 ok;qeaMy nkc cnkZr dj ldrk gS] 27°C ,oa 760 mm nkc ij ok;q ls Hkjh gSA rki ftl ij uyhi QVsxk,xk gksxk%

(1) 381°C

(2) 627°C

(3) 452°C

(4) 1173°C

63. A body of mass 10 mg is moving with a velocity of 100 m s^{-1}. The wavelength of the de-Broglie wave associated with it would be :

(1) 6.63×10^{-7} m

(2) 6.63×10^{-31} m

(3) 6.63×10^{-4} m

(4) 6.63×10^{-35} m

64. A mixture of gases contains H_2 and O_2 gases in the ratio of 1:4 (w/w) what is the ratio of partial pressure of two gases in the mixture :

(1) 16 : 1

(2) 2 : 1

(3) 1 : 4

(4) 4 : 1

65. The density of 3M solution of NaCl is 1.25 gmL^{-1} calculate molality of the solution :

(1) 3 m

(2) 1.25 m

(3) 2.79 m

(4) 2 m

66. Nitric oxide reacts with bromine and give nitrosyl bromide as per the reaction given below

$$2NO(g) + Br_2(g) \rightleftharpoons 2NOBr(g)$$

when 0.087 mol of NO and 0.0437 mol of Br_2 are mixed in a closed container at constant temperature, 0.0518 mol of NOBr is obtained at equilibrium. Calculate the equilibrium amount of nitric oxide :

(1) 0.087 mol

(2) 0.0352 mol

(3) 0.0518 mol

(4) 0.0480 mol

67. The pKa value of weak acid HA is 4.80. The pK_b of a weak base, BOH is 4.78. The pH of an aqueous solution at the corresponding salt, BA, will be :

(1) 5.22

(2) 9.07

(3) 7.01

(4) 13.90

63. 10 mg n<2eku okyh oLrq dks o 100 m s^{-1} ls xfr'khy crk;k tk jgk gS rks bl dh MhczksXyh rjax n?kZ gksxh%

(1) 6.63×10^{-7} m

(2) 6.63×10^{-31} m

(3) 6.63×10^{-4} m

(4) 6.63×10^{-35} m

64. ,d xSl feJ .k esa gkbMkstu ,oa vkWDlhtu xSlksa dk n<2eku vuqikr 1:4 (w/w) gS rks feJ .k esa xSlksa ds vkaf'kd nkc dk vuqikr gksxk%

(1) 16 : 1

(2) 2 : 1

(3) 1 : 4

(4) 4 : 1

65. 3M NaCl foy; u dk ?kuRo 1.25 gmL^{-1} gS rks foy; u dh eksyyrk gksxh%

(1) 3 m

(2) 1.25 m

(3) 2.79 m

(4) 2 m

66. fuEufyf[kr vfHkfØ;k esa ukbVªl vkWDlkbM czksehu ls vfHkfØ;k djds ukbVªkslkby czksekbM cukrk gS

$$2NO(g) + Br_2(g) \rightleftharpoons 2NOBr(g)$$

tc fLFkjrki ij 0.087 eksy NO vkSj 0.0437 eksy Br_2 dks feyk;k tkrk gS rks lkE;koLFkk ij 0.0518 eksy NOBr curk gSA lkE;koLFkk ij ukbVªl vkWDlkbM dh ek=kk gksxh%

(1) 0.087 mol

(2) 0.0352 mol

(3) 0.0518 mol

(4) 0.0480 mol

67. nqcZy vEy HA dk pKa eku 4.80 nqcZy {kkj BOH dk pK_b eku 4.78 gS rks lacaf/kr yo.k BA ds tyh; foy; u dk pH eku gksxk%

(1) 5.22

(2) 9.07

(3) 7.01

(4) 13.90

68. The correct set of four quantum number for the electron involved in Fe^{++} to Fe^{+++} conversion :

(1) n=3, l=2, m=–2, S=–1/2

(2) n=4, l=0, m=0, S=–1/2

(3) n=3, l=0, m=0, S=–1/2

(4) n=4, l=2, m=–2, S=–1/2

69. The hydrated salt, $Na_2SO_4.xH_2O$ undergoes 55.9% loss in weight on heating and becomes anhydrous the value of x will be :

(1) 5

(2) 3

(3) 7

(4) 10

70. Which can act as buffer :

(1) A mixture of acetic acid and sodium acetate

(2) A mixture of Ammonium chloride and ammonium Hydroxide

(3) HCN + NaCN

(4) All of these

71. 10 ml $\frac{N}{2}$ HCl, 50 ml $\frac{N}{10}$ H_2SO_4 and 100 ml $\frac{N}{5}$ HNO_3 are mixed. The normality of the mixture of the acidic solution is :

(1) 1/16

(2) 5/16

(3) 3/16

(4) 3/8

72. CH_3CH_2OH can be converted into CH_3CHO by .....

(1) Pyridinium chlorochromate (PCC)

(2) Catalytic dehydrogenation

(3) Both

(4) None

68. Fe^{++} ls Fe^{+++} : ikuj.kesHkx ysjgsbysDVkudsfy, pkjks Dokae l a; kvksdkl ghl s/ gS%

(1) n=3, l=2, m=–2, S=–1/2

(2) n=4, l=0, m=0, S=–1/2

(3) n=3, l=0, m=0, S=–1/2

(4) n=4, l=2, m=–2, S=–1/2

69. t yh; yo.k $Na_2SO_4.xH_2O$ dksxeZdjusij n2Oeku ea 55.9% i fr'kr dk{k; gkskgS, oa yo.kfut ZZh; gkst krk gS A x dkeku gksk%

(1) 5

(2) 3

(3) 7

(4) 10

70. fuEufyf[kr esa ci Q fo y; u gksk%

(1) ,fl fVd vEy vkjSl kSMe ,fl Vs/ feJ .k

(2) vekfu; e DyksjkbM vkjSvekfu; e gkbMDl kbMfeJ .k

(3) HCN + NaCN

(4) mijksDr l Hkh

71. 10 ml $\frac{N}{2}$ HCl, 50 ml $\frac{N}{10}$ H_2SO_4 vkjS 100 ml $\frac{N}{5}$ HNO_3 dks fefJ r fd; krksvEyh; fo y; u dsfeJ .kdhuleZ rkgksh

(1) 1/16

(2) 5/16

(3) 3/16

(4) 3/8

72. CH_3CH_2OH dks CH_3CHO esa fj ofrZ fd; kt kl drkgS%

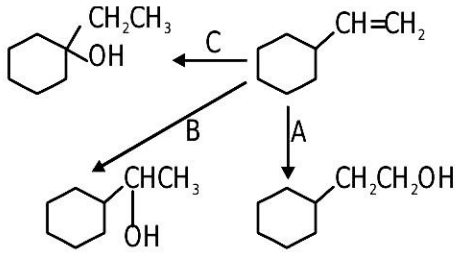
(1) ikbfZfMu; e Dyksjkbkes (PCC)

(2) mRfsjr fMgkbMkt uhdj.k

(3) nksnks

(4) dksZugh

73.



In above reactions A, B, C respectively are :

I. acid catalysed hydration

II. HBO (Hydroboration)

III. oxymercuration - demercuration

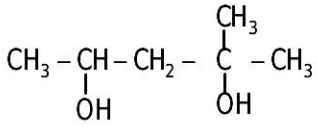
(1) I in all cases

(2) I, II, III

(3) II, III, I

(4) III, I, II

74. The IUPAC name of the compound



is :

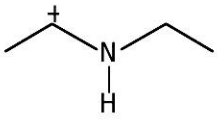
(1) 1, 1-Dimethylbutane-1, 3-diol

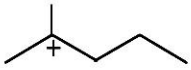
(2) 1, 3, 3-Trimethylpropane-1, 3-diol

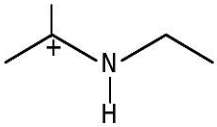
(3) 2-Methylpentane-2, 4-diol

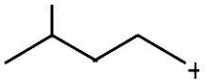
(4) 1, 3, 3-Trimethyl-1, 3-propanediol

75. Which is most stable carbocation :

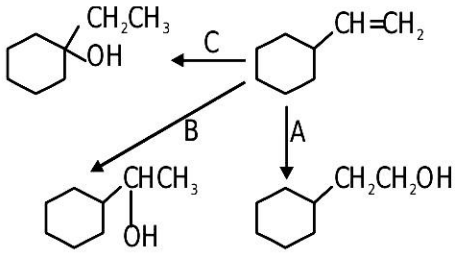
(1) 

(2) 

(3) 

(4) 

73.



mijkDr esa A, B, C Øe'k% gksxsa%

I. vEy mRizsfjr ty;kstu

II. HBO (gkbMªksckstu)

III. vkWDlhejD;qjsku&MhejD;qjsku

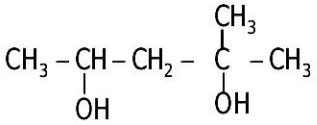
(1) I in all cases

(2) I, II, III

(3) II, III, I

(4) III, I, II

74. ;kSfxd dk vkbZ;wihvsd uke gksxk%



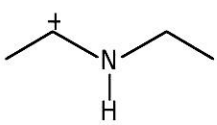
(1) 1, 1-MkbesfFkydkscsu-1, 3-MkbZvkWy

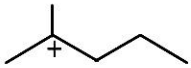
(2) 1, 3, 3-VkbesfFkydkscsu-1, 3-MkbZvkWy

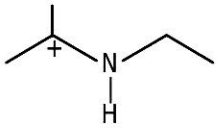
(3) 2-esfFkydsUVsu-2, 4-MkbZvkWy

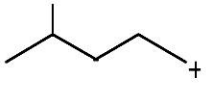
(4) 1, 3, 3-VkbesfFkydkscsu-1, 3-MkbZvkWy

75. fuEu esa dkSu lk LFkkbZ dkcksZdk;u gS%

(1) 

(2) 

(3) 

(4) 

76. **Which is a correct matching set :**

	Column I	Column II
a.	$CH_3COCH_3 \rightarrow CH_3CH_2CH_3$	p. Sodalime
b.	$CH_3CH_2Br \rightarrow CH_2=CH_2$	q. Na / dry ether
c.	$C_6H_5COOH \rightarrow C_6H_6$	r. KOH (alc.)
d.	$C_2H_5Br \rightarrow C_4H_{10}$	s. HI/red P

(1) a-p, b-s, c-q, d-r

(2) a-q, b-p, c-s, d-r

(3) a-s, b-r, c-p, d-q

(4) a-q, b-r, c-s, d-p

77. **Which of the following has highest knocking property :**

(1) Aromatic hydrocarbons

(2) Olefins

(3) Branched chain paraffins

(4) Straight chain parafifins

78. **Which of the following are incorrect (regarding oxidation number) :**

(1) Oxidation number of P in hypophosphorous acid is + 1

(2) Oxidation number of P in phosphorus acid is + 3

(3) Oxidation number of P in pyrophosphoric acid is + 5

(4) Oxidation number of P in ortho-phosphoric acid is + 3

79. **The oxidation number of S in $Na_2S_4O_6$ is :**

(1) +2

(2) +2 and +3 (two S have + 2 and other two have +3).

(3) +2 and +3 (three S have +2 and one S has +3).

(4) +5 and 0 (two S have +5 and the other two S have 0).

80. **For a given mass of a gas, if pressure is reduced to half and temperature is increased two times, then the volume would become :**

(1) V/4

(2) $2V^2$

(3) 6V

(4) 4V

76. fuEufyf[kr LrEHkksa dks lqesfyr dhft;s

	lewg I	lewg II
a.	$CH_3COCH_3 \rightarrow CH_3CH_2CH_3$	p. lksMkykbe
b.	$CH_3CH_2Br \rightarrow CH_2=CH_2$	q. Na / 'kq"d bZFkj
c.	$C_6H_5COOH \rightarrow C_6H_6$	r. KOH (alc.)
d.	$C_2H_5Br \rightarrow C_4H_{10}$	s. HI/ yky P

(1) a-p, b-s, c-q, d-r

(2) a-q, b-p, c-s, d-r

(3) a-s, b-r, c-p, d-q

(4) a-q, b-r, c-s, d-p

77. fuEu esa fdlesa lcls T;knk vi LiQksVu xq.kkad gksrk gS%

(1) ,jksesfVd gkbMªksdkcZu

(2) vkWyhiQsu

(3) izkoZ[kafMr [kqyh Jaf[kr

(4) lh/h [kqyh Jaf[kr

78. fuEufyf[kr esa ls dkSu lk dFku vkWDlhdj.k la[;k ds lanHkZ esa xyr gS%

(1) gkbiksQkLQl vEy esa dh vkWDlhdj.k la[;k +1 gksrh gS

(2) fQkLQl vEy esa dh vkWDlhdj.k la[;k +3 gksrh gS

(3) ikbjksQkLQksfjd vEy esa dh vkWDlhdj.k la[;k +5 gksrh gS

(4) vkFkksZQkLQksfjd vEy esa dh vkWDlhdj.k la[;k +3 gksrh gS

79. lYiQj dh vkWDlhdj.k la[;k $Na_2S_4O_6$ esa gksxh%

(1) +2

(2) +2 vkSj +3 (2 lYiQj +2 esa rFkk 2 lYiQj +3 esa)

(3) +2 vkSj +3 (3 lYiQj +2 esa rFkk 1 lYiQj +3 esa)

(4) +5 vkSj 0 (2 lYiQj +5 esa rFkk 2 lYiQj 0 esa)

80. fdlh fn;s x;s xSl ds nkc dks vk/kk djus vkSj rki nksxquk djus ls vk;ru gksxk%

(1) V/4

(2) $2V^2$

(3) 6V

(4) 4V

81. **Greatest amount of energy involve in the transformation of :**

(1) $Li^{+} \rightarrow Li^{+2} + e$

(2) $K^{+} \rightarrow K^{++} + e$

(3) $Na^{+} \rightarrow Na^{+2} + e$

(4) $Ne \rightarrow Ne^{+} + e$

82. **Generally, the first ionisation energy increases along the third period. But there are some exceptions, the exception is/are :**

A. P and S **B. Na and Mg**

C. Mg and Al **D. Be and B**

(1) A, C & D only

(2) A & C only

(3) A, B, C & D

(4) Only B

83. **In an octahedral structure, the pair of d-orbitals involved in d^2sp^3-hydridisation is**

(1) $d_{x^2-y^2}, d_{z^2}$

(2) $d_{xy}, d_{x^2-y^2}$

(3) d_{z^2}, d_{xz}

(4) d_{xy}, d_{yz}

84. **Which of the following statement is incorrect :**

(1) Two nodal planes result when two wave functions overlap axially in opposite phase.

(2) The shape of NH_3 molecule changes from pyramidal to tetrahedral when it is bonded with BF_3

(3) In O_3 molecule the formal charge on central oxygen atom is +1

(4) All of these

85. **Some of the properties of two species NO_3^- and H_3O^+ are described below. Which one of them is correct**

(1) Dissimilar in hybridization for the central atom with different structures

(2) Isostructural with same hybridization for the central atom

(3) Isostructural with different hybridization for the central atom

(4) Similar in hybridization for the central atom with different structures

81. fuEufyf[kr fdl ifjorZu ls lokZf/d ÅtkZ lEc¼ gS%

(1) $Li^{+} \rightarrow Li^{+2} + e$

(2) $K^{+} \rightarrow K^{++} + e$

(3) $Na^{+} \rightarrow Na^{+2} + e$

(4) $Ne \rightarrow Ne^{+} + e$

82. lk/kj.k;kSfxd e vk;uu ÅtkZ vkorZ esa c<+rh gS yfdu dqN vi ok.kh gS bues ls dkSu lh vi ok.kh gS@gSa%

A. P vkSj S **B. Na vkSj Mg**

C. Mg vkSj Al **D. Be vkSj B**

(1) A, C & D dsoy

(2) A & C dsoy

(3) A, B, C & D

(4) dsoy B

83. ,d v'ViQydh; lajpuk esa d^2sp^3-ladj.k esa vfHkxeu dk dkSu lk d{kd gksrk gS%

(1) $d_{x^2-y^2}, d_{z^2}$

(2) $d_{xy}, d_{x^2-y^2}$

(3) d_{z^2}, d_{xz}

(4) d_{xy}, d_{yz}

84. fuEu esa ls dkSu lk dFku xyr gS%

(1) tc nks lekarj ry rjax v{k ,d nwljs ds foijhr izkoLFkk esa vkaf'kd :i ls vfrPNknu djrs gSa rks nks ukfHkd; d{kd curs gSa

(2) NH_3 ds lajpukRed v/;;u ls irk pyrk gS fd tc ;g BF_3 ds lkFk cU/k cukrk gS rc ;g fijkfeMh ls VsVªkfgMªy gks tkrk gS

(3) O_3 ds lajpukRed v/;;u esa dsUnzh; vkWDlhtu ij vkSipkfjd vkos'k +1 gksrk gS

(4) mijksDr lHkh

85. nks lewgksa NO_3^- o H_3O^+ ds ckjs esa fuEu esa ls dkSu lk lgh gS%

(1) fofHkUu lajpukvksa ds lkFk eè; ijek.kqvksa ds lkFk fHkUu ladj.k

(2) eè; ijek.kq ds fy, leku ladj.k ds lkFk leku lajpuk

(3) eè; ijek.kq ds fy, fofHkUu ladj.k ds lkFk leku lajpuk

(4) fofHkUu lajpukvksa ds lkFk eè; ijek.kqvksa ds lkFk leku ladj.k

86. What will be the bond order of N, N and N, O bond in nitrous oxide respectively :

(1) between 1 and 2, 2 and 3

(2) between 2 and 3, 1 and 3

(3) between 2 and 3, 1 and 2

(4) between 1 and 2, 1 and 3

87. The five d-orbitals are designated as d_{xy}, d_{yz}, d_{xz}, $d_{x^2-y^2}$ and d_{z^2}. The shapes of four d-orbitals are same. Then which one have different shape :

(1) d_{z^2}

(2) $d_{x^2-y^2}$

(3) d_{xy}

(4) d_{yz}

88. In PO_4^{3-}, the formal charge on each oxygen atom and the P – O bond order respectively are :

(1) –0.75, 0.6

(2) –0.75, 1.0

(3) –0.75, 1.25

(4) –3, 1.25

89. The correct order of size among O, O^{2-}, F and F^- is :

(1) $O^{2-} > O > F^- > F$

(2) $O > O^{2-} > F > F^-$

(3) $O^{2-} > F^- > F > O$

(4) $O^{2-} > F^- > O > F$

90. Percentage of p-charactor in the orbital forming P-P bond in P_4 molecule :

(1) 25%

(2) 50%

(3) 75%

(4) can't predict

91. On de electronation of nitric oxide, electron comes out form :

(1) π^*2px

(2) π2px

(3) σ^*2px

(4) None of these

86. ukoM² vkDlkbM esa **N, N** vkj **N, O** cU/ dh dkSV Øe'k% gksxh%

(1) 1 vkj 2, 2 vkj 3 dscp

(2) 2 vkj 3, 1 vkj 3 dscp

(3) 2 vkj 3, 1 vkj 2 dscp

(4) 1 vkj 2, 1 vkj 3 dscp

87. ikWp **d-** vkfoZ **d_{xy}, d_{yz}, d_{xz},** $d_{x^2-y^2}$ vkj d_{z^2} esa lspk dh vkdfr leku gksh gSfdl dh vkdfr pkjksl sfHku gS%

(1) d_{z^2}

(2) $d_{x^2-y^2}$

(3) d_{xy}

(4) d_{yz}

88. **PO_4^{3-}** esa vkDlhtu dsi Z,sd ijekkqj iQeZ vkos'kvkj **P – O** dkcU/ dkSV Øe'k% gksxk%

(1) –0.75, 0.6

(2) –0.75, 1.0

(3) –0.75, 1.25

(4) –3, 1.25

89. **O, O^{2-}, F** vkj **F^-** dsvkdkj dkl ghØe gS%

(1) $O^{2-} > O > F^- > F$

(2) $O > O^{2-} > F > F^-$

(3) $O^{2-} > F^- > F > O$

(4) $O^{2-} > F^- > O > F$

90. **P_4** v.kqesa **P-P** vkc/a cukusokysvkfoZ esa **p-** y{kkdk ifr'kr gksxk%

(1) 25%

(2) 50%

(3) 75%

(4) Kkr ughdj l drs

91. ukbVªd vkDlkbM dsfMtysDVªfudj.kij] bysDVªkWfudyrs gS%

(1) π^*2px

(2) π2px

(3) σ^*2px

(4) bueal sdkSZugh

92. The bleaching power of bleaching powder decreases with time due to :

(1) Stabilisation of clorine as $CaOCl$ and $Ca(OCl)_2$

(2) Stabilisation of clorine as $CaOCl$ and $Ca(ClO_3)_2$

(3) Stabilisation of clorine as $CaOCl$ and $Ca(ClO_4)_2$

(4) Stabilisation of clorine as $CaCl_2$ and $Ca(ClO_3)_2$

93. Which is amphoteric in nature :

(1) SiO_2

(2) SnO_2

(3) PbO_2

(4) CO_2

94. When sodium is treated with sufficient oxygen/air, the product obtained is :

(1) Na_2O

(2) Na_2O_2

(3) NaO_2

(4) NaO

95. The weakest base among $NaOH$, $Ca(OH)_2$, KOH and $Be(OH)_2$ is :

(1) $NaOH$

(2) $Ca(OH)_2$

(3) KOH

(4) $Be(OH)_2$

96. The correct order of increasing thermal stability of K_2CO_3, $MgCO_3$, $CaCO_3$ and $BeCO_3$ is :

(1) $BeCO_3 < MgCO_3 < K_2CO_3 < CaCO_3$

(2) $BeCO_3 < MgCO_3 < CaCO_3 < K_2CO_3$

(3) $MgCO_3 < BeCO_3 < CaCO_3 < K_2CO_3$

(4) $K_2CO_3 < MgCO_3 < CaCO_3 < BeCO_3$

97. Arrange the following in increasing order of Lewis acid character :

a. BF_3 **b. BCl_3**

c. BBr_3 **d. BI_3**

(1) $a < b < c < d$

(2) $d < c < a < b$

(3) $a < d < b < c$

(4) $d < c < b < a$

92. [illegible]

(1) [illegible] $CaOCl$ [illegible] $Ca(OCl)_2$ [illegible]

(2) [illegible] $CaOCl$ [illegible] $Ca(ClO_3)_2$ [illegible]

(3) [illegible] $CaOCl$ [illegible] $Ca(ClO_4)_2$ [illegible]

(4) [illegible] $CaCl_2$ [illegible] $Ca(ClO_3)_2$ [illegible]

93. [illegible]

(1) SiO_2

(2) SnO_2

(3) PbO_2

(4) CO_2

94. [illegible]

(1) Na_2O

(2) Na_2O_2

(3) NaO_2

(4) NaO

95. $NaOH$, $Ca(OH)_2$, KOH [illegible] **$Be(OH)_2$** [illegible]

(1) $NaOH$

(2) $Ca(OH)_2$

(3) KOH

(4) $Be(OH)_2$

96. K_2CO_3, $MgCO_3$, $CaCO_3$ [illegible] **$BeCO_3$** [illegible]

(1) $BeCO_3 < MgCO_3 < K_2CO_3 < CaCO_3$

(2) $BeCO_3 < MgCO_3 < CaCO_3 < K_2CO_3$

(3) $MgCO_3 < BeCO_3 < CaCO_3 < K_2CO_3$

(4) $K_2CO_3 < MgCO_3 < CaCO_3 < BeCO_3$

97. [illegible]

a. BF_3 **b. BCl_3**

c. BBr_3 **d. BI_3**

(1) $a < b < c < d$

(2) $d < c < a < b$

(3) $a < d < b < c$

(4) $d < c < b < a$

98. Which of the following statement is correct for orthoboric acid :

a. It can be prepared by acidifying an aqueous solution of borax.

b. It has a layer structure in which planer BO_3 units are jointed by H-bonding

c. It is highly soluble in cold water

(1) a, b and c

(2) a and b

(3) b and c

(4) a and c

99. Correct order of thermal stability of following compound is :

(1) $GeCl_2 < SiCl_2 < SnCl_2 < PbCl_2$

(2) $SiCl_2 < GeCl_2 < PbCl_2 < SnCl_2$

(3) $SiCl_2 < GeCl_2 < SnCl_2 < PbCl_2$

(4) $PbCl_2 < SnCl_2 < GeCl_2 < SiCl_2$

100. Which of the following statement is correct :

i. Fullerenes have dangling bonds

ii. Fullerenes are cage-like molecules

iii. Graphite is most pure form of carbon

iv. Thermodynamically most stable allotropic form of carbon is graphite.

(1) i and ii

(2) ii and iii

(3) ii and iv

(4) i, ii, iii and iv

98. fuEufyf[kr esa ls dkSu lk dFku vkFkkZfjd vEy dsfy, lgh gS%

a. ;g cksjDl dsr yh; foy;u dksvEyhdr djdscuk; k t kl drk gSA

b. ;g ijr lajpukj[kr kgSft lesa lery BO_3 bdkb; kW gkbMs u cU/ }kjk t qMhjgrh gSA

c. ;g BMst y esavf/d foy;s gS

(1) a, b vkjSc

(2) a vkjSb

(3) b vkjSc

(4) a vkjSc

99. fuEufyf[kr ;kSxdksdsrkih; LFkkbZ dkl gh Øe gksk%

(1) $GeCl_2 < SiCl_2 < SnCl_2 < PbCl_2$

(2) $SiCl_2 < GeCl_2 < PbCl_2 < SnCl_2$

(3) $SiCl_2 < GeCl_2 < SnCl_2 < PbCl_2$

(4) $PbCl_2 < SnCl_2 < GeCl_2 < SiCl_2$

100. fuEu esadkSu lk dFku lR; gS%

i. iQyfju esaMSyhx cU/ gksk gS

ii. iQyfju dkv.kq d fi taMsdhrjg gksk gS

iii. xsQbV dkcZ dhl cls'kq/4 voLFkk gS

iv. xsQbV dkcZ dkl cls Fkek Z;kufedyhLFkkbZ vij:i gSA

(1) i vkjSii

(2) ii vkjSiii

(3) ii vkjSiv

(4) i, ii, iii vkjSiv

TOPIC : Full Syllabus [NCERT-I]

SECTION-A - [BOTANY]

101. Which of the following containes the actual account of habitat and distribution of plants of a given area:

(1) Fauna

(2) Flora

(3) Both 1 and 2

(4) Monographs

102. In which kingdom cell wall are absent :

(1) Animalia

(2) Fungi

(3) Plantae

(4) Monera

103. In members of Phaeophyceae their body is differentiated into holdfast, stipe, frond. What is the function of holdfast and frond respectively

(1) Attachement, photosynthesis

(2) Photosynthesis, attachement

(3) Attachement only

(4) Photosynthesis only

104. Which of the following is not a animal tissue

(1) Epithelial

(2) Connective

(3) Meristematic

(4) Neural

105. Which structure is not related to the excretion of cockroach :

(1) Urecose gland

(2) Nephrocytes

(3) Fat body

(4) Green gland

106. Which one of the following is the incorrect match

(1) C_4 plant - Respond higher temperature

(2) Photorespiration - Wastefull process

(3) C_3 plant - 30 ATP used in calvin cycle

(4) RUBISCO - C_4 plant

SECTION-A - [BOTANY]

101. fuEufyf[kr esa lsdlsfdlh{ks=dsikS/kksa rFkk mudsoklLFkkuksa dsfo'k; esa tkudkjh nsrk gS%

(1) iQwyk

(2) Ýyksjk

(3) 1 vkSj 2 nksuksa

(4) ekWlksa

102. fdl txr esa dksf'kdkfHkfÙk vuqifLFkr gksrh gS%

(1) ,uhfy;k

(2) iQsaxkbZ

(3) ly`Vsfu;k

(4) ekWusjk

103. iQwlkbQk dh dsUnzh; laoguh] gsVsjkslLVsfu;e rFkk iQSM esa foHksnhdj.k gksrk gSA gsVsjkslLVsfu;e rFkk iQSM dk dk;Z Øe'k% gS

(1) tM+ dk LFkkiu ,oa izdk'kla'ys"k.k

(2) izdk'kla'ys"k.k ,oa tM+ dk LFkkiu

(3) dsoy tM+ dk LFkkiu

(4) dsoy izdk'kla'ys"k.k

104. fuEu esa lsdlsi'kq ÅrdksZa esa ugha gS

(1) mindyk

(2) la;kstd

(3) foHkkT;dsd

(4) rafudk

105. dkWdjksp dsmRltZu lsEcfU/kr ugha gS%

(1) ;wjsfud xzafFk

(2) oDdkdkyq

(3) olkh fiaM

(4) gjh xzafFk

106. fuEufyf[kr esa lsdlsa lgh feyku ugha gS

(1) C_4 ikni & vf/d rkieku dh vko';drk

(2) izdk'klu & vi;ZIr gkfu

(3) C_3 ikni & 30 ATP dsfoa pØ esa iz;qDr

(4) RUBISCO & C_4 ikni

107. Which one of the following is the correct match

a.	**Bolus**	**I.**	**Buccal cavity**
b.	**Succus entericus**	**II.**	**Maltase**
c.	**Nucleases**	**III.**	**Oxyntic cell**
d.	**HCl**	**IV.**	**Pancreatic juice**

(1) a - I, b - II, c - IV, d - III

(2) a - II, b - IV, c - III, d - I

(3) a - I, b - IV, c - III, d - II

(4) a - III, b - IV, c - II, d - I

108. Which one of the following is the incorrect match:

(1) Telophase – Nucleolus appears

(2) Cell plate – Porphyra

(3) Cell plate – Sea fan

(4) Anaphase – Centromere split

109. How many are double membrane bounded structure

Lysosome, Nucleoli, Microbodies, Vacuole, Nucleus, Chloroplasts :

(1) 1

(2) 2

(3) 4

(4) 3

110. Classification of amino acids are done on the basis of:

(1) Position of hydroxyl group

(2) Position of carboxyl group

(3) Position of hydrogen

(4) Nature of R group

111. Which one of the following is correct match :

a.	**Reissners membrane**	**i.**	**Cochlea**
b.	**Blind spot**	**ii.**	**External ear**
c.	**Tympanic membrane**	**iii.**	**Cornea**
d.	**Sclera**	**iv.**	**Photoreceptor cells absent**

(1) a-i, b-iv, c-ii, d-iii

(2) a-iv, b-ii, c-i, d-iii

(3) a-ii, b-i, c-iii, d-iv

(4) a-i, b-iii, c-iv, d-ii

107.

a.	ckSy	**I.**	eq[kxqgk
b.	lDdl ,UVsjl	**II.**	ekYVst
c.	U;wDyh,l	**III.**	vkDlhUVhd dksf'kdk,¡
d.	**HCl**	**IV.**	vXukk'k;hjl

(1) a - I, b - II, c - IV, d - III

(2) a - II, b - IV, c - III, d - I

(3) a - I, b - IV, c - III, d - II

(4) a - III, b - IV, c - II, d - I

108. fuEufyf[kr esa lsdkSu lh vuqfirkxyr gS%

(1) vaR;koLFkk – dsUnzdkdkfn[kkbZnsuk

(2) dks'kdkiV~Vh – ijiQkbjk

(3) dks'kdkiV~Vh – lhiQ;j

(4) i'pkoLFkk – xqxqkwkfcUnqdkfo[kaMu

109. fdrus ljapuk,a nksgjh f>Yyh ls?kjh gksrh gSa

ykbZlkslkse] dsUnzdk] ekbZdksMªh;k] oSDl;ksy] dsUnzd] DyksjksIykLV

(1) 1

(2) 2

(3) 4

(4) 3

110. fofo/ izdkj ds vehuksa vEyksa dk oxhZdj.k vk/kfjr gksrk gS%

(1) gkbMªkWDlhy lewg dh fLFkfr ij

(2) dkcksZfDly lewg dh fLFkfr ij

(3) gkbMªkstu dh fLFkfr ij

(4) R lewg dh izd`fr ij

111. fuEufyf[kr esa lsdkSu lh vuqfirkl gS%

a.	jkbZUlZ f>Yyh	**i.**	dksDy;k
b.	vU/kfcUnq	**ii.**	ckg~;d.kZ
c.	d.kZiVy f>Yyh	**iii.**	dkfuZ;k
d.	'osriVy	**iv.**	izdk'k xzkgh dksf'kdk,a vuqifLFkr

(1) a-i, b-iv, c-ii, d-iii

(2) a-iv, b-ii, c-i, d-iii

(3) a-ii, b-i, c-iii, d-iv

(4) a-i, b-iii, c-iv, d-ii

112. Who among the following saw and described a living cell first time :

(1) Anton Von Leeuwenhoek

(2) Robert Brown

(3) Matthias Schleiden

(4) Theodore Schwann

113. Golgi apparatus were observed by Camillo Golgi in 1898. Which of the following is wrong statement regarding it :

(1) Diameter of cisternae is 5 μm to 10 μm

(2) The golgi cisternae are concentrically arranged near the mitochondria

(3) It is site of formation of glycoprotein and glycolipid

(4) Both 1 and 2

114. Which of the following option is incorrect :

(1) Imbibition is diffusion of water against the concentration gradient

(2) Water potential gradient between the absorbent and the liquid imbibed is essential for imbibition

(3) In hypotonic solution their is higher water potential as compared to cytoplasm

(4) Absorption of water by seeds and dry wood is example of imbibition.

115. Which one of the following is not a micronutrient

(1) Copper

(2) Molybdenum

(3) Magnesium

(4) Manganese

116. Essential elements that are component of energy related chemical compounds in plants :

(1) Mg in chlorophyll

(2) P in ATP

(3) Both (1) and (2)

(4) Oxygen.

112. fuEufyf[kr esa lsfdlus igyhckj ,d thfor dksf'kdkdks nsf[kk,oa mldk o.kZu fd;k\%

(1) ,UVkuhoku fyoqUgkd

(2) jkcVZczkmu

(3) eFkkl 'ykbMsu

(4) F;ksMkj 'oku

113. xkWYMh dk; mi dj.kksa dks lcls igys xkWYMh us 1898 esa voyksdr fd;k Abls lEcfU/kr fuEufyf[kr esa dkSulk dFku vlR; gS\%

(1) fl LVsuh dk vkdkj 5 ekbØkWu ls 10 ekbØkWu gksrk gSA

(2) xkWYMh dk;k Zdh fLVZuh e[;r% ekbVkWdkWfUMª;k ds ikl ;kstuk LFky gksrs gSa

(3) xkWYMh dk; XykbdksizksfVu o XykbdksyhfiM fuekZ.k dk izeq[k LFky gSA

(4) mi;qZä (1) vkSj (2)

114. fuEufyf[kr esa dkSulk fodYi vlR; gS\%

(1) vUr%'kks"k.k ,d izlj.k dk fodj.k gS tks lkUnzrk izo.krk ds fo:/n gksrk gSA

(2) vo'kks"kd rFkk vUr%'kks"kr inkFkksZ ds e/; ty foHko izo.krk dk vUrj vko';d gSA

(3) vYi jlkl;h foy;u dk ty foHko vf/d gksrk gS tc bldh rqyuk dksf'kdk nzO; ls dh tkrh gSA

(4) vUr%'kks"k.k dk mnkgj.k cht rFkk 'kq"d ydM+h esa ikuh dk vo'kks"k.k gSA

115. fuEufyf[kr esa dkSu ,d lw{e iks"kd ugha gS

(1) dkWij

(2) eksyhCMsue

(3) eSXuhf'k;e

(4) eSaxuht

116. vfuok;Z rRoksa ds dh Åtk Zlapj.k esa fuEufyf[kr jklk;fud ;kSfxdksa ds ?kVd gS\%

(1) i.kZgfjr esa eSXuhf'k;e

(2) ,Vhi esa fQkLQksjl

(3) mi;qZä (1) vkSj (2)

(4) vkWDlhtu

117. Organism normally aerobic but becomes anaerobic in extreme conditions are called :

(1) Obligate aerobic

(2) Facultative aerobic

(3) Obligate anaerobic

(4) Facultative anaerobic.

118. At how many places in the kreb cycle is NAD^+ reduced to $NADH+H^+$, and FAD^+ reduced to $FADH_2$, respectively:

(1) One and three

(2) Three and one

(3) Two and one

(4) Three and two

119. Residual volume is :

(1) Greater than vital capacity

(2) Greater than tidal volume

(3) Lesser than tidal volume

(4) Greater than inspiratory reserve volume

120. Which of the following are not a part of gastric juice

(a) Pepsinogen

(b) Enterogastrone

(c) Gastric lipase

(d) Prorennin

(e) Amylase

(1) b and e

(2) a, c and d

(3) a, c and e

(4) b, c and d

121. The important muscle proteins that help in movement are

(1) Actin and myosin

(2) Tropomyosin

(3) Troponin

(4) All of these

117. ostho tks lekU;r %vkDlhdj.k djrs gSa ijUrq fo"kV voLFkkvksa esa vukDlh'ol.k djus yxrs gSa dgykrs gSa%

(1) vkCyhxsV, jkscd

(2) iSfYyVsfo, jkscd

(3) vkCyhxsV, uk;jkscd

(4) iSfYyVsfo, uk;jkscd

118. ØsCl pØ esa Øe'k% fdrus LFkku gksrs gSa tgk¡ **NAD^+** dk **$NADH + H^+$** esa vkSj **FAD^+** dk **$FADH_2$** esa vip;u gksrk gS Øe'k%

(1) ,d vkSj rhu

(2) rhu vkSj ,d

(3) nks vkSj ,d

(4) rhu vkSj nks

119. vo"kV vk;ru gS%

(1) tSo {kerk ls T;knk

(2) Tokfgd vk;ru ls T;knk

(3) Tokfgd vk;ru ls de

(4) vUr%'olu lqj{kk vk;ru ls T;knk

120. fuEu esa dkSu tBj jl dk ,d Hkkx ugha gS

(a) isfIlukstu

(b) ,UVsjksxsfLVksu

(c) tBj ykbisl

(d) izksjsfuu

(e) ,ekbyst

(1) b vkSj e

(2) a, c vkSj d

(3) a, c vkSj e

(4) b, c vkSj d

121. osa xfr;ksa esa lgk;d izeq[k isf'k;ksa gSa

(1) ,fDVu vkSj ek;kslhu

(2) Vkbksekslhu

(3) Vkbksfuu

(4) mi;qZä lHkh

122. The principal nitrogenous excretory compound in humans is synthesised :

(1) In kidneys but eliminated mostly through liver

(2) In kidneys as well as eliminated by kidneys

(3) In liver and also eliminated by the same through bile

(4) In the liver, but eliminated mostly through kidneys

123. Which of the following are the specific receptors of the vestibular apparatus responsible for maintenance of balance of the body and posture:

(1) Crista and Organ of corti

(2) Macula and Organ of corti

(3) Organ of corti and Otolith

(4) Macula and Crista

124. Which one of the following are viviparous and oviparous mammals respectively :

(1) Delphinus, Platypus

(2) Platypus, Pteropus

(3) Platypus, Panthera

(4) More than one option are correct

125. Assertion : Scientist believed that reptiles are ancestor of birds.

Reason : In birds scales are present on Hind limb

(1) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(2) (A) is true but (R) is false

(3) (A) is false but (R) is true

(4) Both (A) and (R) are true and (R) is the correct explanation of (A)

126. Expanded petiole perform photosynthesis in :

(1) Onion

(2) Australian acacia

(3) Calotropis

(4) Alstonia

122. izkS<kkuqokZfur ukbVªkstu mRlftZr gksus okyk eq[; ;kSfxd gS

(1) oDd esa ;gh lafJr gksrk gS ijarq ;d ;d`r ds}kjk mRlftZr gksrk gSA

(2) oDd esa vkSj lkFk gh lkFk oDd ds}kjk mRlftZr gksrk gSA

(3) ;d ;d`r esa lafJr gksrk gS vkSj ckby ds}kjk mRlftZr gksrk gSA

(4) ;d ;d`r esa lafJr gksrk gS fdUrq oDd ds}kjk mRlftZr gksrk gSA

123. fuEufyf[kr esa ls dkSu&ls oSfLVC;wyj midj.k ds fof'k"V xzkgh gSa tks 'kjhj dk larqyu o lgh fLFkfr ds fy, mRrjnk;h gksrs gSa%

(1) fØLVk vkSj vkWxZu vkWQ dksfrZ

(2) eSD;wyk vkSj vkWxZu vkWQ dksfrZ

(3) vkWxZu vkWQ dksfrZ vkSj vkWVksfyFk

(4) eSD;wyk vkSj fØLVk

124. fuEufyf[kr esa dkSu ls fodYi Øe'k% vaMt.kh vkSj vaMt.kh Lru/kjh gS%

(1) MkWfiQl] IysVkbil

(2) IysVkbil] Vsjksl

(3) IysVkbil] iSUFkjk

(4) ,d ls T;knk fodYi lgh

125. dFku : oSKkfudksa dk fo'okl gS fd ljhl.kh i{kh,a in~ksa ds iwoZt gSaA

dkj.k : i{kh,a esa in~ksa dh vis{kk 'kYdu ikn ik;k tkrk gSA

(1) (A) vkSj (R) nksuksa lgh gSa vkSj (R) lgh O;k[;k gS (A) dh

(2) (A) lgh gS vkSj (R) xyr gS

(3) (A) xyr gS vkSj (R) lgh gS

(4) (A) vkSj (R) nksuksa lgh gSa vkSj (R) lgh O;k[;k gS (A) dh

126. i.kZoUr iS&dj fdl esa izdk'k la'ys"k.k djrk gS%

(1) l;ksV

(2) vkWDlSfyl dkjuhfs;k

(3) dSYkksVªksfi l

(4) ,YLVksfu;k

127. Which of the following phases of the cell cycle is not a part of interphase:

(1) S

(2) G_1

(3) G_2

(4) M

128. The first stable product of Calvin cycle and Hatch and Slack cycle are:

(1) 4-C and 3-C compound

(2) 4-C and 6-C compound

(3) 3-C and 4-C compound

(4) 5-C and 4-C compound

129. A layer of alimentary canal forms irregular folds in different part what is the name of layer and their irregular folds respectively :

a. Sub Mucosa, Rugae in stomach

b. Mucosa, villi in stomach

c. Mucosa, Rugae in stomach

d. Mucosa, villi in intestine

(1) c, d

(2) Only d

(3) a, d

(4) b, d

130. What is the correct sequence of organisation of skeletal muscles :

(1) Myofibrils → Muscle fibre → Fascicles → Skeletal muscle

(2) Myofibrils → Fascicles → Muscle fibre → Skeletal muscle

(3) Muscle fibre → Myofibrils → Fascicles → Skeletal muscles

(4) Myofibrils → Fascicles → Skeletal muscles → Muscle fibre.

131. In most higher plants, the growing apical bud inhibits the growth of the axillary buds. This phenomenon is known as:

(1) Lateral dominance

(2) Parthenocarpy

(3) Apical dominance

(4) Lodging

127. dkS'kdkpØ dhdkSulh izkoLFkkdksbUVjiQst dkHkkx ugha gS%

(1) S

(2) G_1

(3) G_2

(4) M

128. dSfou pØ vkSj gSrph vkSj Lykd pØ dk izFke LFkk;h mRikn gksrk

(1) 4-C vkSj 3-C ;kSfxd

(2) 4-C vkSj 6-C ;kSfxd

(3) 3-C vkSj 4-C ;kSfxd

(4) 5-C vkSj 4-C ;kSfxd

129. vkgkjukyh dh,d ijr oy; vyx&vyx Hkkxksa esa cukrh gSA bl ijr vkSj bldh scuus okyh oy; dkØe'k% D;k uke gS%

a. lcE;wdkslk] j;wxh vkekk;] esa

b. E;wdkslk] vadqj vkekk;] esa

c. E;wdkslk] j;wxh vkekk;] esa

d. E;wdkslk] vadqj vka esa

(1) c, d

(2) dsoy d

(3) a, d

(4) b, d

130. dadky isf'k;ksa ds laxBu dk lgh Øe D;k gS%

(1) isf'k rarq → isf'k rarq → ifjdk.Mk → dadky isf'k;k¡

(2) isf'k rarq → ifjdk.Mk → isf'k rarq → dadky isf'k;k¡

(3) isf'k rarq → isf'k rarq → ifjdk.Mk → dadky isf'k;k¡

(4) isf'k rarq → ifjdk.Mk → dadky isf'k;k¡ → isf'k rarq

131. vf/kdka'k mPp ikniksa esa o`f) djrh vxzLFk dfydk dq{kLFk dfy;ksa dh o`f) dks jksdrh gS bl ?kVuk dks dgrs gS%

(1) ikoZ izHkqRo

(2) vfu"ksfu;ksu

(3) f'k[kkxz izHkqRo

(4) ykWftax

132. Which is a correct matching set :

	Column I		Column II
a.	Gonadocorticoids	i.	Posterior pituitary
b.	Melatonin	ii.	Anterior pituitary
c.	PRL	iii.	Adrenal cortex
d.	Vasopressin	iv.	Pineal gland

(1) a-iii, b-iv, c-ii, d-i

(2) a-iii, b-iv, c-i, d-ii

(3) a-iii, b-i, c-ii, d-iv

(4) a-i, b-iv, c-ii, d-iii

133. The correct route through which pulse making impulse travels in the heart is :

(1) SA Node → Purkinje fiber → Bundle of his → AV node → Heart muscle

(2) SA Node → AV node → Bundle of his → Purkinje fiber → Heart muscle

(3) AV node → Bundle of his → SA Node → Purkinje fiber → Heart muscle

(4) AV node → SA Node → Purkinje fiber → Bundle of his → Heart muscle

134. Myelin sheath is produced by :

(1) astrocytes and Schwann cells

(2) oligodendrocytes and osteoclasts

(3) osteoclasts and astrocytes

(4) Schwann cells and oligodendrocytes

135. In six kingdom classifications which kingdom is divided into two domains :

(1) Protista

(2) Monera

(3) Fungi

(4) Plantae

SECTION–B – [BOTANY]

136. In the given below examples. How many are viral diseases in animals :

Common cold, mumps, small pox, typhoid, cholera, influenza, herpes, tetanus, AIDS

(1) 6

(2) 5

(3) 4

(4) 3

132. fuEu esa lsdkSu lesfyr gS%

	lwph&I		lwph&II
a.	xksuSMksdkWfVZdksbM~l	i.	i'p fiV;wVjh
b.	esyksVksfuu	ii.	vxzfiV;wVjh
c.	PRL	iii.	,Mhuy dkVZsDl
d.	oSlksizlhu	iv.	ikbfu;y xzafFk

(1) a-iii, b-iv, c-ii, d-i

(2) a-iii, b-iv, c-i, d-ii

(3) a-iii, b-i, c-ii, d-iv

(4) a-i, b-iv, c-ii, d-iii

133. lgh iFk dkSulk gS ftlds}kjk ukM+h mRiUu vkosx gn; esa igqaprk gSA

(1) SAN → iqdafdUtas rarq → fgl caMy → AVN → gn; isf'k

(2) SAN → AVN → fgl caMy → iqdafdUtas rarq → gn; isf'k

(3) AVN → fgl caMy → SAN → iqdafdUtas rarq → gn; isf'k

(4) AVN → SAN → iqdafdUtas rarq → fgl caMy → gn; isf'k

134. ek;fyu vkoj.k dk fuekZ.k gksrk gS%

(1) ,LVªkslkbV vkSj 'okudksf'kdkvksa ds}kjk

(2) vkWfyxksMsaMªkslkbV vkSj vkLVsvksDyklV }kjk

(3) vkLVsvksDyklV vkSj ,LVªkslkbV }kjk

(4) 'okudksf'kdkvksa vkSj vkWfyxksMsaMªkslkbV }kjk

135. N% xr oxhZdj.k i¼fr esa dkSu lk jkT; nks MkseSu esa foHkkftr gS\

(1) izksVhLVk

(2) eksusjk

(3) dodkZ

(4) ikS/ks

SECTION–B – [BOTANY]

136. uhps fn;s x;s lHkh jksxksa esa ls fdrus ekuo jksxksa esa gSa\ tqdke] eLrhd Tojksx] gSts] VkbQkbM] dky;qDr [kalh] gsifVVkbfVl ch] ,Mh~l

(1) 6

(2) 5

(3) 4

(4) 3

137. The Exocoetus and Scoliodon are respectively :

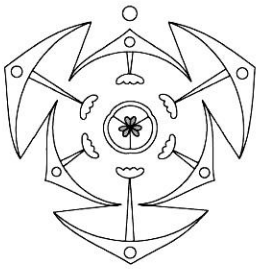
(1) Unisexual, Unisexual

(2) Bisexual, Bisexual

(3) Unisexual, Bisexual

(4) Bisexual, Unisexual

138. Which of the following are correct for the given floral diagram of plant



(a) Present in Solanaceae

(b) Epiphyllous condition

(c) Related with gloriosa

(d) Bisexual, zygomorphic

(e) Unisexual, Actinomorphic

(1) b, c

(2) a, b, c, d

(3) b, c, d

(4) b, c, e

139. Which of the following will occur during chemiosmosis :

(a) Decrease of protons in stroma

(b) Decrease in pH in stroma

(c) Conformational change of F_1 portion of ATP synthase

(d) Conformational change of F_0 portion of ATP synthase

(e) Facilitated diffusion of protons

(1) a, c, e

(2) a, b, c

(3) d, e

(4) b, d, e

137. ,DlksVl vkSjLdksfy;ksMkWu Øe'k% gSa%

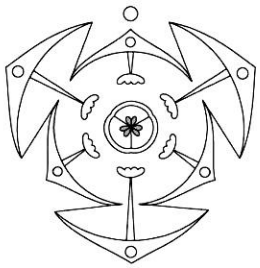
(1) ,dfyaxh], ,dfyaxh

(2) f}fyaxh], f}fyaxh

(3) ,dfyaxh], f}fyaxh

(4) f}fyaxh], ,dfyaxh

138. fuEufyf[kr esa lsdkSu lk fn;s x;s ikS/ks ds iq"i fp=k ds fy, lgh gS



(a) lksyscsh esa mifLFkfr

(b) bifi Qkbyl voLFkk

(c) Xyksfjvkslk ls lEcfU/kr

(d) f}fyaxh], dOdk lefer

(e) ,dfyaxh], DvuhlksekWVl

(1) b, c

(2) a, b, c, d

(3) b, c, d

(4) b, c, e

139. fuEufyf[kr esa D;k gksxk tc dhfeokslekWlhl ds nkSjku %

(a) LVkbZek esa izksVkWu de gksuk

(b) LVkbZek esa pH dk de gksuk

(c) ,Vihlhl UFkst ds F_1 Hkkx dk lajpukRed cnyko

(d) ,Vihlhl UFkst ds F_0 Hkkx dk lajpukRed cnyko

(e) izksVkWu dk lqxe fofj.k

(1) a, c, e

(2) a, b, c

(3) d, e

(4) b, d, e

140. If glucose molecule has 20000 calories energy, how much energy will be remain unutilized if lactic acid or alcohol fermentation from glucose taken place

(1) Nearly 18600 calories

(2) Less than 1400 calories

(3) 20000 calories

(4) 17600 calories

141. Which of the following set is wrong

(a) Acetyl Co-A – 2 C

(b) Citric acid – 4 C

(c) α-ketoglutaric acid – 5 C

(d) Succinic acid – 4 C

(1) b

(2) a, b

(3) a, c

(4) c

142. During seed germination its stored food is mobilized by:

(1) Cytokinin

(2) ABA

(3) Gibberellin

(4) Ethylene

143. The exchange of O_2 with CO_2 by simple diffusion over their entire body surface occurs in

(1) Higher invertebrates like sponges, flatworms

(2) Higher invertebrates like sponges, flatworms, coelenterates

(3) Lower invertebrates like sponges, flatworms, coelenterates

(4) Lower invertebrates like sponges only

144. Which type of curve is obtained when percentage saturation of haemoglobin with oxygen is plotted against the pO_2 :

(1) Linear

(2) Sigmoid

(3) Hyperbola

(4) J-shaped

140. vxj Xywdksl dk.k esa 20000 dSyksjh Åtkz gS rks Xywdksl ds ykfDVd vEy vFkok ,Ydksgy fd.ou ds i'pkr~ fdruh Åtkz vi;qDr cprh

(1) yxHkx 18600 dSyksjh

(2) 1400 dSyksjh ls de

(3) 20000 dSyksjh

(4) 17600 dSyksjh

141. fuEu esa ls dkSulk lsV xyr gS%

(a) ,lhVkby dks,atkbe- , - **2 C**

(b) lkbVªhd vEy - **4 C**

(c) α-dhVksXywVsfjd vEy - **5 C**

(d) lDlhfud vEy - **4 C**

(1) b

(2) a, b

(3) a, c

(4) c

142. cht vadq.kksn~Hkou lapf;r Hkkstu fdlds }kjk xeu djrk gS

(1) lkbVksdkbfuu

(2) ,clhlh-

(3) ftCcjsfyu

(4) ,Fkkbyhu

143. O_2 dk CO_2 ds lkFk vkdku lkjy folj.k ds }kjk ikjs 'kjhj dh lrg ij ik;k tkrk gS%

(1) mPp vd'ksdh tUrqvksa tSls fd Liatl] pi Vsfu;e

(2) mPp vd'ksdh tUrqvksa tSls fd Liatl] pi Vsfu;e] lhyasVsjsV

(3) fuEu vd'ksdh tUrqvksa tSls fd Liatl] pi Vsfu;e] flysaVsjsVk

(4) fuEu vd'ksdh tUrqvksa tSls fd dsoy Liatl

144. fdl izdkj dk oØ izkIr gksxk tc gheksXyksfcu dh izfr'kr lar`fIr dks pO_2 ds lkFk [kaprs gSa%

(1) js[kh;

(2) flXeksbM

(3) gkbijcksyk

(4) J-vkdkj dk

145. How many matching are correct :

a. Hypertension	-	160/90 mm Hg
b. Stroke volume	-	170 ml of Blood
c. Duration of a cardiac cycle	-	0.08 second
d. Cardiac output	-	5000 ml

(1) 4

(2) 3

(3) 2

(4) 1

146. In the given below example how many are peptide and steroidal hormone respectively -

Progesterone, ANF, GIP, Cortisol, CCK, Gastrin, Androgens, Aldosterone, Glucagon

(1) 5, 4

(2) 4, 5

(3) 6, 3

(4) 7, 2

147. How many matching are correct :

(a) Nitrogen	–	Nucleic acids
(b) Phosphorus	–	Nucleic acids
(c) Calcium	–	Mitotic spindle
(d) Sulphur	–	Ferredoxin

(1) 3 (2) 4

(3) 2 (4) 1

148. Read the given name carefully

Ustilago, Puccinia, Neurospora, Claviceps, Aspergillus, Trichoderma.

How many fungi is/are imperfect

(1) 3 (2) 2

(3) 1 (4) 5

145. fdruhvuqirkLR, gS%

a. vfrruko	-	160/90 mm Hg
b. izkgvk;ru	-	170 feyhjDr
c. ânpØdhvof/	-	0.08 lsds M
d. ânfudlk	-	5000 feyh-

(1) 4

(2) 3

(3) 2

(4) 1

146. uhpsfn;sx;sumkgj.kkesalsfdrusisVkMVvkSLVjkW;M gekssalaÅe'k%gS%

iksLVsLVjksu] ANF, GIP, dkVZkWy, CCK, xSLVªu] ,UMªkstu] ,YMksLVsjksu] XyqdkxkWu

(1) 5, 4

(2) 4, 5

(3) 6, 3

(4) 7, 2

147. fdruhvuqirkLR, gS%

(a) ukbVªkstu	-	U;wfDyd vEy
(b) iQkLQksjl	-	U;wfDyd vEy
(c) dSfY'k;e	-	lesVksfud dfr
(d) lYQj	-	iQsjsMkWDlu

(1) 3 (2) 4

(3) 2 (4) 1

148. fn;sx;sumkesalsdkSulsdo/kuhivaZfir gSa%

vkLVsySxks] fiDlhfu;k] U;wjksLikjk] DysohlsIl] ,Lijftyl] VªkbdksMekZ

fdrusvi wkZdod gS%

(1) 3 (2) 2

(3) 1 (4) 5

149. Match the following Columns :

	Column I	Column II
a.	Adenine derivative	i. Ethylene
b.	Terpenes	ii. Gibberellic acid
	derivatives	
c.	Gaseous hormone	iii. Kinetin
d.	Carotenoide derivative	iv. Abscisic acid

(1) a-i, b-ii, c-iii, d-iv

(2) a-i, b-iii, c-ii, d-iv

(3) a-ii, b-i, c-iii, d-iv

(4) a-iii, b-ii, c-i, d-iv

150. Respiratory climactic effect is shown by which PGR:

(1) Abscisic acid

(2) Auxin

(3) Gibberellin

(4) Ethylene

SECTION–A – [ZOOLOGY]

151. Read carefully and choose the correct statement.

(1) The juxta-medullary nephrons have small Henle's loop

(2) The PCT and DCT are situated in the medulla part of the kidney

(3) The glomerulus encloses the Bowman's capsule

(4) The ascending limb of Henle's loop extends as the DCT

152. A person in your home suddenly feel earthquakes then what is the immediate condition in the body:

a. Glycogenolysis

b. Glycogenesis

c. Breakdown of lipids and proteins

d. Decrease the strength of heart contraction

(1) a, c

(2) a, d

(3) Only a

(4) b, c

149. fuEufyf[kr LrEHkksa dks lqesfyr dhft,%

	LrEHk&I	LrEHk&II
a.	,Mhuhu O;qRiUu	i. ,Fkkbyhu
b.	Vhjsfiu O;qRiUu	ii. fti cjsfyd vEy
c.	xSl;q gkesZku	iii. dkbusfVu
d.	dSjksVhukbM dk O;qRiUu	iv. ,cflfld vEy

(1) a-i, b-ii, c-iii, d-iv

(2) a-i, b-iii, c-ii, d-iv

(3) a-ii, b-i, c-iii, d-iv

(4) a-iii, b-ii, c-i, d-iv

150. 'olu;q DykbesfDVd izHkko fdl ikni&oklh }kjk izn'kZr gksrk gS%

(1) ,cflfld vEy

(2) vkWDlhu

(3) fti Cjsfyu

(4) ,Fkkbyhu

SECTION–A – [ZOOLOGY]

151. lko/kuhiwoZd i<+sa vkSj lgh dFku pquq;s%

(1) tDVsesMyjh nwjLFk esa NksVk gSa;sy;wi gksrk gSA

(2) ihVhMh vkSj Mh Mh vkiDV dsesMqyk Hkkx esa fLFkr gksrs gSA

(3) Xyksesyl dsvUrj dksa lh[kk;k gksrk gSA

(4) gsy;sy;wi dh vkjksghHkqkMh Mh vkrd gksrs gSA

152. ,d O;fDr vius?kj esa vpkud Hkwdai dk vuqHko djrk gSA rc mldsa'kjhj esa rRdky D;k voLFkk gksrh%

a. Xykbdkstsusfll

b. Xykbdkstsusfll

c. fyfiMksa vkSj izksVhu dk fo?kVu

d. ân; ladqpu dh {kerk ?kVuk

(1) a, c

(2) a, d

(3) dsoy a

(4) b, c

153. Which one of the following is the incorrect match

(1) Hyperthyroidism - Graves disease

(2) Hypothyroidism - Goitre

(3) Thymosine - CMI

(4) Thyroid gland - Thymosine

154. The multipolar neuron's contains :

(1) One axon and two or more dendrites

(2) Many axon and one dendrite

(3) Many axon and two or more dendrites

(4) One axon and one dendrites

155. In laboratory there are three sample of brain which are placed for study. These samples are X, Y, Z.

- **In sample X, Y, Z 12 pair cranial nerves occurs.**
- **In sample Z corpus callosum occurs.**

What is the correct conclusion for these brain samples -

a. X, Y brain sample may be of reptiles and birds brain.

b. X, Y brain sample may be of amphibian, reptiles, birds brain.

c. Z brain sample surely only mammalian brain.

d. Z brain sample may be of birds or mammalian brain.

(1) a, b, c

(2) a, c

(3) a, b

(4) Only d

156. The junction between a motor neuron and the sarcolemma of the muscle fibre is called the

(1) Sensory end plate

(2) Motor end plate

(3) A band

(4) I band

157. Which is a correct statement

(a) Fibrinogen helps in maintenance of osmotic pressure

(b) Glucose is absent in plasma

(c) Serum does not clot

(d) Lymph is a connective tissue

(1) a & b

(2) b & c

(3) c & d

(4) a & d

153. fuEufyf[k esa lsdkSulh vuqirkxyr gSA

(1) gkbijFkkbjkWbMTe & xsl fcekjh

(2) gkbiksFkkbjkWbMTe & xyx.M

(3) Fkkbeksflu & CMI

(4) FkkbjkWbMxzafFk & Fkkbeksflu

154. cgqzqoh; U;wjkWu [krkgS%

(1) ,d ,Dlku vkSj nks vFkok vf/d MsUMzkbV

(2) dbZ ,Dlku vkSj ,d MsUMzkbV

(3) dbZ ,Dlku vkSj nks vFkok vf/d MsUMzkbV

(4) ,d ,Dlku vkSj ,d MsUMzkbV

155. iz;ksx'kkyk esa rhu uewus fLr"d ds v/;;u ds fy, j[ks x;s gSA ;s uewus X, Y, Z gSA

- uewus X, Y, Z esa 12 tksM+h dikyh ukM+h;k¡ ikbZ tkrh gSA
- uewus Z esa dkWjil dSyksle ikbZ tkrh gSA

bu fn;s x;s fLr"d ds uewuksa ds fy, lgh fu"d"kZ dkSulk gSA

a. X, Y fLr"d dk uewuk ljhl;ksa vkSj i{kh;ksa dk gks ldrk gSA

b. X, Y fLr"d dk uewuk mHk;pj] ljhl;ksa] i{kh;ksa dk gks ldrk gSA

c. Z fLr"d dk uewuk fuf'pr :i ls Lrukis{kh dk fLr"d gSA

d. Z fLr"d dk uewuk i{kh;ksa vFkok Lrukis{kh dk gks ldrk gSA

(1) a, b, c

(2) a, c

(3) a, b

(4) dsoy d

156. ijs d rafdk d vkSj isf'k;ksa ds tksM+ dks lkdksZesjs dk dgk tkrk gSA

(1) lsalsVjh IysV

(2) ijs d IysV

(3) A iVVh

(4) I iVVh

157. dkSulk dFku lR; gS%

(a) iQkbczkstu ijkL.kh nkc dks fu;af=r djrk gS

(b) Xywdksl IykTek esa vuqifLFkr gS

(c) lhje ter kugha gS

(d) yhQdk,d ,sls hÅrd gS

(1) a vkSj b

(2) b vkSj c

(3) c vkSj d

(4) a vkSj d

158. Which excretory structures are found in cephalochordate :

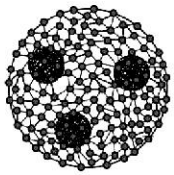
(1) Urecose gland

(2) Kidney

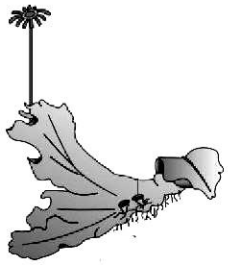
(3) Protonephridia

(4) Antennal gland

159. Which one of the following statements are correct with reference to given diagram of different plants:

(i) 

(ii)

(iii) 

(iv)

a. All given plant are cryptogams

b. All given plant are same type of life cycle pattern

c. All given plant are produced motile male gamete

d. All given plants are containes chlorophyll a

(1) a, d

(2) c, d

(3) a, b, d

(4) Only d

160. Which one of the following statements are correct

(1) Sequoia is one of the tallest tree species of pteridophytes

(2) Mycorrhiza are association of Amensalism

(3) Coralloid roots of cycas are symbiotic association

(4) All of these

158. fl iQyksa esa mRltZu ladqpu ik;k tkrk gS%

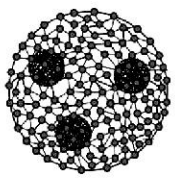
(1) ;wjksa ls xzflr

(2) oDd

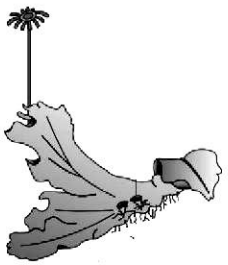
(3) vkfnoDd

(4) ,UVhuy xzafFk

159. fuEufyf[kr esa ls dkSu dFku fofHkUu ikS/kksa ds fp=k ds lUnHkZ esa lR; gS%

(i) 

(ii)

(iii) 

(iv)

a. lHkh fn;s x;s ikS/ks fØIVksxSe gSA

b. lHkh fn;s x;s ikS/kksa esa leku izdkj ds thou pØ dk rjhdk gksrk gSA

c. lHkh fn;s x;s ikS/ks pyu'khy unj xSesV~l mRiUu djrs gSA

d. lHkh fn;s x;s ikS/kksa esa DyksjksfQy a j[krs gSA

(1) a, d

(2) c, d

(3) a, b, d

(4) dsoy d

160. fuEufyf[kr esa ls dkSu lR; gS%

(1) fldksk VsjhMksQkbV~ dh lcls yEch >kM+h ik;h tkrh gS

(2) dod ewy (ekbdksjkbt+k) ,d lgtho.k gS

(3) izky ewy (dksjkbM) tkbZ Hkdh dk fl)kar ,d lgtho.k gS

(4) ;s lHkh

161. In the given below example. How many plants are phanerogams

Spirogyra, Sargassum, Fern, Funaria, Cycas, Pinus, Volvox, Adiantum, Salvinia, Equisetum, Ginkgo, Psilotum

(1) 9

(2) 3

(3) 4

(4) 5

162. Monocotyledonous, Muscidae and Angiospermae are respectively :

(1) Class, Family, Phylum

(2) Class, Family, Division

(3) Family, Class, Phylum

(4) Division, Family,Class

163. Which is a correct matching set :

	Column I	Column II
(a)	Outer ear joint	(i) Involuntary
(b)	Blood formation	(ii) Voluntary
(c)	Biceps	(iii) Cartilage
(d)	Cardiac	(iv) Bone marrow

(1) a-iii, b-iv, c-ii, d-i

(2) a-iv, b-iii, c-i, d-ii

(3) a-iv, b-ii, c-iii, d-i

(4) a-iii, b-iv, c-i, d-ii

164. Match the following and choose the correct combination from the option given below

	Column – I (Organic compound)	Column –II (Example)
(a)	Fatty acid	(i) Glutamic acid
(b)	Phospholipid	(ii) Tryptophan
(c)	Aromatic amino acid	(iii) Lecithin
(d)	Acidic amino acid	(iv) Palmitic acid

(1) a-i, b-ii, c-iii, d-iv

(2) a-ii, b-iii, c-iv, d-i

(3) a-iv, b-iii, c-ii, d-i

(4) a-iii, b-iv, c-i, d-ii

161. uhps fn;s x;s mnkgj.k esa fdrus ikS/ks iq"ikHkksth gSa

Likbjkbjk] jkbZ] lkbxdl] iQuZ] ok;ksfe;k] lkbdl] ikbul] ukVdkV] ,fM;UVe] lkYdhfu;k] bDohlhVe] fxdaxks] lkbyksVe

(1) 9

(2) 3

(3) 4

(4) 5

162. eksuksdksMkbfyMksu] eLdsfMuh ,oa fuf"ikrkvksa ds oxhZdj.k ds vk/kkj gSa%

(1) oxZ] dqy] ;qXe

(2) oxZ] dqy] foHkkt

(3) dqy] oxZ] ;qXe

(4) foHkkt] dqy] oxZ

163. fuEu esa dkSu lk feyku lgh gS%

	LrEHkh	LrEHkh
(a)	ckg~; d.kZ lfU/k	(i) vuSfPNd
(b)	jDr fuekZ.k	(ii) ,fPNd
(c)	f}f'kjLdk	(iii) nhkLFk
(d)	ân;	(iv) vfLFkeTtk

(1) a-iii, b-iv, c-ii, d-i

(2) a-iv, b-iii, c-i, d-ii

(3) a-iv, b-ii, c-iii, d-i

(4) a-iii, b-iv, c-i, d-ii

164. uhps fn;s dkWye dks feykdj lgh fodYi pquk, %

	dkWye - I (dkcZfud ;kSfxd)	dkWye-II (mnkgj.k)
(a)	olh; vEy	(i) XywVkfed vEy
(b)	iQkLQksfyfiM	(ii) fVªIVksQsu
(c)	,jkseSfVd vehuks vEy	(iii) ysflFkhu
(d)	vEyh; vehuks vEy	(iv) ikYehfVd vEy

(1) a-i, b-ii, c-iii, d-iv

(2) a-ii, b-iii, c-iv, d-i

(3) a-iv, b-iii, c-ii, d-i

(4) a-iii, b-iv, c-i, d-ii

165. Select the correct option with reference to enzyme:

i. Holoenzyme = Apoenzyme + Co-factor

ii. Holoenzyme = Apoenzyme + Co-enzyme

iii. Holoenzyme = Apoenzyme + Metal ions

iv. Holoenzyme = Apoenzyme + Prosthetic group

(1) (i) is false but (ii) is true

(2) (i) and (ii) are false but (iii) and (iv) are true

(3) (i), (ii) and (iii) are false but (iv) are true

(4) All are correct

166. Assertion : In Humans due to non functioning of parietal or oxyntic cell protein digestion effected.

Reason : Parietal cell or oxyntic cell secretes HCl that are necessory for conversion of pepsinogen to pepsin.

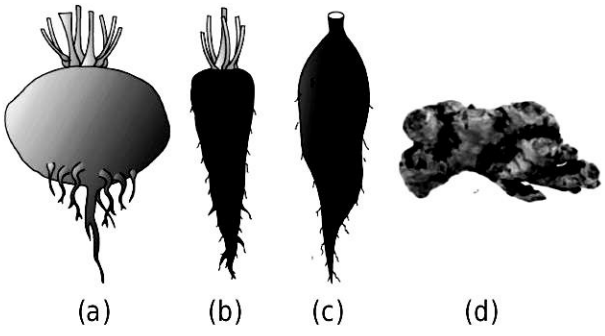
(1) Both (A) and (R) are true but (R) is not the correct explanation of (A)

(2) (A) is true but (R) is false

(3) (A) is false but (R) is true

(4) Both (A) and (R) are true and (R) is the correct explanation of (A)

167. In the given below diagram how many structure are modification of Tap root :



(a) (b) (c) (d)

(e) (f) (g) (h)

(1) 7
(2) 1
(3) 2
(4) 3

165. ,alkbe dsl aEkZesadkSu lk fodYi lR; gS%

i. gksyksaalkbe=,iksalkbe+lg dkjd

ii. gksyksaalkbe=,iksalkbe+lg ,alkbe

iii. gksyksaalkbe=,iksalkbe+/kkrq vk;u

iv. gksyksaalkbe=,iksalkbe+izksFksfVd lewg

(1) (i) vlR; gSyfdu (ii) lR; gS

(2) (i) vkSj (ii) vlR; gSyfdu (iii) and (iv) lR; gS

(3) (i), (ii) vkSj (iii) vlR; gSyfdu (iv) lR; gS

(4) mijksDr lHkh lR; gS

166. dFku : eq[; dksf'kdk esa izksVhu vi?kVu vFkok vkDlhUVhd dksf'kdkvksa ds vi;kIr gksus ds dkj.k izksVhu dk ikpu izHkkfor gksrk gSA

dkj.k : izksVhu vi?kVu vFkok vkDlhUVhd dksf'kdk esa gkbMªksDyksfjd vEy dk lko.k djrh gSA tks fd ikbZlhuksftu ds ikbZlhu esa ifjorZu ds fy, vko';d gSA

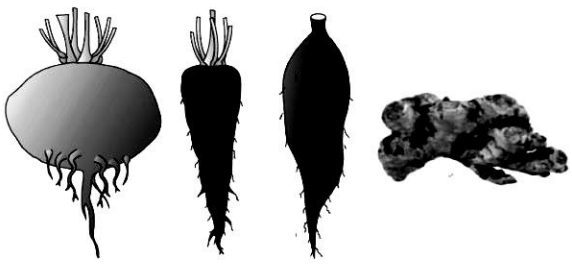
(1) (A) vkSj (R) nksuksa lgh gSyfdu (R) lgh O;k[;k ugha gS (A) dk

(2) (A) lgh gSyfdu (R) xyr gS

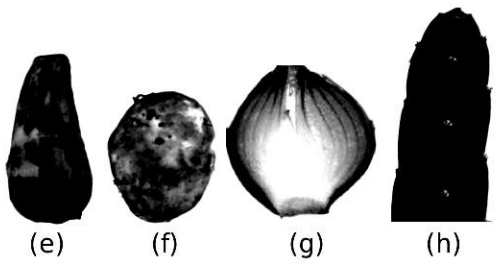
(3) (A) xyr gSyfdu (R) lgh gS

(4) (A) vkSj (R) nksuksa lgh gSa vkSj (R) lgh O;k[;k gS (A) dk

167. uhps fn;s x;s fp=k esa dqy fdrus ewyk tM+ dk :ikarj.k gS%



(a) (b) (c) (d)



(e) (f) (g) (h)

(1) 7
(2) 1
(3) 2
(4) 3

168. Which one of the following is the correct statement

(1) Vegetative cell present in embryosac

(2) Generative cell present in embryosac

(3) Only diploid nuclei are present in embryosac

(4) Ploidy of antipodal cell and vegetative cell are similar

169. Which one of the following is the incorrect match

(1) PEM - Marasmus

(2) PEM - Kwashiorkar

(3) Vomit centre - Cerebellum

(4) Jaundice - Bile pigments

170. Which one of the following is the correct match

(1) Total fore limbs bone - 50

(2) Total hind limbs bone - 55

(3) Coxal bone - Axial skeleton

(4) Scapula - Pectoral girdle

171. Which among the following is not a prokaryotic cell:

(1) Bacteria

(2) Blue green algae

(3) Mycoplasma

(4) Yeast

172. Class of enzymes contained in lysosome :

(1) Lyases

(2) Ligases

(3) Hydrolases

(4) Transferases.

173. Tonoplast is differentially permeable membrane surrounding the :

(1) Mitochondria

(2) Cytoplasm

(3) Vacuole

(4) Nucleus

168. fuEufyf[k esa lsdkSulk dFku lgh gSA

(1) dk;d dksf'kdk Hkzwk dks.k esa ik;k tkrk gSA

(2) tuu dksf'kdk Hkzwk dks.k esa ik;k tkrk gSA

(3) dsoy fMIyk;M U;fDy;l Hkzwk dks.k esa ik;s tkrs gSA

(4) dk;d dksf'kdk vkSj,UVhiksMy dksf'kdk dh ykbZ;M leku gSA

169. fuEufyf[k esa lsdkSulk lgh vuqikr xyr gSA

(1) PEM & ejkeol

(2) PEM & Dofkvkjdj

(3) oeu dsUnz & vuqLrafd

(4) ihfy;k & fiRr o.kZd

170. fuEufyf[k esa lsdkSulk lgh vuqikr lgh gSA

(1) dqy vxzinu vfLFk & 50

(2) dqy i'pinu vfLFk & 55

(3) JksfM vfLFk & v{kh; dadky

(4) LdSiqyk & vaesa;yk

171. fuEufyf[k esa lsdkSulk lh,d izksdsfj;ksfVd dksf'kdk ugha gS%

(1) tho.kq

(2) uhyhgjh'kSoky

(3) ekbdksIykTek

(4) ;hLV

172. ykblkseksa esa mifLFkr ,atkbeksa dk oxhZdj.k gS%

(1) ykbZstsl

(2) ykbxsl

(3) gkbMsyst

(4) VªkUliSVstsl

173. VksuksIykLV ,d fo'ks"kr kikjxE; f>Yyh gS tks fdlds?ksjs gq,a gS%

(1) lkbVksdkbaZ

(2) dksf'kdkn zO;

(3) jl/kkuh

(4) U;wfDy;l

174. The splitting of the centromere of each chromosome occur :

(1) Telophase I

(2) Anaphase I

(3) Anaphase II

(4) Metaphase II

175. Which is a correct statement :

(a) AV node is called as pace maker

(b) Atrial systole causes 30% ventricular filling

(c) Cardiac output depends on ventricular filling

(d) Blood pumped during a cardiac cycle is cardiac output

(1) a & b

(2) b & c

(3) c & d

(4) a & d

176. What is/are most correct regarding reaction centre

(1) Reaction centre is single chlorophyll 'a' molecule

(2) The reaction centre is different in both photosystems

(3) Reaction centre is formed by accessory pigments

(4) Both 1 and 2

177. Which statement is correct :

(1) Squamous epithelium are found in fallopian tube

(2) Two types of cell junctions are found in the epithelium and other tissues

(3) Neural tissue exerts the greatest control over the body's responsiveness to changing conditions

(4) The simple squamous epithelium is made of more than one layer of cells

178. Which of the following statement is true regarding blood vascular system of Pheretima

(1) Contraction keep blood circulation in one direction only

(2) Smaller blood vessels supply blood to gut, nerve cord and body wall

(3) Haemoglobin is dissolved in blood plasma and blood cells are phagocytic in nature

(4) All are true

174. iR;sd xq.klw=kdsxq.kklw=kfcUnq,a yxrk gksrk gS%

(1) vUrkoLFkk esa

(2) i'pkoLFkk esa

(3) i'pkoLFkk I esa

(4) eè;koLFkk I esa

175. dkSulk dFku lR; gS%

(a) A.V iozZdksxfr izsjd dgrs gSa

(b) vfyan izdkspu 30% fuy; dksHkjrk gS

(c) ân; fudkl fuy;hHkkoksa ij fuHkZj djrk gS

(d) ,d ân; pØ dsnkSjku iEi fd;k tkus okyk jDr ân; fudkl dgykrk gS

(1) a vkSj b

(2) b vkSj c

(3) c vkSj d

(4) a vkSj d

176. vfHkfØ;k dsUnzdsfo"k; esa D;k lR; gS%

(1) vfHkfØ;k dsUnzDyksjksfQy 'a' dk,dy v.kq gS

(2) nksuksa izdk'k iz.kkfy;ksa esa vfHkfØ;k dsUnz fHkUu gksrs gSa

(3) vfHkfØ;k dsUnz lgk;d fi XesaV }kjk cuk gksrk gS

(4) 1 vkSj 2 nksuksa

177. dkSulk dFku lR; gS%

(1) 'Ydh mifdyk fyaQsfMDV esa ik;h tkrh gS

(2) nks izdkj dh dksf'kdk,a vUrjdksf'kdh; ijrksa esa ik;h tkrh gSa

(3) rafddk Ård eq[; :i ls ifjofrZr vo;oksa ds izfr 'kjhj dh vuqfØ;kvksa ds fu;a=.k ds fy;s mRrjnk;h gksrk gS

(4) ljy 'Ydh mifdyk,a ls vf/d dksf'kdkvksa dh lrg dh cuh gksrh gS

178. fuEufyf[kr esa ls dkSulk dFku iSfjesfd;k ds jDr ifjlapj.k rU=k ds lUnHkZ esa lgh gS

(1) lkekU; jDr ifjlapj.k dks,d fn'kk esa cuk,j[krk gS

(2) NksVh jDr dkf'kdk,a dksa vkgkj uky] rfUrdk dk;Z rFkk 'kjhj fHkfÙk esa vkDlhtu dk ifjogu djrk gS

(3) fgeksXyksfcu jDr ykfTekesa ?kqyk gksrk gS vkSj jDr dksf'kdk,a iQsxksflVksfld izd`fr dh gksrh gSa

(4) lHkh lgh gS

179. Which of the following statement is true regarding female reproductive system in frog

(a) consist of a pair of ovary, situated near kidney and functionally connected to kidneys,

(b) A pair of oviduct opens into cloaca separately. female lays 25000-30000 eggs at a time

(c) fertilisation external and takes place in water

(d) the larval stage tadpole undergoes metamorphosis to become adult

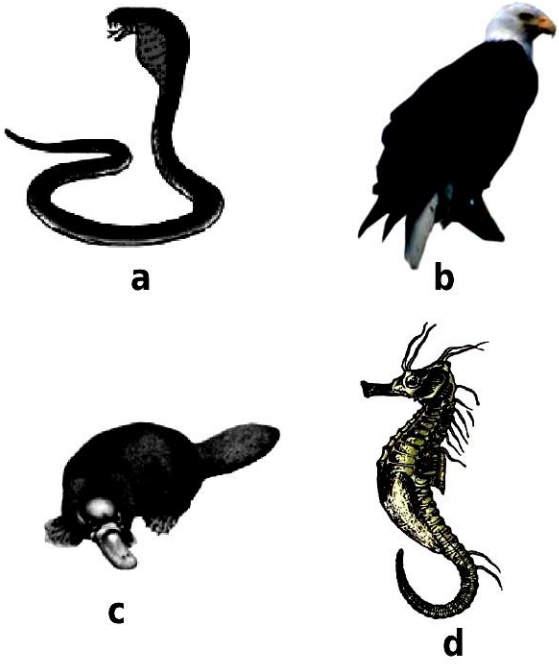
(1) all true

(2) a,b,c

(3) b,c,d

(4) c, d

180. How many of the following statements are correct with reference to the given below diagram of different animals:



A. All are vertebrate

B. All are chordate

C. All are viviparous animal

D. All are four chambered heart containing animals

E. Only b, c have scales

(1) 2

(2) 4

(3) 3

(4) 1

179. fuEufyf[kr esa lsekn kes-sa-d st uu r U-kds lUnHZ esa dkSu lk dFku lgh gS A

(a) ,d t kMh v.Mk[k] oDd ds lehi fLFkr vk;SfØ; kRed :i lsoDd lst Mqh gks hgS

(b) ,d t kMh v.Mokfguh Dyk;sd kesa iFkd :i ls[kyrh gS A vk;Sekn k,d le; esa 25000 & 30000 v.Mns h gS

(c) fu"ks pu okâ; vk;Si kuhesa Ei Uu gks kgS

(d) VSMlky yokZdk;kUrj.kl so;Ld esacny t kr kgS

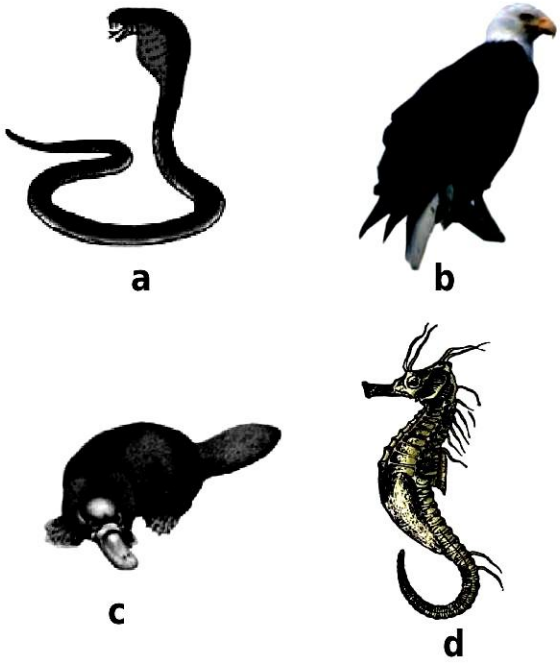
(1) lHkh lR,

(2) a,b,c

(3) b,c,d

(4) c, d

180. fuEufyf[kr esafd rusdFku uhpsfn;sx;sfofHkUu t Uuvqkds fp=kds lUnHZ esa lR, gS%



A. lHkh oVhZ/ gS

B. lHkh dkMZ gS

C. lHkh ohoh;Sl t Uu gS

D. lHkh pkj i zdkSB okyk gn; j[kus okyst ho gS

E. dsoy b, c Ld Sy j[kr sgS

(1) 2

(2) 4

(3) 3

(4) 1

181. In leaves a bud is present in the axil of petiole in:

a. Simple leaf

b. Compound leaf

c. Axil of leaflets of the compound leaf

(1) a, b, c

(2) a, b

(3) a, c

(4) b, c

182. In case of which type of chromosome the centromere is situated close to its end forming one extremely short and one very long arm :

(1) Acrocentric

(2) Telocentric

(3) Metacentric

(4) Submetacentric

183. Which one of the following is the viviparous reptile:

(1) Chelone

(2) Testudo

(3) Viper

(4) Calotes

184. The solubility of CO_2 in blood higher than that of O_2

(1) 5 - 10 Times

(2) 20 - 25 Times

(3) 25 - 50 Times

(4) 40 - 50 Times

185. What is the vasa recta

(1) A minute branch of PCT

(2) A minute branch of henley loop

(3) A minute vessel of capillaries

(4) A very large vessel of capillaries

181. iRrh,ksesi .kZU dsd{kesdyhik,ht krhgA

a. ljy iRrh,ksea

b. l,aQr iRrh,ksea

c. l,aQr iRrhdsi=kdksdsd{kea

(1) a, b, c

(2) a, b

(3) a, c

(4) b, c

182. fdl izdkj dsxqk wkesxqk wkfcUnqd dsfcYdqy fdukjs ij feyrkgA ftlls,d Hqkvr,U Nkvho,d Hqkcgq cMhgkshgS%

(1) ,sZkfSVd

(2) Vhyk SVd

(3) esVk fSVd

(4) lcesVk fSVd

183. fuEufyf[kr esl sdkSu ohoh,S ljhi gS%

(1) fdyks

(2) VsV;Mks

(3) dkbj

(4) dsyks

184. CO_2 dh?kqu'kyrkjDr esa O_2 dhrqukesvf/d gkshgS

(1) 5 - 10 xqk

(2) 20 - 25 xqk

(3) 25 - 50 xqk

(4) 40 - 50 xqk

185. okkjSVkD,kgA

(1) PCT dh,d lwe'kk[kk

(2) gsyisk kdh,d lwe'kk[kk

(3) dfsyjhdh,d lwe'kk[kk

(4) dfsyjhdh,d cgq cMhdsY

SECTION–B – [ZOOLOGY]

186. True about nitrogen bases

(1) It is a type of heterocyclic compound

(2) Pyrimidines of all nucleic acid are same and purine may differ

(3) Among purines RNA have uracil and DNA have thymines

(4) Both 1 and 3

187. Which one of the following is not an amino acid

(1) Aspartic acid

(2) Lysine

(3) Tripalmitin

(4) Leucine

188. Functions of which of the following is not known in organisms :

(1) Lectins

(2) Ricin

(3) Morphine

(4) All of these

189. A Beta-plated sheet is the example of _____structure of protein

(1) Primary

(2) Secondary

(3) Tertiary

(4) Quaternary

190. What is the full form of FAD :

(1) Ferrous Adenine Dinucleotide

(2) Flavin Adenine Diphosphate

(3) Flavin Adenine Dinucleotide

(4) Fluorine Adenine Dinucleotide

191. In Anaphase–I

(1) Chromosomes move to respective poles

(2) Chromatids move to respective poles

(3) Centriole moves towards poles

(4) Spindle fibres move towards equator

SECTION–B – [ZOOLOGY]

186. ukbVkstu {kkj dsckjsesa lR; gS

(1) ;g ,d izdkj dkfo"kerpØh; ;kSfxd gS

(2) lHkh U;wfDyd vEy dsfijhfeMhu leku rFkk;qDr vyx gSa

(3) l;qDr esa vkj,u, dsikl ;wjsly rFkk Fkkbfeu, dsikl Fkkbehu gSA

(4) nksuksa vkSj 3

187. fuEufyf[kr esa lsdkSu,d vehuksvEy ugha gS%

(1) ,LikjfVd vEy

(2) ykbflu

(3) VkbZikfeVhu

(4) Y;wlhu

188. fuEu esa lsfdldkdk;Zt hoksa/kkj;ksesa ugh irkgS%

(1) ySDVhu

(2) fjflu

(3) ekWQhZu

(4) lHkh

189. ,d cheVkydhVsM lhV _____ izksVhu lajpuk dkmnkgj.k gS

(1) izkFkfed

(2) f}rh;d

(3) r`rh;d

(4) prqFkZd

190. FAD dkiwjkZ i D;k gS

(1) Ferrous Adenine Dinucleotide

(2) Flavin Adenine Diphosphate

(3) Flavin Adenine Dinucleotide

(4) Fluorine Adenine Dinucleotide

191. i'pkoLFkk I esa

(1) xq.klw=kfoHkktd /kqzoksa dh vksj pyus yxrs gSa

(2) v/;Zxq.klw=kfoHkktd /kqzoksa dh vksj pyus yxrs gSa

(3) rkjdsUnzd /kqzoksa dh vksj pyus yxrs gSa

(4) rdqZeq[kh jpuk,a /kqzoksa dh vksj pyus yxrs gSaA

192. Which one of the following events belongs to telophase:

(1) Chromosome at opposite poles and lost their identity as discrete elements

(2) Nucleolus, ER are reform

(3) Nuclear envelope developes

(4) All of these

193. The Longest phase of cell cycle is :

(1) Interphase

(2) Metaphase

(3) Prophase

(4) Telophase

194. How many mitotic division occur in a cell of root tip to form 354 cells :

(1) 354

(2) 353

(3) 177

(4) 86

195. Stomochord present in:

(1) Urochordata

(2) Cephalochordata

(3) Hemichordata

(4) All of these

196. Comparison of different transport mechanism :

Property	Simple Diffusion	Facilitated Transport	Active Transport
Uphil Transport	A	B	C

What is on A, B and C :

(1) No, No, yes

(2) Yes, Yes, Yes

(3) No, Yes, No

(4) No, Yes, Yes

197. Moss protonema, PEN of dicot, Rhizoids of moss, prothallus of fern, gemma of marchantia, egg of liverwort, zygote of fern.

How many are haploid structure.

(1) 5

(2) 2

(3) 4

(4) 3

192. fuEufyf[kr esa dkSu h?kVuk vkSkLFkkl sa a/r gS

(1) xqk ea fojhr /qzqo ksij gksrs gSa vkSj iwFkd igpku ugha fn[kkbZ nsrs gSA

(2) dsUnzd] ER iqu%fodfl r gksrs gSA

(3) dsUnzd f>Yyh dk fodfl r gksuk

(4) lHkh lghgSA

193. dkf'kdk pØ dh lcls yEch izkoLFkk gS

(1) vrjkoLFkk

(2) eè;koLFkk

(3) izkoLFkk

(4) vUR;koLFkk

194. tM+ ds fljs ij dksf'kdkvksa esa 354 dkf'kdk cukus ds fy, fdrus lekl vko';d gksrs gSa%

(1) 354

(2) 353

(3) 177

(4) 86

195. LVkseksdkMZ fdlesa ik;k tkrk gS

(1) ;qjksdkMZsVk

(2) lsQsyksdkMZsVk

(3) gsfedkMZsVk

(4) lHkh

196. fofHkUu izdkj ds ifjogu rarz dh rqyuk%

xqk	lfØ; ifjogu	lqxe ifjogu	lfØ; ifjogu
f'k[kj ds fljs	A	B	C

A, B vkSj C D;k gS%

(1) ugha] ugha] gk¡

(2) gk¡] gk¡] gk¡

(3) ugha] gk¡] ugha

(4) ugha] gk¡] gk¡

197. Fkkbl izksVksusek] f}cht i=kHk dk PEN] ekl dk ekWl] iQuZ dk izFkeiwoZ] fjMkbM ekl dk cht] ykbojoVZ dk v.Mkf.k; iQuZ dk tkbxksVA

fuEu esa fdruh vxq.kr lajpuk gS%

(1) 5

(2) 2

(3) 4

(4) 3

198. The hypodermis in dicot stem are made up of :

(1) Collenchyma

(2) Sclerenchyma

(3) Parenchyma

(4) Cuticle

199. Which of the following are secondary meristems

(1) Lateral meristems

(2) Interfascicular cambium

(3) Cork cambium

(4) All of these

200. Seive tube elements are present in the phloem of:

(1) Gymnosperms

(2) Pteridophytes

(3) Angiosperms

(4) Algae

198. [illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible]

199. [illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible]

200. [illegible]

(1) [illegible]

(2) [illegible]

(3) [illegible]

(4) [illegible]

SOLUTION

PHYSICS

SECTION-A

1. (3) **[NCERT-49]**

8 m

2. (1)

$$\frac{2u\sin\theta}{g}$$

= 8 sec.

3. (2) **[NCERT-46]**

u cos θ

4. (1) **[NCERT-94]**

$$v \propto \frac{1}{\text{intesntie of noise}}$$

5. (2) **[NCERT-117]**

Never cancelled each other.

6. (1) **[NCERT-98]**

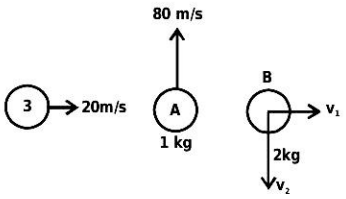
$v^2 = 2g \sin\theta \, . \, S$ .....(i) [on smooth incline plane]

$$\frac{v^2}{n^2} = 2(g\sin\theta - \mu g\cos\theta)S$$ .....(ii) [on rough incline palne]

eqn. (i) and (ii)

$$n^2 = \frac{\sin\theta}{\sin\theta - \mu\cos\theta} \Rightarrow \mu = \tan\theta\left(1 - \frac{1}{n^2}\right)$$

7. (2) **[NCERT-92]**



Momentum is conserved in horizontal & vertical directions

$\therefore$ $3\times20 = 2v_1 \Rightarrow v_1 = 30$ m/s

$0 = 1\times80 - 2v_2 \Rightarrow v_2 = 40$ m/s

Hence net velocity of B, $V = \sqrt{30^2 + 40^2}$

= 50 m/s

SECTION-A

1. (3) **[NCERT-49]**

8 m

2. (1)

$$\frac{2u\sin\theta}{g}$$

= 8 sec.

3. (2) **[NCERT-46]**

u cos θ

4. (1) **[NCERT-94]**

$$v \propto \frac{1}{\text{'kksj dh rhozrk}}$$

5. (2) **[NCERT-117]**

,d nwljs dk fujLr dHkh unga dat rs gSA

6. (1) **[NCERT-98]**

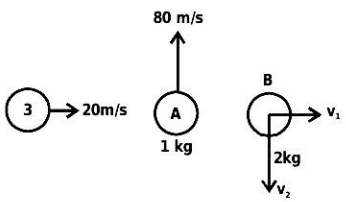
$v^2 = 2g \sin\theta \, . \, S$ .....(i) [fpduus ur lery ij]

$$\frac{v^2}{n^2} = 2(g\sin\theta - \mu g\cos\theta)S$$ .....(ii) [[:kqur lery ij]

leddj.k (i) vkSj (ii)

$$n^2 = \frac{\sin\theta}{\sin\theta - \mu\cos\theta} \Rightarrow \mu = \tan\theta\left(1 - \frac{1}{n^2}\right)$$

7. (2) **[NCERT-92]**



jSf[kd lax{k.k esa {ks=t vkSj Å/okZ/kj fn'kkvksa esa laoxsx laj{k.k gksrk gSA

$\therefore$ $3\times20 = 2v_1 \Rightarrow v_1 = 30$ m/s

$0 = 1\times80 - 2v_2 \Rightarrow v_2 = 40$ m/s

vr% dkifj.kkeh osx, $V = \sqrt{30^2 + 40^2}$

= 50 m/s

8. (1) **[NCERT-73]**

$l^2 = (500 - 20t)^2 + (400 - 15t)^2$

For minimum distance

$$\frac{dl}{dt} = 0$$

$= 20$ m.

9. (4) **[NCERT-46]**

10. (1) **[NCERT-137]**

zero.

11. (4) **[NCERT-178]**

As there is no external force so velocity of center of mass remains V .

12. (2) **[NCERT-110]**

$v = u - at$

$0 = 10 - a \times 4$

$a = 2.5$

$F = ma$

$= 465 \times 2.5$ so $F = 1.2 \times 10^3$ N

13. (2) **[NCERT-347]**

$$A_{net} = \sqrt{\left(\frac{A}{2}\right)^2 + A^2} = \frac{A\sqrt{5}}{2}$$

14. (2) **[NCERT-104]**

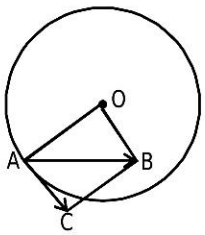
$\vec{\omega} \times \vec{v} = \vec{A}$

$\vec{\alpha} \times \vec{r} = \vec{B}$

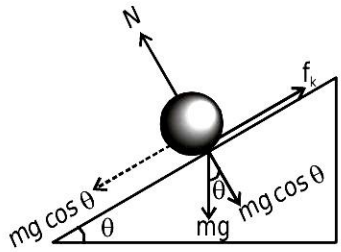
Then $\vec{A}$ and $\vec{B}$ will be perpendicular

$\vec{A} \cdot \vec{B} = 0$

15. (4) **[NCERT-104]**



16. (3) **[NCERT-163]**



8. (1) **[NCERT-73]**

$l^2 = (500 - 20t)^2 + (400 - 15t)^2$

For minimum distance

$$\frac{dl}{dt} = 0$$

$= 20$ m.

9. (4) **[NCERT-46]**

10. (1) **[NCERT-137]**

11. (4) **[NCERT-178]**

As there is no external force so velocity of center of mass remains V .

12. (2) **[NCERT-110]**

$v = u - at$

$0 = 10 - a \times 4$

$a = 2.5$

$F = ma$

$= 465 \times 2.5$ so $F = 1.2 \times 10^3$ N

13. (2) **[NCERT-347]**

$$A_{net} = \sqrt{\left(\frac{A}{2}\right)^2 + A^2} = \frac{A\sqrt{5}}{2}$$

14. (2) **[NCERT-104]**

$\vec{\omega} \times \vec{v} = \vec{A}$

$\vec{\alpha} \times \vec{r} = \vec{B}$

Then $\vec{A}$ and $\vec{B}$ will be perpendicular

$\vec{A} \cdot \vec{B} = 0$

15. (4) **[NCERT-104]**

16. (3) **[NCERT-163]**

17. (2) **[NCERT-158]**

$$mg(2R) = \frac{1}{2} I\omega^2$$

$$2mgR = \frac{1}{2}\left(\frac{5}{4}mR^2\right)\times\frac{v^2}{R^2}$$

$$2mgR = \frac{5}{8}mv^2$$

$$v^2 = \frac{16gR}{5}$$

$$\Rightarrow v = \sqrt{\frac{16gR}{5}}.$$

18. (1) **[NCERT-190]**

$$L = \frac{2\times 2\times 2}{\sqrt{1+(1)^2}}$$

$$= 4\sqrt{2} \text{ kg m}^2/\text{s}$$

19. (2) **[NCERT-203]**

$$\Delta U = \frac{Mgh}{\left(1+\frac{h}{R}\right)}$$

$$\text{So } \frac{1}{2}mv^2 = \frac{mg(2R)}{\left(1+\frac{2R}{R}\right)}$$

$$\frac{1}{2}mv^2 = \frac{2mgR}{3}$$

$$v^2 = \frac{4gR}{3} \qquad \Rightarrow v = 2\sqrt{\frac{gR}{3}}$$

20. (1) **[NCERT-343]**

$$-\tan 45 = \frac{a}{x}$$

$$a = -x$$

$$a = -\omega^2 x$$

$$\omega = 1.$$

$$\frac{2\pi}{T} = 1 \Rightarrow T = 2\pi \text{ seconds}$$

17. (2) **[NCERT-158]**

$$mg(2R) = \frac{1}{2} I\omega^2$$

$$2mgR = \frac{1}{2}\left(\frac{5}{4}mR^2\right)\times\frac{v^2}{R^2}$$

$$2mgR = \frac{5}{8}mv^2$$

$$v^2 = \frac{16gR}{5}$$

$$\Rightarrow v = \sqrt{\frac{16gR}{5}}.$$

18. (1) **[NCERT-190]**

$$L = \frac{2\times 2\times 2}{\sqrt{1+(1)^2}}$$

$$= 4\sqrt{2} \text{ kg m}^2/\text{s}$$

19. (2) **[NCERT-203]**

$$\Delta U = \frac{Mgh}{\left(1+\frac{h}{R}\right)}$$

$$\text{So } \frac{1}{2}mv^2 = \frac{mg(2R)}{\left(1+\frac{2R}{R}\right)}$$

$$\frac{1}{2}mv^2 = \frac{2mgR}{3}$$

$$v^2 = \frac{4gR}{3} \qquad \Rightarrow v = 2\sqrt{\frac{gR}{3}}$$

20. (1) **[NCERT-343]**

$$-\tan 45 = \frac{a}{x}$$

$$a = -x$$

$$a = -\omega^2 x$$

$$\omega = 1.$$

$$\frac{2\pi}{T} = 1 \Rightarrow T = 2\pi \text{ seconds}$$

21. (2) **[NCERT-145]**

$m_1x_1 - m_2x_2 = 0$

$x_1 + x_2 = 2$ ----------(1)

$50\,x_1 - 150\,(2 - x_1) = 0$

$200\,x_1 = 300\,x_2$

$x_1 = 1.5$ m.

22. (2) **[NCERT-147]**

$$\frac{1}{2}mv^2\left(1+\frac{k^2}{R^2}\right) = mg\frac{5v^2}{6g}$$

23. (3) **[NCERT-148]**

$$a = v\frac{dv}{dx}$$

$$\frac{dv}{dx} = b\frac{d}{dx}(x)^{1/2}$$

$$\frac{dv}{dx} = b\left(\frac{1}{2}x^{-\frac{1}{2}}\right)$$

$$\frac{dv}{dx} = \frac{b}{2\sqrt{x}}$$

so $a = b\sqrt{x} \times \frac{b}{2\sqrt{x}} \Rightarrow a = \frac{b^2}{2}$

$F = m\,a$

$$F = \frac{2b^2}{2} \Rightarrow F = b^2$$

$$dW = Fdx \Rightarrow W = \int Fdx$$

$$= \int_0^4 b^2 dx$$

[$W = 4\,b^2$].

24. (1) **[NCERT-129]**

$$e^n = \sqrt{\frac{h_n}{h_0}}$$

Where n = number of collision

here $n = 1$ and $e = \frac{1}{\sqrt{2}}$

So $\frac{1}{\sqrt{2}} = \sqrt{\frac{h}{h_0}}$

$$h = \frac{h_0}{2} \Rightarrow h = \frac{10}{2}$$

h = 5 metre.

21. (2) **[NCERT-145]**

$m_1x_1 - m_2x_2 = 0$

$x_1 + x_2 = 2$ ----------(1)

$50\,x_1 - 150\,(2 - x_1) = 0$

$200\,x_1 = 300\,x_2$

$x_1 = 1.5$ m.

22. (2) **[NCERT-147]**

$$\frac{1}{2}mv^2\left(1+\frac{k^2}{R^2}\right) = mg\frac{5v^2}{6g}$$

23. (3) **[NCERT-148]**

$$a = v\frac{dv}{dx}$$

$$\frac{dv}{dx} = b\frac{d}{dx}(x)^{1/2}$$

$$\frac{dv}{dx} = b\left(\frac{1}{2}x^{-\frac{1}{2}}\right)$$

$$\frac{dv}{dx} = \frac{b}{2\sqrt{x}}$$

so $a = b\sqrt{x} \times \frac{b}{2\sqrt{x}} \Rightarrow a = \frac{b^2}{2}$

$F = m\,a$

$$F = \frac{2b^2}{2} \Rightarrow F = b^2$$

$$dW = Fdx \Rightarrow W = \int Fdx$$

$$= \int_0^4 b^2 dx$$

[$W = 4\,b^2$].

24. (1) **[NCERT-129]**

$$e^n = \sqrt{\frac{h_n}{h_0}}$$

; gkn = l ?k; ;kd hl [a; k

n = 1 rFk e = $\frac{1}{\sqrt{2}}$

vr% $\frac{1}{\sqrt{2}} = \sqrt{\frac{h}{h_0}}$

$$h = \frac{h_0}{2} \Rightarrow h = \frac{10}{2}$$

h = 5 ehVj.

25. (3) **[NCERT-128]**

26. (2) **[NCERT-276]**

As we know $\alpha = \frac{\Delta L}{L_0 \Delta\theta}$

$$\Delta\theta = \frac{\Delta L}{\alpha\ L_0} = \frac{5\times10^{-5}}{10\times10^{-6}\times1} = 5°C$$

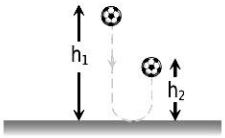
27. (2) **[NCERT-274]**

Since $102.2°F \rightarrow 39°C$ and $98.6°F \rightarrow 37°C$

Hence $\Delta Q = m.\ s.\ \Delta\theta = 80\times1000\times(39-37)$

$= 16\times10^4$ cal $= 160$ kcal.

28. (3) **[NCERT-281]**



$$mg(h_1 - h_2) = m.c.\Delta\theta$$

$$\Rightarrow \Delta\theta = \frac{g(h_1 - h_2)}{c}$$

$$= \frac{10(10-5.4)}{460} = 0.1°C$$

29. (2) **[NCERT-327]**

$VP^3 = \text{constant} = k \Rightarrow P = \frac{k}{V^{1/3}}$

$PV = \mu RT \Rightarrow \frac{k}{V^{1/3}}.V = \mu RT$

$$\Rightarrow V^{2/3} = \frac{\mu RT}{k}$$

$$\left(\frac{V_1}{V_2}\right)^{2/3} = \frac{T_1}{T_2} \Rightarrow \left(\frac{V}{27V}\right)^{2/3} = \frac{T}{T_2}$$

$T_2 = 9T.$

30. (3) **[NCERT-326]**

$$v_{rms} \propto \frac{1}{\sqrt{M}} \Rightarrow \frac{v_1}{v_2} = \sqrt{\frac{M_2}{M_1}}$$

$$\therefore \frac{1}{\sqrt{2}} = \sqrt{\frac{M_2}{32}} \Rightarrow M_2 = 16.$$

Hence the gas is CH_4.

25. (3) **[NCERT-128]**

26. (2) **[NCERT-276]**

ge t kurr sgS $\alpha = \frac{\Delta L}{L_0 \Delta\theta}$

$$\Delta\theta = \frac{\Delta L}{\alpha\ L_0} = \frac{5\times10^{-5}}{10\times10^{-6}\times1} = 5°C$$

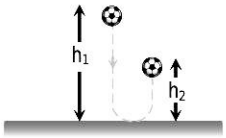
27. (2) **[NCERT-274]**

$102.2°F \rightarrow 39°C$ rFkk $98.6°F \rightarrow 37°C$

vr% $\Delta Q = m.\ s.\ \Delta\theta = 80\times1000\times(39-37)$

$= 16\times10^4$ cal $= 160$ kcal.

28. (3) **[NCERT-281]**



$$mg(h_1 - h_2) = m.c.\Delta\theta$$

$$\Rightarrow \Delta\theta = \frac{g(h_1 - h_2)}{c}$$

$$= \frac{10(10-5.4)}{460} = 0.1°C$$

29. (2) **[NCERT-327]**

$VP^3 =$ fu; rkd $= k \Rightarrow P = \frac{k}{V^{1/3}}$

$PV = \mu RT \Rightarrow \frac{k}{V^{1/3}}.V = \mu RT$

$$\Rightarrow V^{2/3} = \frac{\mu RT}{k}$$

$$\left(\frac{V_1}{V_2}\right)^{2/3} = \frac{T_1}{T_2} \Rightarrow \left(\frac{V}{27V}\right)^{2/3} = \frac{T}{T_2}$$

$T_2 = 9T.$

30. (3) **[NCERT-326]**

$$v_{rms} \propto \frac{1}{\sqrt{M}} \Rightarrow \frac{v_1}{v_2} = \sqrt{\frac{M_2}{M_1}}$$

$$\therefore \frac{1}{\sqrt{2}} = \sqrt{\frac{M_2}{32}} \Rightarrow M_2 = 16.$$

CH_4 xSsea

31. (3) **[NCERT-328]**

$$(C_V)_{mix} = \frac{\mu_1 C_{V_1} + \mu_2 C_{V_2}}{\mu_1 + \mu_2}$$

$$= \frac{1 \times \frac{3}{2}R + 1 \times \frac{5}{2}R}{1+1} = 2R$$

$$\left((C_V)_{mono} = \frac{3}{2}R,\ (C_V)_{di} = \frac{5}{2}R\right)$$

32. (2) **[NCERT-324]**

Change in internal energy from $A \to B$ is

$$\Delta U = \frac{f}{2}\mu R \Delta T = \frac{f}{2}(P_f V_f - P_i V_i)$$

$$= \frac{3}{2}(2P_0 \times 2V_0 - P_0 \times V_0) = \frac{9}{2}P_0 V_0$$

$$W_{A \to B} = \frac{1}{2}(P_0 + 2P_0) \times (2V_0 - V_0) = \frac{3}{2}P_0 V_0$$

$$\Delta Q = \Delta U + \Delta W$$

$$= \frac{9}{2}P_0 V_0 + \frac{3}{2}P_0 V_0 = 6P_0 V_0$$

33. (2) **[NCERT-329]**

For adiabatic process $TV^{\gamma-1} = \text{constant}$

$$\Rightarrow \frac{T_2}{T_1} = \left(\frac{V_1}{V_2}\right)^{\gamma-1} \Rightarrow T_2 = \left(\frac{V_1}{V_2}\right)^{\gamma-1} \times T_1$$

$$\Rightarrow T_2 = \left(\frac{1}{81}\right)^{1.25-1} \times 273 = \left(\frac{1}{81}\right)^{0.25} \times 273$$

$$= \frac{273}{3} = 91K \to -182°C$$

34. (1) **[NCERT-325]**

$$\eta = \frac{T_1 - T_2}{T_1} = \frac{(127+273)-(87+273)}{(127+273)}$$

$$= \frac{400-360}{400} = 0.1 \to 10\%$$

31. (3) **[NCERT-328]**

$$(C_V)_{mix} = \frac{\mu_1 C_{V_1} + \mu_2 C_{V_2}}{\mu_1 + \mu_2}$$

$$= \frac{1 \times \frac{3}{2}R + 1 \times \frac{5}{2}R}{1+1} = 2R$$

$$\left((C_V)_{mono} = \frac{3}{2}R,\ (C_V)_{di} = \frac{5}{2}R\right)$$

32. (2) **[NCERT-324]**

$A \to B$ [illegible]

$$\Delta U = \frac{f}{2}\mu R \Delta T = \frac{f}{2}(P_f V_f - P_i V_i)$$

$$= \frac{3}{2}(2P_0 \times 2V_0 - P_0 \times V_0) = \frac{9}{2}P_0 V_0$$

$$W_{A \to B} = \frac{1}{2}(P_0 + 2P_0) \times (2V_0 - V_0) = \frac{3}{2}P_0 V_0$$

$$\Delta Q = \Delta U + \Delta W$$

$$= \frac{9}{2}P_0 V_0 + \frac{3}{2}P_0 V_0 = 6P_0 V_0$$

33. (2) **[NCERT-329]**

[illegible] $TV^{\gamma-1} =$ [illegible]

$$\Rightarrow \frac{T_2}{T_1} = \left(\frac{V_1}{V_2}\right)^{\gamma-1} \Rightarrow T_2 = \left(\frac{V_1}{V_2}\right)^{\gamma-1} \times T_1$$

$$\Rightarrow T_2 = \left(\frac{1}{81}\right)^{1.25-1} \times 273 = \left(\frac{1}{81}\right)^{0.25} \times 273$$

$$= \frac{273}{3} = 91K \to -182°C$$

34. (1) **[NCERT-325]**

$$\eta = \frac{T_1 - T_2}{T_1} = \frac{(127+273)-(87+273)}{(127+273)}$$

$$= \frac{400-360}{400} = 0.1 \to 10\%$$

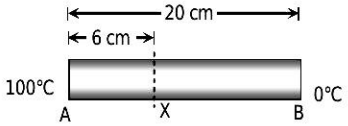
35. (4) **[NCERT-326]**

$$T^{\gamma}P^{1-\gamma} = \text{constant} \Rightarrow P \propto T^{\frac{\gamma}{\gamma-1}}$$

$$P \propto T^{C} \Rightarrow C = \frac{\gamma}{\gamma-1} = \frac{5/3}{5/3-1} = \frac{5}{2}$$

SECTION-B

36. (2) **[NCERT-286]**



$$\Rightarrow \frac{(\theta_A - \theta_x)}{6} = \frac{(\theta_A - \theta_B)}{20} \Rightarrow (100 - \theta_x)$$

$$= \frac{6}{20} \times (100 - 0)$$

$\theta_x = 70^{o}C$.

37. (4) **[NCERT-288]**

38. (4) **[NCERT-287]**

$y \propto$ slope.

39. (3) **[NCERT-365]**

$3l_1 = 3 \times 16 = 48cm$

40. (2) **[NCERT-347]**

$y = -0.8A \sin(\omega t + kx)$

41. (3) **[NCERT-373]**

Third overtone is the fourth harmonic i.e.,

$n_4 = 4n_1 = 4 \times 100 = 400$ Hz

42. (2) **[NCERT-373]**

$l_1 + l_2 + l_3 = 110cm$ and $n_1 l_1 = n_2 l_2 = n_3 l_3$

$n_1 : n_2 : n_3 :: 1 : 2 : 3$

$$\because \frac{n_1}{n_2} = \frac{1}{2} = \frac{l_2}{l_1} \Rightarrow l_2 = \frac{l_1}{2}$$

and $\frac{n_1}{n_3} = \frac{1}{3} = \frac{l_3}{l_1} \Rightarrow l_3 = \frac{l_1}{3}$

$$\therefore l_1 + \frac{l_1}{2} + \frac{l_1}{3} = 110$$

So, $l_1 = 60cm, l_2 = 30cm, l_3 = 20cm$

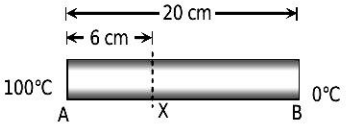
35. (4) **[NCERT-326]**

$$T^{\gamma}P^{1-\gamma} = \text{fu; rkd} \Rightarrow P \propto T^{\frac{\gamma}{\gamma-1}}$$

$$P \propto T^{C} \Rightarrow C = \frac{\gamma}{\gamma-1} = \frac{5/3}{5/3-1} = \frac{5}{2}$$

SECTION-B

36. (2) **[NCERT-286]**



$$\Rightarrow \frac{(\theta_A - \theta_x)}{6} = \frac{(\theta_A - \theta_B)}{20} \Rightarrow (100 - \theta_x)$$

$$= \frac{6}{20} \times (100 - 0)$$

$\theta_x = 70^{o}C$.

37. (4) **[NCERT-288]**

38. (4) **[NCERT-287]**

$y \propto$ i z.kk

39. (3) **[NCERT-365]**

$3l_1 = 3 \times 16 = 48cm$

40. (2) **[NCERT-347]**

$y = -0.8A \sin(\omega t + kx)$

41. (3) **[NCERT-373]**

rhjsvf/ Lojd pkSkl akngS

$n_4 = 4n_1 = 4 \times 100 = 400$ Hz

42. (2) **[NCERT-373]**

$l_1 + l_2 + l_3 = 110cm$ rFkk $n_1 l_1 = n_2 l_2 = n_3 l_3$

$n_1 : n_2 : n_3 :: 1 : 2 : 3$

$$\because \frac{n_1}{n_2} = \frac{1}{2} = \frac{l_2}{l_1} \Rightarrow l_2 = \frac{l_1}{2}$$

rFkk $\frac{n_1}{n_3} = \frac{1}{3} = \frac{l_3}{l_1} \Rightarrow l_3 = \frac{l_1}{3}$

$$\therefore l_1 + \frac{l_1}{2} + \frac{l_1}{3} = 110$$

vr% $l_1 = 60cm, l_2 = 30cm, l_3 = 20cm$

43. (3) **[NCERT-344]**

$n_1l_1 = n_2l_2 = n_3l_3 ..... = \text{constant} = k \text{ (say)} = nl$

$l_1 + l_2 + l_3 + l_4 + ... = 1$

$$\frac{k}{n_1} + \frac{k}{n_2} + \frac{k}{n_3} + \frac{k}{n_4} + ... = \frac{k}{n}$$

$$\Rightarrow \frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} + ...$$

44. (3) **[NCERT-372]**

Given $y = 5\sin\frac{\pi x}{3}\cos 40\ \pi t$

Comparing with $y = 2a\cos 2\pi ft \sin\frac{2\pi x}{\lambda}$

$$\frac{2\pi}{\lambda} = \frac{\pi}{3} \Rightarrow \lambda = 6 \text{ cm.}$$

$$= \frac{\lambda}{2} = 3\text{cm.}$$

45. (2) **[NCERT-378]**

From the given equation $\omega_1 = 2\pi n_1 = 646\pi$

$\Rightarrow n_1 = 323$ and $\omega_2 = 2\pi n_2 = 652\pi \Rightarrow n_2 = 326$

Hence, beat frequency $= 326 - 323 = 3$

46. (3)

Becauses there is no accelerating or retarding force available in horizontal motion

47. (1)

Density if only single liquid filled.

48. (2)

non-uniform motion.

49. (2)

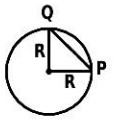
According to Bernoulli's theorem

$P_C > P_B > P_A$

50. (3) **[NCERT-79]**

$$|\vec{v}_{av}| = \left|\frac{\text{displacement}}{\text{time}}\right|$$

$$= \frac{PQ}{t} = \frac{\sqrt{2}R}{t}$$



$$\theta = \frac{1}{2}\alpha t^2 \text{ or } t = \sqrt{\frac{2\theta}{\alpha}}, \text{ where } \theta = \frac{\pi}{2}$$

$$= \sqrt{\frac{2\times\frac{\pi}{2}}{\pi/4}} = 2\text{s}$$

$$\therefore |\vec{v}_{av}| = \frac{\sqrt{2}R}{t} = \frac{\sqrt{2}.\sqrt{2}}{2} = 1\text{m/s}$$

43. (3) **[NCERT-344]**

$n_1l_1 = n_2l_2 = n_3l_3 ..... = \text{fu;rkad} = k \text{ (say)} = nl$

$l_1 + l_2 + l_3 + l_4 + ... = 1$

$$\frac{k}{n_1} + \frac{k}{n_2} + \frac{k}{n_3} + \frac{k}{n_4} + ... = \frac{k}{n}$$

$$\Rightarrow \frac{1}{n} = \frac{1}{n_1} + \frac{1}{n_2} + \frac{1}{n_3} + ...$$

44. (3) **[NCERT-372]**

fn;kgSA $y = 5\sin\frac{\pi x}{3}\cos 40\ \pi t$

rqyuk djus ij $y = 2a\cos 2\pi ft \sin\frac{2\pi x}{\lambda}$

$$\frac{2\pi}{\lambda} = \frac{\pi}{3} \Rightarrow \lambda = 6 \text{ cm.}$$

$$= \frac{\lambda}{2} = 3\text{cm.}$$

45. (2) **[NCERT-378]**

$\omega_1 = 2\pi n_1 = 646\pi$

$\Rightarrow n_1 = 323$ and $\omega_2 = 2\pi n_2 = 652\pi \Rightarrow n_2 = 326$

vr% foLi.k vko`fÙk = $326 - 323 = 3$

46. (3)

D;ksafd {kSfrt xfr ds fy, dksbZ Roj.k ;k eanu cy vFkok.kjd cy mifLFkr ugha gSA

47. (1)

?kuRo ij ;fn ,d nzo Hkjk gks

48. (2)

vlekuxfr gS

49. (2)

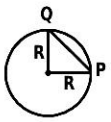
cjukSyh fu;e ls vuqlkj

$P_C > P_B > P_A$

50. (3) **[NCERT-79]**

$$|\vec{v}_{av}| = \left|\frac{\text{foLFkkiu}}{\text{le;}}\right|$$

$$= \frac{PQ}{t} = \frac{\sqrt{2}R}{t}$$



$$\theta = \frac{1}{2}\alpha t^2 \text{ or } t = \sqrt{\frac{2\theta}{\alpha}}, \text{ where } \theta = \frac{\pi}{2}$$

$$= \sqrt{\frac{2\times\frac{\pi}{2}}{\pi/4}} = 2\text{s}$$

$$\therefore |\vec{v}_{av}| = \frac{\sqrt{2}R}{t} = \frac{\sqrt{2}.\sqrt{2}}{2} = 1\text{m/s}$$

CHEMISTRY

SECTION-A

51. (3) **[NCERT-171]**

$$\frac{1}{2}A_2 + \frac{1}{2}B_2 \rightarrow AB, \quad \Delta H = -50 \text{ K cal}$$

$$\left(\frac{1}{2}x + \frac{1}{2}\frac{x}{2}\right) - x = -50$$

$$\left(\frac{x}{2} + \frac{x}{4}\right) - x = -50$$

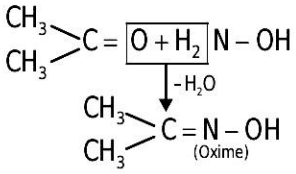
$$\frac{2x + x}{4} - x = -50$$

$x = 200.$

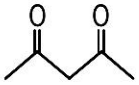
52. (4) **[NCERT-170]**

Enthalpy of combustion is always exothermic in nature.

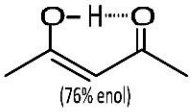
53. (4) **[NCERT 340]**



54. (2) **[NCERT 341, AIIMS 2008]**



Pentan-2, 4-dione has α-H atoms and two C=O groups. It is also stabilized by H-bonding in its enol form, so it has maximum enol content here.



55. (2)

Glycerol is purified by vaccum distillation

56. (1) **[NCERT 355]**

using

$$\% C = \frac{12}{44} \times \frac{\text{wt. of } CO_2(g)}{\text{wt. of org. comp.}} \times 100$$

$$\% C = \frac{12}{44} \times \frac{0.147}{0.2} \times 100 = 20.04$$

$$\% H = \frac{2}{18} \times \frac{\text{wt. of } H_2O(g)}{\text{wt. of org. comp.}} \times 100$$

$$\% H = \frac{2}{18} \times \frac{0.12}{0.2} \times 100 = 6.67$$

$\% O = 100 - (\%C + \%H)$

$= 73.29 \%$

SECTION-A

51. (3) **[NCERT-171]**

$$\frac{1}{2}A_2 + \frac{1}{2}B_2 \rightarrow AB, \quad \Delta H = -50 \text{ K cal}$$

$$\left(\frac{1}{2}x + \frac{1}{2}\frac{x}{2}\right) - x = -50$$

$$\left(\frac{x}{2} + \frac{x}{4}\right) - x = -50$$

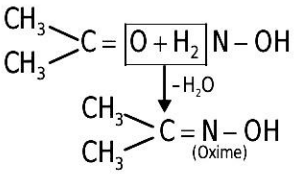
$$\frac{2x + x}{4} - x = -50$$

$x = 200.$

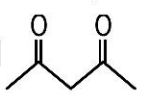
52. (4) **[NCERT-170]**

ngu , d Å"ek{kisa vfHkfØ;k gksrh gSA

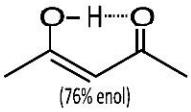
53. (4) **[NCERT 340]**



54. (2) **[NCERT 341, AIIMS 2008]**

gkbMªkstu cU/ ds dkj.k ;kSfxd  dk bukWy

iQkeZ/f/ dLFkkbZ gksrk gSA



55. (2)

fXyljkWy dk 'kks/ku fuokZr vkalouf/ }kjk fd;k tkrk gSA

56. (1) **[NCERT 355]**

$$\% C = \frac{12}{44} \times \frac{\text{wt. of } CO_2(g)}{\text{wt. of org. comp.}} \times 100$$

$$\% C = \frac{12}{44} \times \frac{0.147}{0.2} \times 100 = 20.04$$

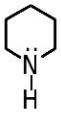
$$\% H = \frac{2}{18} \times \frac{\text{wt. of } H_2O(g)}{\text{wt. of org. comp.}} \times 100$$

$$\% H = \frac{2}{18} \times \frac{0.12}{0.2} \times 100 = 6.67$$

$\% O = 100 - (\%C + \%H)$

$= 73.29 \%$

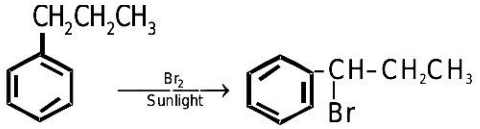
57. (3) **[NCERT 395]**

Strongest base is 

58. (4) **[Mod. CBSE]**

When the two groups in a benzene ring direct differentially i.e. belong to o/p directing and m-directing, then o/p directing group takes prodominant.

59. (4) **[NCERT 393]**



60. (3) **[NCERT 375]**

Due to ortho effect ($o\text{-}O_2NC_6H_4COOH$) will be strongest acid.

61. (4) **[NCERT 341]**

2-Cyclopropyl butane

Optically active due to presence of chiral carbon atom.

62. (4) **[NCERT 138]**

at constant volume $\frac{P_1}{T_1}=\frac{P_2}{T_2}$

putting the values $T_2 = 900\ K = 627^0C$

Hence temperature must exceeds this value for brusting of tube.

63. (2) **[Mod. CBSE]**

$$\lambda = \frac{h}{mv} = \frac{6.63\times10^{-34}}{10\times10^{-6}\times100}$$

$= 6.63\times10^{-31}\ m$

64. (4)

Partial pressure ratio = molar ratio.

65. (3) **[NCERT 21]**

By using the formula

$$\text{Density} = M\left[\frac{1}{m}+\frac{\text{mol. wt. of solute}}{1000}\right]$$

66. (2) **[NCERT–225]**

$$2\,NO + Br_2 \rightleftharpoons 2NO\,Br$$

t = 0 0.087 0.0437 0

t = eq (0.087 – 2x) (0.0437 – x) 2x

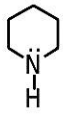
$2x = 0.0518 \Rightarrow x = 0.0259$ mol

Equilibrium amount of NO $= 0.087 - 2x$

$= 0.087 - 0.0518$

$= 0.0352$ mol

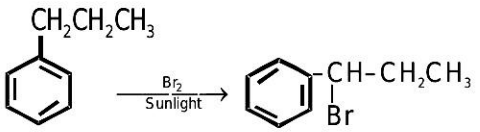
57. (3) **[NCERT 395]**

lokZd {kkj;  gksrk gSA

58. (4) **[Mod. CBSE]**

vkWDlhdkjh lewg ,oa eè; fn'kk ds lewg ds fo:) fofHkUu dsUnzksa dks fuxZeu djrs gSaA

59. (4) **[NCERT 393]**



60. (3) **[NCERT 375]**

vkWFkksZ izHkko ds dkj.k ($o\text{-}O_2NC_6H_4COOH$) lcls vf/d vEyh; gksrk gSA

61. (4) **[NCERT 341]**

2-lkbDyksizksihy C;wVsu esa dkcZu ijek.kq dkbjy gksrk gSA

62. (4) **[NCERT 138]**

fu;rkad vk;ru ij $\frac{P_1}{T_1}=\frac{P_2}{T_2}$

$T_2 = 900\ K = 627^0C$

63. (2) **[Mod. CBSE]**

$$\lambda = \frac{h}{mv} = \frac{6.63\times10^{-34}}{10\times10^{-6}\times100}$$

$= 6.63\times10^{-31}\ m$

64. (4)

vkn'kZ nkc vuqikr = eksyj vuqikr

65. (3) **[NCERT 21]**

lkUnzrk xq.kkad

$$\text{?kuRo} = M\left[\frac{1}{m}+\frac{\text{mol. wt. of solute}}{1000}\right]$$

66. (2) **[NCERT–225]**

$$2\,NO + Br_2 \rightleftharpoons 2NO\,Br$$

t = 0 0.087 0.0437 0

t = eq (0.087 – 2x) (0.0437 – x) 2x

$2x = 0.0518 \Rightarrow x = 0.0259$ mol

NO dh lkE;koLFkk ij ek=kk $= 0.087 - 2x$

$= 0.087 - 0.0518$

$= 0.0352$ mol

67. (3) **[NCERT-219]**

$$pH = 7 + \frac{1}{2}pK_a - \frac{1}{2}pK_b$$

$$= 7 + \frac{1}{2}[4.80 - 4.78] \qquad = 7.01$$

68. (1) **[NCERT 55]**

Fe = 26, $3d^6 4s^2$

69. (4) **[NCERT 15]**

% loss of H_2O in one mole of $Na_2SO_4.xH_2O$

$$\frac{18 \times 100}{142 + 18x} = 55.9$$

x = 10

70. (4) **[NCERT 220]**

Factual

71. (3) **[Mod. CBSE]**

$$N_1V_1 + N_2V_2 + N_3V_3 = N(V_1 + V_2 + V_3)$$

$$\frac{1}{2} \times 10 + \frac{1}{10} \times 50 + \frac{1}{5} \times 100 = N(10 + 50 + 100)$$

$$N = \frac{5 + 5 + 20}{160} = \frac{30}{160} = \frac{3}{16}$$

72. (3) **[NCERT 359]**

$$CH_3CH_2OH \xrightarrow{PCC} CH_3CHO$$

$$CH_3CH_2OH \xrightarrow[300^0C]{Cu} CH_3CHO$$

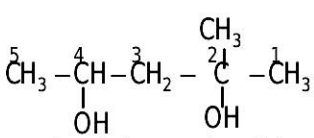
73. (3) **[NCERT 377]**

Reaction A is HBO (Hydroboration)

Reaction B is oxymercuration - demercuration

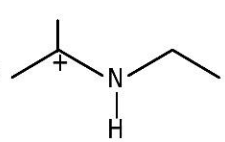
Reaction C is acid catalysed hydration

74. (3) **[NCERT 335]**



2-Methylpentane-2, 4-diol

75. (3) **[NCERT 342]**

Most stable carbocation is 

76. (3) **[NCERT 380]**

$CH_3COCH_3 \rightarrow CH_3CH_2CH_3$ – HI/red P

$CH_3CH_2Br \rightarrow CH_2{=}CH_2$ – KOH (alc.)

$C_6H_5COOH \rightarrow C_6H_6$ – Sodalime

$C_2H_5Br \rightarrow C_4H_{10}$ – Na / dry ether

67. (3) **[NCERT-219]**

$$pH = 7 + \frac{1}{2}pK_a - \frac{1}{2}pK_b$$

$$= 7 + \frac{1}{2}[4.80 - 4.78] \qquad = 7.01$$

68. (1) **[NCERT 55]**

Fe = 26, $3d^6 4s^2$

69. (4) **[NCERT 15]**

1 eks $Na_2SO_4.xH_2O$ est y dhi fr'k gfu

$$\frac{18 \times 100}{142 + 18x} = 55.9$$

x = 10

70. (4) **[NCERT 220]**

rF;

71. (3) **[Mod. CBSE]**

$$N_1V_1 + N_2V_2 + N_3V_3 = N(V_1 + V_2 + V_3)$$

$$\frac{1}{2} \times 10 + \frac{1}{10} \times 50 + \frac{1}{5} \times 100 = N(10 + 50 + 100)$$

$$N = \frac{5 + 5 + 20}{160} = \frac{30}{160} = \frac{3}{16}$$

72. (3) **[NCERT 359]**

$$CH_3CH_2OH \xrightarrow{PCC} CH_3CHO$$

$$CH_3CH_2OH \xrightarrow[300^0C]{Cu} CH_3CHO$$

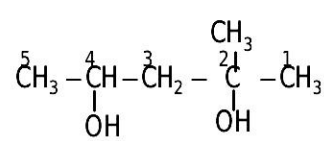
73. (3) **[NCERT 377]**

vfHkØ; kA = HBO (Hydroboration)

vfHkØ; kB = oxymercuration - demercuration

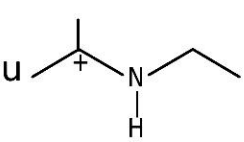
vfHkØ; kC = acid catalysed hydration

74. (3) **[NCERT 335]**



2-Methylpentane-2, 4-diol

75. (3) **[NCERT 342]**

l d sfLFk dkZuk, u 

76. (3) **[NCERT 380]**

$CH_3COCH_3 \rightarrow CH_3CH_2CH_3$ – HI/red P

$CH_3CH_2Br \rightarrow CH_2{=}CH_2$ – KOH (alc.)

$C_6H_5COOH \rightarrow C_6H_6$ – Sodalime

$C_2H_5Br \rightarrow C_4H_{10}$ – Na / dry ether

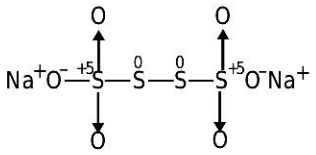
77. (4) **[NCERT 349]**

Factual

78. (4) **[NCERT 179]**

Oxidation number of P in ortho-phosphoric acid is +5.

79. (4) **[NCERT 265]**



80. (4) **[NCERT 142]**

Use $\frac{P_1V_1}{P_2V_2} = \frac{T_1}{T_2}$

81. (1) **[NCERT 85]**

Greatest amount of energy involves in the transformation of $Li^+ \rightarrow Li^{+2} + e^-$

82. (2) **[NCERT 85]**

P have greater IE than S due to half filled E.C.

Mg have greater IE whtn Al due to full filled EC.

83. (1) **[Mod. NCERT]**

84. (1) **[Mod. NCERT]**

Factual

85. (1) **[Mod. NCERT]**

NO_3^- has sp^2– hybridisation while H_3O^+ has sp^3– hybridisation.

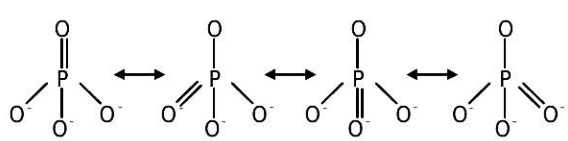
SECTION-B

86. (3) **[Mod. NCERT]**

87. (1) **[NCERT 55]**

d_{z^2} have different shape from other.

88. (3) **[NCERT 101]**



formal charge on each O-atom = Total charge /No. of O-atoms = –3/4 = –0.75 and P–O bond order = Total no. of bonds /Total no. of resonating structures = 5/4 = 1.25.

89. (4) **[NCERT 83]**

The size of anion is greater than its neutral atom.

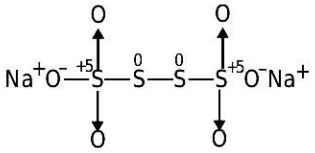
77. (4) **[NCERT 349]**

rF;

78. (4) **[NCERT 179]**

vkFkZ Qi Qsd vEy esP dh vkDVhdj.kl [a;k +5 gA

79. (4) **[NCERT 265]**



80. (4) **[NCERT 142]**

$\frac{P_1V_1}{P_2V_2} = \frac{T_1}{T_2}$

81. (1) **[NCERT 85]**

l dZd Åt kZdh vko'; drk gkSh $Li^+ \rightarrow Li^{+2} + e^-$ ds fy, A

82. (2) **[NCERT 85]**

P dh S l s IE T; k rk gkSh gSvk/ kHjs gq vkfcZy ds dkj.k

Mg dh IE l s T; k rk gkSh gSi jsHjs gq vkfcZy ds dkj.k

83. (1) **[Mod. NCERT]**

84. (1) **[Mod. NCERT]**

rF;

85. (1) **[Mod. NCERT]**

$NO_3^- \rightarrow sp^2$

$H_3O^+ \rightarrow sp^3$

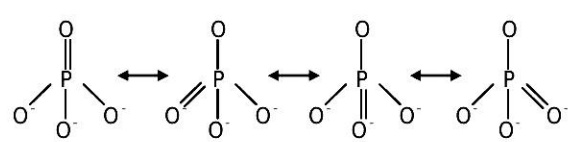
SECTION-B

86. (3) **[Mod. NCERT]**

87. (1) **[NCERT 55]**

d_{z^2} dk vkdkj cfd l c l s fofHku gA

88. (3) **[NCERT 101]**



O-i jekkqj vkSpkfjd vkosk = dqy vkosk / O-i jekkqvk dh l [a;k

= –3/4 = –0.75

cU/ dkSV = dqy cU/ dh l [a;k / dqy vuqkn l ;pukvk dh l [a;k

= 5/4 = 1.25.

89. (4) **[NCERT 83]**

½ k, u dkU;W u i jekkq s cM+k gA

90. (3) **[NCERT 116]**

In P_4 molecule phosphorous is sp^3 hybridised so percentage p-charactor will be 75%.

91. (1) **[NCERT 122]**

NO , total number of electron = 15

Molecular electronic configuration =

$\sigma 1s^2 \sigma^* 1s^2\ \sigma 2s^2\ \sigma^* 2s^2\ \sigma 2p_z^2\ \pi 2p_x^2\ \pi 2p_y^2\ \pi^* 2p_x^1$

92. (4) **[NCERT 197]**

On long standing bleaching power decomposes as

$CaOCl_2 \rightarrow CaCl_2 + Ca(ClO_3)_2$

93. (2) **[NCERT 317]**

SnO_2 is amphoteric in nature while PbO_2 is basic and SiO_2 and CO_2 is acidic.

94. (2) **[NCERT 295]**

$2Na + O_2 \rightarrow Na_2O_2$

95. (4) **[NCERT 295]**

It is fact

96. (2) **[NCERT 301, CBSE 2007]**

Thermal stability of carbonates increases in a group as we move from top to bottom and decreases in a period as we move from left to right. So, the correct order of thermal stability of given carbonates is :

$BeCO_3 < MgCO_3 < CaCO_3 < K_2CO_3$

Be, Mg and Ca belongs to IInd group while K belongs to 1st group.

97. (1) **[NCERT 311]**

Correct order of Lewis acid character will be

$BI_3 > BBr_3 > BCl_3 > BF_3$ This is due to ability to form back bonding.

98. (2) **[NCERT 312]**

It can be prepared by acidifying an aqueous solution of borax, It has a layer structure in which planer BO_3 units are jointed by H-bonding, It is highly soluble in hot water

99. (3) **[NCERT 319]**

On going down the group compounds in +2 oxidation state become more stable due to inert pair effect.

100. (3) **[NCERT 317]**

Fullerenes are cage-like molecules, while thermodynamically most stable alotropic form of carbon is graphite.

90. (3) **[NCERT 116]**

P_4 v.kq esa QkLQksjl dk ladj.k sp^3 gSrFkk izfr'kr p-xq.k =75%.

91. (1) **[NCERT 122]**

NO ,dq y byS VªkWfud la[;k=15

vkf.od byS VªkWfud foU;kl =

$\sigma 1s^2 \sigma^* 1s^2\ \sigma 2s^2\ \sigma^* 2s^2\ \sigma 2p_z^2\ \pi 2p_x^2\ \pi 2p_y^2\ \pi^* 2p_x^1$

92. (4) **[NCERT 197]**

$CaOCl_2 \rightarrow CaCl_2 + Ca(ClO_3)_2$

93. (2) **[NCERT 317]**

SnO_2 mHk;/eh gSrFkk fuEu dkscd PbO_2 {kkjh;] SiO_2 vkSj CO_2 vEyh; gSA

94. (2) **[NCERT 295]**

$2Na + O_2 \rightarrow Na_2O_2$

95. (4) **[NCERT 295]**

rF;

96. (2) **[NCERT 301, CBSE 2007]**

m"ehr LFkkbZ dkcksZusV dh Åij ls uhps tkus ij fdlh lewg esa ekuksa c<+rk gSA

$BeCO_3 < MgCO_3 < CaCO_3 < K_2CO_3$

97. (1) **[NCERT 311]**

fyfod vEyh; xq.k dk lgh Øe cSl cy ds dkj.k

$BI_3 > BBr_3 > BCl_3 > BF_3$ gksxkA

98. (2) **[NCERT 312]**

;g izr ljanq ukj[kk gSft lesa ealer y BO_3 bdkbZ;k¡ gkbMªkstu cU/ }kjk tqM+h jgrh gSA

99. (3) **[NCERT 319]**

rkih; LFkkbZ Øe esa +2 vkWDlhdj.k la[;k dk LFkkbZRo c<+rk gSA

$SiCl_2 < GeCl_2 < SnCl_2 < PbCl_2$

100. (3) **[NCERT 317]**

iQqysu dkcZu dk lq;ksftr fiatM+ dhrjg gksrk gSA

xzsQkbV dkcZu dk lcls LFkkbZ vijwi gSA

BIOLOGY

SECTION–A – [BOTANY]

101. (2) **[NC-I-14]**

Flora contains the actual account of habitat and distribution of plants of a given area.

102. (1) **[NC-I-17]**

TABLE 2.1 Characteristics of the Five Kingdoms

Characters	Five Kingdoms				
	Monera	Protista	Fungi	Plantae	Animalia
Cell type	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Cell wall	Noncellulosic (Polysaccharide + amino acid)	Present in some	Present (without cellulose) with chitin	Present (cellulose)	Absent
Nuclear membrane	Absent	Present	Present	Present	Present
Body organisation	Cellular	Cellular	Multicellular/ loose tissue	Tissue/ organ	Tissue/organ/ organ system
Mode of nutrition	Autotrophic (chemosynthetic and photosynthetic) and Heterotrophic (saprophytic/parasitic)	Autotrophic (Photosynthetic) and Heterotrophic	Heterotrophic (Saprophytic/ Parasitic)	Autotrophic (Photosynthetic)	Heterotrophic (Holozoic/ Saprophytic etc.)

103. (1) **[NC-I-33]**

The plant body is usually attached to the substratum by a holdfast, and has a stalk, the stipe and leaf like photosynthetic organ – the frond

104. (3) **[NC-I-100]**

Meristematic - Plant tissue

105. (4) **[NC-I-114]**

Green gland is not related to the excretion of cockroach.

106. (3) **[NC-I-218,219,220]**

C_4 plant - Respond higher temperature

C_3 plant – 18 ATP

C_4 plant – 30 ATP

107. (1) **[NC-I-261,262,263]**

Bolus - Buccal cavity

Succus entericus - Maltase

Nucleases - Pancreatic juice

HCl - Oxyntic cell

108. (3) **[NCERT-I-166]**

Cell plate - plants cells

→ Pigeon , sea fan - Animals.

SECTION–A – [BOTANY]

101. (2) **[NC-I-14]**

Ýyksjk fdlh {ks= ds ikni LFkkuksa ds fo'ks"k eas tkudkjh nsrk gSA

102. (1) **[NC-I-17]**

लक्षण	पाँच जगत				
	मॉनेरा	प्रोटिस्टा	फंजाई	प्लांटी	ऐनिमेलिया
कोशिका प्रकार	प्रोकैरियोटिक	यूकैरियोटिक	यूकैरियोटिक	यूकैरियोटिक	यूकैरियोटिक
कोशिका भित्ति	सेलूलोज रहित (म्यूकरोइड) + एमीनो अम्ल	कुछ में उपस्थित	उपस्थित (सेल्यूलोस रहित) काइटिन युक्त	उपस्थित (सेल्यूलोस सहित)	अनुपस्थित
केंद्रक झिल्ली)	अनुपस्थित	उपस्थित	उपस्थित	उपस्थित	उपस्थित
काय संरचना	कोशिकीय	कोशिकीय	बहुकोशिक/ अदृढ़ ऊतक	ऊतक/अंग ऊतकतंत्र	ऊतक/अंग/ अंग तंत्र
पोषण की विधि	स्वपोषी (रसायन संश्लेषी एवं प्रकाशसंश्लेषी) तथा परपोषी (मृतपोषी एवं परजीवी)	स्वपोषी (प्रकाशसंश्लेषी) तथा परपोषी	परपोषी (मृतपोषी एवं परजीवी	स्वपोषी (प्रकाशसंश्लेषी)	परपोषी (प्राणि समभोजी, मृतपोषी इत्यादि)
प्रजनन की विधि	संयुग्मन	युग्मक संलयन एवं संयुग्मन	निषेचन	निषेचन	निषेचन

103. (1) **[NC-I-33]**

gSekVksQ~V & tM+ksa ds fy,

izQ~yM & izdk'k la'ys"k.k

104. (3) **[NC-I-100]**

foHkT;ksa dk ikni Ård gSA

105. (4) **[NC-I-114]**

xzhu xzafFk dk mRlthZu ls dksbZ lacU/k ugha gSA

106. (3) **[NC-I-218,219,220]**

C_4 ikni & vf/d rkieku dh vuqfØ;k

C_3 ikni & 18 ATP

C_4 ikni & 30 ATP

107. (1) **[NC-I-261,262,263]**

cksyl - eq[k xqgk

lDdl ,UVsjdl - eSYVst

U;wDyh;st - vXUk;k'k; jl

HCl - vkWDlhfUVd dksf'kdk,a

108. (3) **[NCERT-I-166]**

dksf'kdk izo/kh&ikni dksf'kdk

dduso;j] lh fQu&tUrq

109. (2) **[NCERT-I-133,134,135,136,137,138,139,140]**

Single membrane bounded structure	=	Lysosome, microbodies, vacuole
Double membrane bounded structure	=	Nucleus, Chloroplasts
Non membrane bounded structure	=	Nucleolus

110. (4) **[NCERT-I-144]**

Classification of amino acids are done on the basis of Nature of R group

→ R group is variable in different amino acids

111. (1) **[NCERT-I-323, 324, 325, 326]**

Reissners membrane	–	Cochlea
Blind spot	–	Photoreceptor cells absent
Tympanic membrane	–	External ear
Sclera	–	Cornea

112.(1) **[NC-I-125]**

Anton Von Leeuwenhoek first saw and described a live cell. Robert Brown later discovered the nucleus.

113.(4) **[NC-I-133-134]**

Golgi apparatus consist of many flat, disc-shaped sacs or cisternae of 0.5 μm to 1.0 μm diameter.

The golgi cisternae are concentrically arranged near the Nucleus.

114. (1) **[NCERT-I-183]**

Imbibition is also diffusion of water along the concentration gradient.

115. (3) **[NCERT-I-196]**

Macronutrients are generally present in plant tissues in large amounts (in excess of 10 mmole Kg –1 of dry matter). The macronutrients include carbon, hydrogen, oxygen, nitrogen, phosphorous, sulphur, potassium, calcium and magnesium. Of these, carbon, hydrogen and oxygen are mainly obtained from CO_2 and H_2O, while the others are absorbed from the soil as mineral nutrition.

Micronutrients or trace elements, are needed in very small amounts (less than 10 mmole Kg –1 of dry matter). These include iron, manganese, copper, molybdenum, zinc, boron, chlorine and nickel.

109. (2) **[NCERT-I-133,134,135,136,137,138,139,140]**

,dy f>Yyh lf?kjh lajpuk	=	ykbZlkseal] fjfDrdk] ekbZdksMªh
nksgjh f>Yyh lf?kjh lajpuk	=	dsUnzd] DyksjksIykLV
f>Yyhjfgr lajpuk	=	dsUnzdk] jkbckslkse] lsLVªksLkse

110. (4) **[NCERT-I-144]**

fofo/ izdkj ds vehuks vEyksa dk oxhZdj.k vkj dkj.k gksrk gSA lewg dh izÑfr ij

R lewg vyx&vyx gksrk gSA vyx&vyx vehuks vEyksa esa

111. (1) **[NCERT-I-323, 324, 325, 326]**

jkbZtus Zf>Yyh	–	dksfd;k
vU/kfcUnq	–	izdk'k xzkgh dksf'kdk,a vuqifLFkr
d.kZ V f>Yyh	–	cká d.kZ
'osr iVy	–	dksfdZdk

112.(1) **[NC-I-125]**

,UVksu oku ywosUgkd us igyh clk, d thfor dksf'kdk dks ns[kk, oa mldk o.kZ fd;k

113.(4) **[NC-I-133-134]**

fLVªdk dk vkdkj 0-5 ekbØkWu ls 1-0 ekbØkWu O;kl dk gksrk gSA

xkWYth dkWEIysDl fLVªdk esa f>Yyh dsUnzd ds pkjksa vksj fLFkr gksrs gSA

114. (1) **[NCERT-I-183]**

vUr%'kks"k.k, d izdkj dk fofo/ gksrk gS tks ty dh xfr lkanzrk izo.krk ij vuqjkr gSA

115. (3) **[NCERT-I-196]**

lwe&iks"kd rRo & Cu, Mn, Ni, Zn, Cl, B, Mo

ojn iks"kd rRo & C, H, O, N, P, K, Mg, S, Ca, Fe

116. (3) **[NCERT-I-196]**

Essential elements that are components of energy-related chemical compounds in plants (e.g., magnesium in chlorophyll and phosphorous in ATP).

117. (4) **[NCERT-I-228]**

There are sufficient reasons to believe that the first cells on this planet lived in an atmosphere that lacked oxygen. Even among present-day living organisms, we know of several that are adapted to anaerobic conditions. Some of these organisms are facultative anaerobes, while in others the requirement for anaerobic condition is obligate.

118. (2) **[NCERT-I-232]**

Also there are three points in the cycle where NAD+ is reduced to NADH +H+ and one point where FAD+ is reduced to FADH2.

119. (2) **[NCERT-I-272]**

Residual volume is greater than tidal volume.

120. (1) **[NCERT-I-262]**

The stomach stores the food for 4-5 hours. The food mixes thoroughly with the acidic gastric juice of the stomach by the churning movements of its muscular wall and is called the chyme. The proenzyme pepsinogen, on exposure to hydrochloric acid gets converted into the active enzyme pepsin, the proteolytic enzyme of the stomach. Pepsin converts proteins into proteoses and peptones (peptides). The mucus and bicarbonates present in the gastric juice play an important role in lubrication and protection of the mucosal epithelium from excoriation by the highly concentrated hydrochloric acid. HCl provides the acidic pH (pH 1.8) optimal for pepsins. Rennin is a proteolytic enzyme found in gastric juice of infants which helps in the digestion of milk proteins. Small amounts of lipases are also secreted by gastric glands.

121. (4) **[NCERT-I-306]**

Each actin (thin) filament is made of two 'F' (filamentous) actins helically wound to each other. Each 'F' actin is a polymer of monomeric 'G' (Globular) actins. Two filaments of another protein, tropomyosin also run close to the 'F' actins throughout its length. A complex protein Troponin is distributed at regular intervals on the tropomyosin. In the resting state a subunit of troponin masks the active binding sites for myosin on the actin filaments.

Each meromyosin has two important parts, a globular head with a short arm and a tail, the former being called the heavy meromyosin (HMM) and the latter, the light meromyosin (LMM). The HMM component, i.e.; the head and short arm projects outwards at regular distance and angle from each other from the surface of a polymerised myosin filament and is known as cross arm. The globular head is an active ATPase enzyme and has binding sites for ATP and active sites for actin.

116. (3) **[NCERT-I-196]**

vfuokZ;rRo tSlsfØ;kRed ;kSfxdksa ds?kVd gSA

i.kZgfjr esaMSXuhf'k;e

,Vhisa;ksQkbVksy

117. (4) **[NCERT-I-228]**

ostho tSlsekurs%vkfnre dksf'kdk;sa vkWDlhtu djrsgSajrqfo'kkV vokLFkkvksesavukWDlh'oh dksf'kdk;sa gSA iQSdyVSfVo ,uSjkscht

118. (2) **[NCERT-I-232]**

$NAD^+ \rightarrow NADH + H^+$ = rhu LFkku

$FAD^+ \rightarrow FADH_2$ = ,d LFkku

119. (2) **[NCERT-I-272]**

Tokjh; vk;ru & 500 - 600 ml/lsdsaM

vofk"V vk;ru & 1100 - 1200 ml/lsdsaM

120. (1) **[NCERT-I-262]**

lSyqykst,somyst & ykbZ

vXukk;h,somyst & vXukk;hjl

,UtkbesVsa,d gekjs'kjhj esaMkbZtsLVkbu,oa,Myksl,sfMgkbMªsV ds:i esa gksrk gSA

121. (4) **[NCERT-I-306]**

rhx;hlHkhi'kSfkyU xfr;ksesalsgk,d gksrhgSA

122. (4) **[NC-I-298]**

Urea is the principal nitrogenous excretory compound in humans in synthesised in liver by ornithine cycle and eliminated by mostly through kidneys.

123. (4) **[NC-I-327]**

Macula and crista are the specific receptors of the vestibular apparatus responsible for maintenance of balance of the body and posture.

124.(1) **[NC-I-60]**

Oviparous mammals - Platypus

Viviparous mammals - Delphinus, Pteropus, Panthera.

125. (4) **[NC-I-58, 59]**

Both (A) and (R) are true and (R) is the correct explanation of (A)

126.(2) **[NC-I-71]**

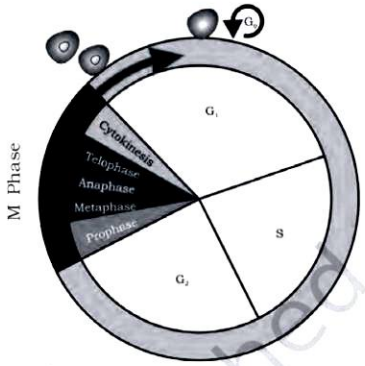
In some plants such as Australian acacia, the leaves are small and short-lived. The petioles in these plants expand, become green and synthesise food.

127. (4) **[NC–I-163]**

The cell cycle divided mainly into two basic phases

→ Interphase

→ M phase (Mitosis phase)



128. (3) **[NC-I-216, 217]**

In calvin cycle first stable product

= 3–carbon compound

= 3–phosphoglyceric acid

In hatch and slack pathway first stable product = 4- carbon compound oxaloacetic acid.

129. (1) **[NC-I-259]**

The inner most layer lining the lumen of the alimentary canal is the mucosa. This layer forms irregular folds (rugae) in the stomach and small finger like folding called villi in the small intestine.

122. (4) **[NC-I-298]**

;wfj;kizsfjkukbVkstu nzO;tUrq esa;dr esa;kfjr
pØ ds}kjk ;kSfxd lajpuk gksrk gSA vkSj T;knkrj oDd ds}kjk
dkj gksrk gSA

123. (4) **[NC-I-327]**

eSD;qyk vkSj fØLVk dsoy Cyy rUrqvksa ds fof'k"V xzkgh gksrs gSa
tks 'kjhj ds larqyu o lghLFkfr ds fy, nzO;jk;h gksrs
gSA

124.(1) **[NC-I-60]**

lyfeuk &vaMs nsus okys Lru/kjh

Mkyfiq] Vsjsl]iVsjksIl &foijhr Lru/kjh

125. (4) **[NC-I-58, 59]**

(A) vkSj (R) nksuksa lgh gSa vkSj (R) lgh O;k[;k gS (A) dk

126.(2) **[NC-I-71]**

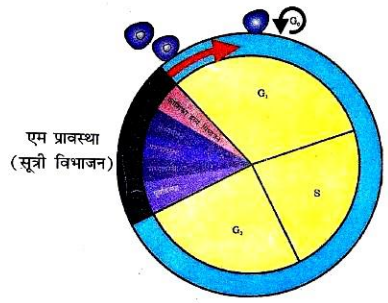
dbZ ikS/kksa esa tSls fd vLVªsfy;u ckscwy] vkSj vYi vk;q ikS/kksa esa
ikS/kksa esa.Mh iÙkh yEch rFkk 'kh?kz fxjus okyh gksrh gSA bu
ikS/kksa esa iÙkh pkSM+h gksdj gjk gks tkrk gS rFkk dk;Z djrk gSA
mudk Hkkstu&fuekZ.k djrk gSA

127. (4) **[NC–I-163]**

dksf'kdk pØ dks eq[;r% nks ewy izkoLFkkvksa esa foHkkftr
fd;k tk ldrk gSA

→ vUrjkoLFkk

→ M izkoLFkk (lekos'kh izkoLFkk)



128. (3) **[NC-I-216, 217]**

dSfou pØ dk izFke

= 3&dkcZu ;kSfxd 3&fQkLQksfXyljhd vEy

LFkk;h mRikn 3&dkcZu ;kSfxd

gSA ,oa Lyscs pØ dk = vkWDlSyksflVhd vEy

izFke LFkk;h mRikn 4&dkcZu ;kSfxd

129. (1) **[NC-I-259]**

vkgkjuky dh Hkhrjh lrg esa dksf'kdk gksrh gSA ;g ijr vkarfjd
eaQ;qfjQsjl ;qDr ykbfuax (j;wxk) vkSj vkarjaxh
esa vuqn?kZ.k ;qDr vkUrjLrj gksrh gSA

130. (1) **[NC-I-304]**

The correct sequence of organisation of skeletal muscles is myofibrils → Muscles fiber → Fascicles → Skletal muscle.

131. (3) **[NCERT-I-248]**

In most higher plants, the growing apical bud inhibits the growth of the lateral (axillary) buds, a phenomenon called apical dominance.

132. (1) **[NCERT-I-332, 333, 334]**

Gonadocorticoids	–	Adrenal cortex
Melatonin	–	Pineal gland
PRL	–	Anterior pituitary
Vasopressin	–	Posterior pituitary

133. (2) **[NCERT-I-284]**

SA Node → AV node → Bundle of his → Purkinje fiber → Heart muscle

134. (4) **[NEET 2017]**

Myelin sheath is produced by schwann cells in PNS and oligodendrocytes in CNS.

135.(2) **[NCERT-I-17]**

The three-domain system has also been proposed that divides the Kingdom Monera into two domains, leaving the remaining eukaryotic kingdoms in the third domain and thereby a six kingdom classification. You will learn about this system in detail at higher classes

SECTION–B – [BOTANY]

136. (1) **[NCERT-I-26]**

Viruses cause diseases like mumps, small pox, herpes and influenza. AIDS in humans is also caused by a virus.

All of us who have suffered the ill effects of common cold or 'flu' know what effects viruses can have on us, even if we do not associate it with our condition.

137.(1) **[NCERT-I-57]**

Members of chondrichthyes, and osteichthyes are unisexual

Exocoetus - Osteichthyes

Scoliodon - Chondrichthyes

138. (1) **[NCERT-I-81]**

This floral diagram belongs to family Liliaceae.

130. (1) **[NC-I-304]**

dadk; isf'k;ksa dh laxBu dk lgh Øe gS

iS'kqrarq → iS'kq rarq → ifjn`;dk vkSj → dadky iS'kq;

131. (3) **[NCERT-I-248]**

vf/dkad mPp ikni ksa esa ¼djhb vxzLFk dfydk {kSfrt dfy;ksa dh o`f¼ dks jksdrk gSd ?kVuk dks dgrs gSA f'k[kkxz izHkqrk

132. (1) **[NCERT-I-332, 333, 334]**

xksuSMksdkWfVZdkW bM - ,Mªhuy dkVZDl

esyksVksfuu - ikbfu;y xzafFk

PRL - vxzfi Vqvjh

okWlksizsflu - i'p fi Vqvjh

133. (2) **[NCERT-I-284]**

SAN → AVN → fgl caMy → iqdathtsrarq → ân; isf'k

134. (4) **[NEET 2017]**

ek;fyu vkoj.k dk fuekZk PNS esa ok dksf'kdk ds }kjk vkSj vkWfyxksMsaMªkblkbV }kjk CNS esa gksrk gSA

135.(2) **[NCERT-I-17]**

N% txr oxZ dk ifjdYiuk esa ekWjsYl dks ikap Hkkxksa esa dkVk x;k Fkk

SECTION–B – [BOTANY]

136. (1) **[NCERT-I-26]**

dkbZ l fur jksx tSls eqaxQyh] psprd] gfjZ] ,M~l

137.(1) **[NCERT-I-57]**

,DlksVl vkSj LdkWfy;ksMku Øe'k% dfyaxh] dfyaxhgS

138. (1) **[NCERT-I-81]**

fn;k x;k fp=k fyfy, lhdyl dk gS

bl fiQyl vkWFk

Xyksfj;kslk ls Hkh fuf/Zr

fyfyaxh] DvwuLFkSVsfl;l

139. (1) **[NCERT-I-214-215]**

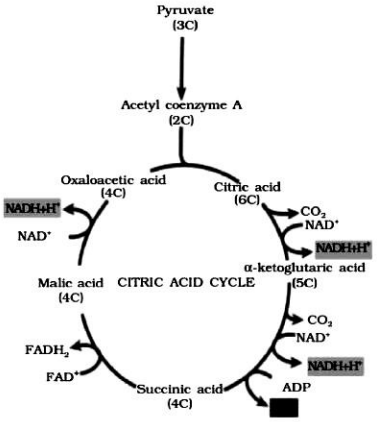
Hence, within the chloroplast, protons in the stroma decrease in number, while in the lumen there is accumulation of protons. This creates a proton gradient across the thylakoid membrane as well as a measurable decrease in pH in the lumen.

The ATPase enzyme consists of two parts: one called the F_0 is embedded in the membrane and forms a transmembrane channel that carries out facilitated diffusion of protons across the membrane. The other portion is called F_1 and protrudes on the outer surface of the thylakoid membrane on the side that faces the stroma. The break down of the gradient provides enough energy to cause a conformational change in the F1 particle of the ATPase, which makes the enzyme synthesise several molecules of energy-packed ATP.

140. (1) **[NCERT-I-230]**

In both lactic acid and alcohol fermentation not much energy is released; less than seven per cent of the energy in glucose is released and not all of it is trapped as high energy bonds of ATP.

141. (1) **[NCERT-I-232]**



142. (3) **[NCERT-I-249]**

Gibberellins promote synthesis of α-amylase this enzyme converts stored carbohydrates into simple sugar are mobilised.

143. (3) **[NCERT-I-268]**

Lower invertebrates like sponges, coelenterates, flatworms etc exchange of O_2 with CO_2 by simple diffusion over their entire body surface.

139. (1) **[NCERT-I-214-215]**

dsoy;kseSVl dsvUnj gkbMªkstu dh la[;k de gksrh gS

(a) LokbZ esa gkbMªkstu de gksrk gS

(b) LokbZ esa pH dk c<+rk gqvk

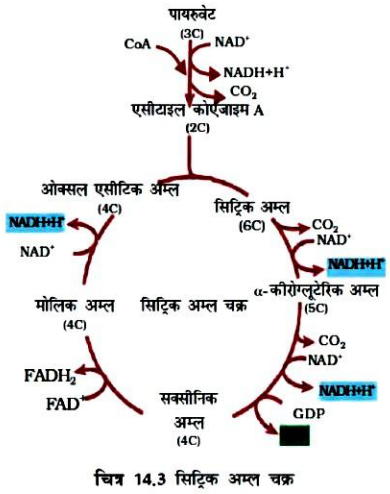
(c) ,Vhihlsl dk F$_1$ Hkkx dyk esa .kd cukrk gS

(e) izksVkWu dk la'ys"k.k gksrk gS

140. (1) **[NCERT-I-230]**

Xyqdksl ds ySfDVd vEy vkSj ,Ydksgy fd.ou ds i'pkr~ Hkh vf/kdka'k ÅtkZ eqDr ugha gksrh gSA

141. (1) **[NCERT-I-232]**



चित्र 14.3 सिट्रिक अम्ल चक्र

142. (3) **[NCERT-I-249]**

dhV vo:/kdksa dk izHkkoh la;qDr Hkkstu ftCcsfyu }kjk xeu djrk gSA

143. (3) **[NCERT-I-268]**

O$_2$ dk CO$_2$ ds lkFk vkdkuSizdkj lk/kj.k fofo/k.kds }kjk iwjs 'kjhj dh lrg ij ikl[kr gksrk gS

fuEu vd'ks:dh tUrqvksa fd lkalk] pi Vsfe] fyaVsoekZ esa

144. (2) **[NCERT-I-274]**

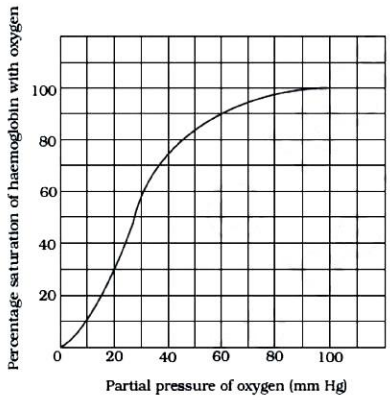


Figure 17.5 Oxygen dissociation curve

145. (3) **[NCERT-I-280, 285, 287]**

Stroke volume - 70 ml

Duration of cardiac cycle – 0.8 second

Monocytes – 6-8%

146. (1) **[NCERT-I-340]**

Progesterone, Androgens, Aldosterone, cortisol – Steroidal hormone

- Remaining are peptide hormone.

147. (2) **[NCERT-I-197]**

Nitrogen	–	Nucleic acids
Phosphorus	–	Nucleic acids
Calcium	–	Mitotic spindle
Sulphur	–	Ferredoxin

148. (3) **[NCERT-I-24]**

Member of deuteromycetes are called imperfect fungi. e.g. Alternaria, Colletotrichum, Trichoderma.

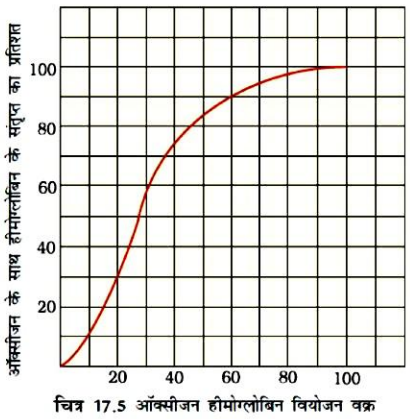
149. (4) **[NCERT-I-247]**

Adenine derivative	–	Kinetin
Terpenes derivatives	–	Gibberellic acid
Gaseous hormone	–	Ethylene
Carotenoide derivative	–	Abscisic acid

150. (4) **[NCERT-I-250]**

Ethylene the respiration rate during ripening of the fruits. This rise in rate of respiration is called respiratory climactic.

144. (2) **[NCERT-I-274]**



चित्र 17.5 ऑक्सीजन हीमोग्लोबिन वियोजन वक्र

145. (3) **[NCERT-I-280, 285, 287]**

a.	vfrruko	–	160/90 mm Hg
b.	izkgo vk;ru	–	70 feyhjDr
c.	ân pØ dh vof/	–	0.8 lsds.M
d.	ân fudkl	–	5000 feyh

146. (1) **[NCERT-I-340]**

LVsjkWbM gkeksZu&izkstsLVsjksu] dkVhZdksLVsjkWu, ,YMksLVsjksu

isIVkbM&ANF, GIP, CCK, xSLVªu] Xyqdkxksu

147. (2) **[NCERT-I-197]**

ukbVªkstu	–	U;wfDyd vEy
fQkLQksjl	–	U;wfDyd vEy
dSfY'k;e	–	lsfy;ksjdz
lYQj	–	izksVhu

148. (3) **[NCERT-I-24]**

M;wVsjksekblhVl ds lanHkZ esa vi wkZ dod dgk tkrk gSA

mnkgj.k& VªkbdksMekZ

149. (4) **[NCERT-I-247]**

,Mhuhu O;qRiUu	–	dkbusfVu
VsjsihUl O;qRiUu	–	ftcjsfyd vEy
xSlh;l gkeksZu	–	,fFkyhu
dSjksVhukbM dk O;qRiUu	–	,cfl fld vEy

150. (4) **[NCERT-I-250]**

,fFkyhu iQyksa ds ikdus ds nkSjku 'olu dh xfr dh nj esa o`f) djrk gSA 'olu xfr esa o`f) dks DykbesfDVd 'olu dgrs gSA

SECTION–A – [ZOOLOGY]

151. (4) **[NCERT-I-293]**

The Malpighian corpuscle, PCT and DCT of the nephron are situated in the cortical region of the kidney whereas the loop of Henle dips into the medulla. In majority of nephrons, the loop of Henle is too short and extends only very little into the medulla. Such nephrons are called cortical nephrons. In some of the nephrons, the loop of Henle is very long and runs deep into the medulla. These nephrons are called juxta medullary nephrons

152. (1) **[NCERT-I-336, 327]**

During earthquakes the hormones adrenaline and noradrenaline increases the heart beat, the strength of heart contraction and the rate of respiration.

- Catecholamines also stimulates the breakdown of glycogen resulting in an increased concentration of glucose in blood in addition they also stimulate the breakdown of lipids and proteins.

153. (4) **[NCERT-I-334, 335]**

Thymus gland - Thymosine

154. (1) **[NCERT-I-317]**

The multipolar neuron's contains one axon and two or more dendrites.

155. (2) **[NCERT-I-321]**

Reptiles, birds, mammal - 12 pair cranial nerves

- Corpus callosum are unique feature of mammalian brain.
- Amphibia – 10 pair cranial nerves.

156. (2) **[NCERT-I-307]**

The junction between a motor neuron and the sarcolemma of the muscle fibre is called the motor end plate

157. (3) **[NCERT-I-279]**

Albumin helps in maintenance of osmotic pressure

Glucose is present in plasma

Serum does not clot

Lymph is a connective tissue

158. (3) **[NCERT-I-291]**

Protonephridia or flame cells are the excretory structures in Platyhelminthes (Flatworms, e.g., Planaria), rotifers, some annelids and the cephalochordate – Amphioxus.

SECTION–A – [ZOOLOGY]

151. (4) **[NCERT-I-293]**

→ tDlVk&eSMyihuisQuesacNkgsysyiwgksskgSA

→ ihMhvnvkSMhvhoDd dsoYdvqHkk esaLFkr gksgSA

→ dkssLkbZ;q dsvUrj Xyksssyl gksskgSA

152. (1) **[NCERT-I-336, 327]**

HkwdEi dsle; ,Mzsukyhu vkSj ukj,Mzsukyhu ân; Lian dks ân; ladqpu dh{krk dks'olu dh nj dksc<+krk gSA

- dSVsdksykehu Xyksdksu dsVwVus dksizsfjr djrk gSA ftlls jDr esaXywdksl dh ek=kk c<+krk gSAbl dsvykok fyfiM-vkSjizksVhu dsVwVus dksHkh izsfjr djrk gSA

153. (4) **[NCERT-I-334, 335]**

Fkkbel xzafFk & Fkkbelksu

154. (1) **[NCERT-I-317]**

cgqqzqh; U;wjkWu,d ,Dlku vkSjnks vFkokf/d MsaMªkbV j[krk gSA

155. (2) **[NCERT-I-321]**

ljhlìi]i{kh]Lru/kjh&12 tksM+h dikyh dhuls

- dkWiZl dSyksle Lru/kjh dsfo'ks"krk gSA;g y{k.k gSA
- mHk;pj&10 tksM+h dikyh dhuls

156. (2) **[NCERT-I-307]**

ijs rafdk vkSj isf'k;ksa dsfdlh Zeksa dsdsanzLFky dks ijs vUr;QyddgrsgSA

157. (3) **[NCERT-I-279]**

→ ,Yca qeu ijkt.k nkc dksfu;fU=kr djrk gS

→ Xyqdksl ylhZ rekesa miflFkr gS

158. (3) **[NCERT-I-291]**

fli{kkgsfeaUFkhZeavkfnDdd mRlt Zjapukik,sht kkrk gSA

159.(4) **[NCERT-I-31-36]**

I - Volvox, II-porhyra, III-Female thallus of marchantia

IV-Ginkgo

Volvox, porphyra - Algae

Female thallus of marchantia - Bryophytes

Ginkgo - Gymnosperm

Cryptogams - Algae, Bryophyte, Pteridophyte

Porphyra are members of rhodophyceae they are produced non flagellates male gamete

→ All plants containes chlorophyll a

→ Marchantia - Haplodiplontic life cycle

→ Volvox, porphyra - Haplontic life cycle

→ Ginkgo - Diplontic life cycle

160. (3) **[NCERT-I-38]**

One of the gymnosperms, the giant redwood tree Sequoia is one of the tallest tree species. The roots are generally tap roots. Roots in some genera have fungal association in the form of mycorrhiza (Pinus), while in some others (Cycas) small specialised roots called coralloid roots are associated with N_2-fixing cyanobacteria. Mycorrhiza are symbiotic association.

In Mycorrhiza fungi are associates with root of pinus and in cycas cyanobacteria are associates these association are symbiotic. Fungi are heterotrophic and cyanobacteria are autotrophic organism.

161.(2) **[Modified NEET]**

Cryptogams – Hidden sex organ bearing plant.

Phanerogams – visible sex organs bearing plant.

Algae, Bryophyta, Pteridophyta - cryptogams

Gymnosperm, Angiosperms - Phanerogams

162. (2) **[NCERT-I-11]**

TABLE 1.1 Organisms with their Taxonomic Categories

Common Name	Biological Name	Genus	Family	Order	Class	Phylum/ Division
Man	*Homo sapiens*	*Homo*	Hominidae	Primata	Mammalia	Chordata
Housefly	*Musca domestica*	*Musca*	Muscidae	Diptera	Insecta	Arthropoda
Mango	*Mangifera indica*	*Mangifera*	Anacardiaceae	Sapindales	Dicotyledonae	Angiospermae
Wheat	*Triticum aestivum*	*Triticum*	Poaceae	Poales	Monocotyledonae	Angiospermae

163. (1) **[NCERT-I-104]**

Outer ear joint	–	Cartilage
Blood formation	–	Bone marrow
Biceps	–	Voluntary
Cardiac	–	Involuntary

159.(4) **[NCERT-I-31-36]**

I&dkyodkWV] II&iksfQjk III&ekjdsafUk;kdsdkedkdkHkkx] IV&fxadxks

I, II&'kSoky

III&dkbZdksfQVs

IV&fteEuksLieZ

fØVksxSe &'kSoky] dkbZdksfQVs] VsjhMksfQVs

iksfQjk fjtkbMksfQVs dh dkfL;; gSA;s vpyu'khy ujt ;qDr dkfuekZdkdjrk gSA

→ lHkh ikS/kksa esDyksjksfQy a j[krs gSA

→ dkyodkWV] iksfQjk&gsyksLVd thou pØ

→ ekjdsafUk;k&gsyksSMyksLVd thou pØ

→ fxadxks&fMyksLVd thou pØ

160. (3) **[NCERT-I-38]**

→ fldksdkvuksckscM+ dh dkfl;ksa esa cgqdkfjr gSA

→ dod eww(ekodksdgrs gSa fla;kVd thou gSA

161.(2) **[Modified NEET]**

fØVksxSe &fNikssa esa tuukaa j[kusokys ikni

iQwyksa esa &Li"Vfr[k;h lsDlqvy tuukaa j[kusokys iknk

'kSoky] dkbZdksfQVs] VsjhMksfQVs&fØVksxSe

fteEuksLieZ, fuR;gfjr&iQwyksa esa

162. (2) **[NCERT-I-11]**

तालिका 1.1 वर्गिकी सवर्ग सहित कुछ जीव

सामान्य नाम	जैविक नाम	वंश	कुल	गण	वर्ग	संघ/भाग
मानव	*होमो सेपियन्स*	*होमो*	होमोनिडी	प्राइमेट	मेमेलिया	कॉर्डेटा
घरेलू मक्खी	*मस्का डोमस्टिका*	*मस्का*	म्यूसीडी	डिप्टेरा	इंसेक्टा	आर्थ्रोपोडा
आम	*मेंजीफेरा इंडिका*	मेंजीफेरा	एनाकार्डिएसी	सेपिन्डेल्स	डाइकोटीलिडनी	एंजियोस्पर्मी
गेहूँ	*ट्रीटीकम एस्टीवम*	ट्रीटीकम	पोएसी	पोएलस्	मोनोकोटीलिडनी	एंजियोस्पर्मी

163. (1) **[NCERT-I-104]**

(a) dkuds~d.kZ fU;	(iii)	nhkLFk
(b) jDr fuekZk	(iv)	vfLFkeTtk
(c) f}f'kjLdk	(ii)	,fiFkd
(d) ân;	(i)	vuSfPNd

164. (3) **[NCERT-I-144, 145]**

Option 3 is the correct answer of the question as correct matching are

Fatty acid – Palmitic acid

Phospholipid – Lecithin

Aromatic amino acid – Tryptophan

Acidic amino acid – Glutamic acid

165. (4) **[NCERT-I-159]**

Protein portion of the enzymes is called the apoenzyme. non-protein constituents called cofactors Three kinds of cofactors may be identified: prosthetic groups, co-enzymes and metal ions.

166. (4) **[NCERT-I-262]**

Both (A) and (R) are true and (R) is the correct explanation of (A)

167. (3) **[NCERT-I-68-71]**

a, b – tap root modification

→ h - Phylloclade of opuntia

Aerial modification of stem.

It is phylloclade for photosynthesis.

168. (4) **[NCERT-II-23, 26,27]**

→ Vegetative cell, generative cell present in pollen grain

→ All nuclei in embryosac are haploid

169. (3) **[NCERT-I-265,266]**

Vomit centre - Medulla

170. (4) **[NCERT-I-310,311]**

Coxal bone - Pelvic girdle

Pelvic girdle are included in the appendicular skeleton

Total fore limbs bone - 60

Total hind limbs bone - 60

164. (3) **[NCERT-I-144, 145]**

(a) dh;n vEy (iv) ikYekfVd vEy

(b) iQkLQksfyfiM (iii) yslsFkhu

(c) ,jkseSfVd vehuksvEy (ii) fVªIVkiQsu

(d) vEyh;n vehuksvEy (i) XywVkfed vEy

165. (4) **[NCERT-I-159]**

i. gkyksavke=,ikssavke+lgdkjd

ii. gkyksavke=,ikssavke+lg,takbe

iii. gkyksavke=,ikssavke+/kkrqvk;u

iv. gkyksavke=,ikssavke+izkslfFkfld leqg

166. (4) **[NCERT-I-262]**

(A) vkSj (R) nksuksa lgh gSa vkSj (R) lgh O;k[;k gS (A) dh

167. (3) **[NCERT-I-68-71]**

→ a, b– ewykt Mªsd:i gksrs gSaA

168. (4) **[NCERT-II-23, 26,27]**

dk;d dksf'kdk] tuu dksf'kdk ijkx.k esa ik;h tkrh gSA

dk;d dksf'kdk vkS,UVhiksMy dksf'kdk dh ihyk;,Mh eku gS

Hkzw.k dksf'kdk dh lHkh dksf'kdk,a gsyksfVMsM gksrh gSA

169. (3) **[NCERT-I-265,266]**

oeu dsUnz & esMyyk

170. (4) **[NCERT-I-310,311]**

(1) dqy vxzinksa dh vfLFk & 60

(2) dqy i'pinksa dh vfLFk & 60

(3) Jksfण vfLFk & nhikdkj dadky

(4) LdSiqyk & vaesyyk

171. (4) **[NC-I-127]**

The prokaryotic cells are represented by bacteria, blue-green algae, mycoplasma and PPLO (Pleuro Pneumonia Like Organisms). Yeast is a unicellular fungus.

172. (3) **[NC-I-134]**

The isolated lysosomal vesicles have been found to be very rich in almost all types of hydrolytic enzymes (hydrolases – lipases, proteases, carbohydrases) optimally active at the acidic pH.

173. (3) **[NC-I-134]**

Tonoplast is differentially permeable membrane surrounding the Vacuole.

174. (3) **[NC-I-169]**

The simultaneous splitting of the centromere of each chromosome occur in Anaphase II.

175. (2) **[NCERT-I-285]**

SA node is called as pace maker

Atrial systole causes 30% ventricular filling

Cardiac output depends on ventricular filling

Blood pumped during a cardiac cycle is stroke volume.

176. (4) **[NCERT-I-211]**

The reaction centre is different in both the photosystems. In PS I the reaction centre chlorophyll a has an absorption peak at 700 nm, hence is called P700, while in PS II it has absorption maxima at 680 nm, and is called P680.

177. (3) **[NC-I-110]**

Ciliated epithelium found in fallopian tube

Three types of cell junctions are found in the epithelium and other tissues

Neural tissue exerts the greatest control over the body's responsiveness to changing conditions

The simple squamous epithelium is made of a single thin layer of flattened cells

178. (4) **[NC-I-108]**

True regarding blood vascular system of Pheretima

(1) Contraction keep blood circulation in one direction only

(2) Smaller blood vessels supply blood to gut, nerve cord and body wall

(3) Haemoglobin is dissolved in blood plasma and blood cells are phagocytic in nature

171. (4) **[NC-I-127]**

;hV ikSVksfl;kdksa esa lfEefyr fd;k tkrk gSA

172. (3) **[NC-I-134]**

ykblkslkse esa fufgr ,atkbekadksa dk vR;f/kd ekzk esa ikbZ xbZ gS

173. (3) **[NC-I-134]**

VksuksIykLV ,d foHksnd ikjxE; f>Yyh gksrh gS tks dsoy jl/kkuh ?kqlrk gSA

174. (3) **[NC-I-169]**

izR;sd xq.klw=d ds xq.klw=fcUnq'pkoLFkk II esa vyx gksus ykrs gSA

175. (2) **[NCERT-I-285]**

(a) S.V. izoZdks{ksi.k dgykrk gSA

(b) vfyan izdqapu 30% fuy; dks Hkjrk gSA

(c) â n; fudkl fuy;hHkkoh ij fuHkZj djrk gSA

(d) ,d â n; pØ ds nkSjku iEi fd;s tkus okys jDr izek.k dks vk;ru dgykrk gSA

176. (4) **[NCERT-I-211]**

vfHkfØ;k dsUnzksa ds fo"k; esa lR; gS

(1) vfHkfØ;k dsUnzDyksjksfQy 'a' dk ,dy v.kq gSA

(2) nksuksa iSQ~lhLVe esa vfHkfØ;k dsUnzHkUu gksrs gSA

177. (3) **[NC-I-110]**

(1) 'kdhmidyk jDr dksf'kdkvksa esa ik;h tkrh gSA

(2) midyk esa rhu izdkj dh lfV ik;h tkrh gSA

(3) rafdkvksa dh eq[; :i ls fjofrZ vo;oksa ds ckgj 'kjhj dh vuSfPN;k Hkjyrk ds fu;a=.k ds fy;s mRrjnk;h gksrs gSA

(4) ljy 'kdhmidyk,d dksf'kdkvksa dh lrg dh cuh gksrh gSA

178. (4) **[NC-I-108]**

iQsfVek ds jDr ifjlapj.k rU= ds lUnHkZ esa lgh gS

(1) ladqpu jDr ifjlapj.k dks,d fn'kk esa cuk;s j[krk gSA

(2) NksVh jDr dksf'kdk jDr dks vkgkj nsus ds fy, vkarfjd vax dks 'kjhj fHkfRr esa vkiwfrZ djrk gSA

(3) fgeksXyksfcu jDr ydZ rekesa ?kqyk gksrk gS vkSj jDr dksf'kdk iQsxksflVksa }kjk fr dh tkrh gSA

179. (4) **[NC-I-120]**

c and d true

consist of a pair of ovary, situated near kidneys. ovaries are not functionally related to kidneys

a pair of ovaiduct opens into cloaca separately. female lays 2500-3000 eggs at a time

180.(1) **[NCERT-I-58-59]**

a.	Snake (Naja)	–	Reptiles
b.	Vulture	–	Birds
c.	Platypus	–	Mammals
d.	Hippocampus	–	Osteichythes

- All are vertebrate
- All are chordate

181. (2) **[NCERT-I-70]**

In leaves a bud is present in the axil of petiole in Simple leaf and Compound leaf.

182. (1) **[NCERT-I-139]**

In case of Acrocentric type of chromosome the centromere is situated close to its end forming one extremely short and one very long arm.

183. (3) **[NCERT-I-58]**

Viper exceptionally viviparous reptiles.

184. (2) **[NCERT-I-273]**

The solubility of CO_2 in blood higher than that of 20-25 times

185. (3) **[NCERT-I-293]**

Vasa recta is a minute vessel of capillaries

SECTION–B – [ZOOLOGY]

186. (1) **[NCERT-I-149, Mod. NEET 2019]**

Heterocyclic compounds in nucleic acids are the nitrogenous bases named adenine, guanine, uracil, cytosine, and thymine. Adenine and Guanine are substituted purines while the rest are substituted pyrimidines. The skeletal heterocyclic ring is called as purine and pyrimidine respectively. The sugar found in polynucleotides is either ribose (a monosaccharide pentose) or 2' deoxyribose. A nucleic acid containing deoxyribose is called deoxyribonucleic acid (DNA) while that which contains ribose is called ribonucleic acid (RNA).

179. (4) **[NC-I-120]**

ekudksa esa o`Dd ds tuu tudksa ds lq>koksa dk lgh le>k tkrk gSA

(a) ,d tksM+k v.Mkk;] o`Dd ds lehi fLFkr vkSj Øe'k% o`Dd :i ls tqM+k gksrk gSA

(b) ,d tksM+k v.Mokguh Dyksdk esa Qsd :i ls [kqyrk gSA vkSj ekudk,d le; esa 2500 & 3000 v.Ms nsrh gSA

(c) fu'kpq ukalk; vkSj ikbFkksu esa fHkUurk n'kkZrs gSA

(d) VsVªkiksy ykoZ dk ,d ty&LFkyh; tUrq ds leku tyh; gksrk gSA

180. (1) **[NCERT-I-58-59]**

a. lkai

b. fx¼

c. ljhl`i

d. fgiksdSEil

A. lHkh ouLifr;k¡ gSA

B. lHkh dkMZsV gSA

181. (2) **[NCERT-I-70]**

iRrh esa dfydk.k dsd{k esa ,d dyh ik;h tkrh gSA

a. ljy iRrh esa

b. la;qDr iRrh esa

182. (1) **[NCERT-I-139]**

,sDlsaVªhd dsUnzdksa esa dksa dk lsaVªksehvj ds fudV gksrk gS tks ij feyrk gS ftlls ,d Hkqtk vR;Ur NksVh ,oa ,d Hkqtk cgqr cM+h gksrh gSA

183. (3) **[NCERT-I-58]**

dkbij ljhlìi gS

184. (2) **[NCERT-I-273]**

CO_2 dh ?kqyu'khyrk jDr esa O_2 dh rqyuk esa 20 - 25 xquk vf/d gksrh gSA

185. (3) **[NCERT-I-293]**

dkdkjSVk dh fyjhdh,d lwe 'kkfHkdk gSA

SECTION–B – [ZOOLOGY]

186. (1) **[NCERT-I-149, Mod. NEET 2019]**

ukbVªkstu {kkj &

→ lHkh UFkSyd vEy ds lkFk jkbcksu leku rFkk fijhfeMhu vyx gSA

→ fijhfeMhu esa vkj,u, ds lkFk ;qDr rFkk fifjeMhu, ds lkFk Fkkbekbu gSA

187. (3) **[NC-I-144]**

Phospholipid are found in cell membrane. Lecithin is one example. Some tissues especially the neural tissues have lipids with more complex structures.

188. (4) **[NC-I-147]**

TABLE 9.3 Some Secondary Metabolites

Pigments	Carotenoids, Anthocyanins, etc.
Alkaloids	Morphine, Codeine, etc.
Terpenoides	Monoterpenes, Diterpenes etc.
Essential oils	Lemon grass oil, etc.
Toxins	Abrin, Ricin
Lectins	Concanavalin A
Drugs	Vinblastin, curcumin, etc.
Polymeric substances	Rubber, gums, cellulose

When one analyses plant, fungal and microbial cells, one would see thousands of compounds other than these called primary metabolites, e.g. alkaloides, flavonoides, rubber, essential oils, antibiotics, coloured pigments, scents, gums, spices. These are called secondary metabolites (Table 9.3). While primary metabolites have identifiable functions and play known roles in normal physiologial processes, we do not at the moment, understand the role or functions of all the 'secondary metabolites' in host organisms.

189. (2) **[NC-I-150]**

An α – helix is an example of secondary structure of protein.

190. (3) **[NC-I-159]**

NAD = Nicotinamide adenine dinucleotide

191. (1) **[NCERT-I-169, Mod. AIPMT 2012]**

Anaphase I: The homologous chromosomes separate, while sister chromatids remain associated at their centromeres.

192. (4) **[NCERT-I-166]**

Events of Telophase

Chromosomes cluster at opposite spindle poles and their identity is lost as discrete elements.

Nuclear envelope assembles around the chromosome clusters.

Nucleolus, golgi complex and ER reform.

193. (1) **[NCERT-I-164]**

The duration of time period in m-Phase of cell cycle prophase > Telophase > Metaphase > Anaphase.

194. (2) **[NC-I-163]**

Number of mitiotic division equal to given number of cells –1 = 354 – 1 = 353

187. (3) **[NC-I-144]**

yslhiFkku iqjkuh dksf'kdkvksa esa ikbZ tkrh gSA

188. (4) **[NC-I-147]**

ताालका 9.3 कुछ द्वितायक उपापचयज

वर्णक	कैरोटीनाएड्स, एंथोसाइनिन्स, आदि
एल्कल्वाएड	मार्फीन, कोडेसीन, आदि
टरपीन्वाएडस	मोनोटरपींस, डाइटरपींस आदि
आवश्यक तेल	नींबूघास तेल, आदि
टॉक्सीन	एब्रिन, रिसीन
लेक्टिन्स	कोनकेनेवेलीन ए
ड्रग्स	वीनब्लेस्टीन, करकुमीन आदि
बहुलक पदार्थ	रबर, गोंद, सेलुलोज

f}rh;d mRikn; dkdk;Z ds vUrxZr ikS/ks dh dbZ gtkjksa ;kSfxdksa dk irk yxk;k tk pqdk gSA

189. (2) **[NC-I-150]**

,d α gsyDl f}rh;d izksVhu dk mnkgj.k gSA

190. (3) **[NC-I-159]**

NAD = Nicotinamide adenine dinucleotide

191. (1) **[NCERT-I-169, Mod. AIPMT 2012]**

i'pkoLFkk I esa xq:rokd.kh; lgksn;h xq:Ro/kfj;ksa dk i`Fkd~ gksuk izkjaHk gks tkrk gSA

192. (4) **[NCERT-I-166]**

vUR;koLFkk dh ?kVuk,¡

→ xq:rokd.kh; lgksn;h xq:Ro/kfj;ksa dk lewg fo:f/kr gks tkrk gS vkSj budh iFkd igpku lekIr gks tkrh gSA

→ xq:rokd.k lewgksa ds pkjksa rjiQ dsUnzd rdqdk esa ,df=r gks tkrk gSA

→ dsUnzd[k.Mksa ds vUrjkoj.k] >Yyhdk fuekZ.k gks tkrk gSA

193. (1) **[NCERT-I-164]**

dksf'kdk pØ dh M-izkoLFkk esa le; vof/ dk lcls cM+k Hkkx gS

izkoLFkk> vUR;koLFkk> eè;koLFkk> vUrjkoLFkk

194. (2) **[NC-I-163]**

lelw=h foHkktu dh la[;k=mRiUu gksus okyh dksf'kdkvksa dh la[;k

= 354 – 1 = 353

195. (3) **[NCERT-I-54]**

Stomochord present in hemichordata

196. (1) **[NCERT-I-178]**

Property	Simple Diffusion	Facilitated Transport	Active Transport
Requires special membrane proteins	No	Yes	Yes
Highly selective	No	Yes	Yes
Transport saturates	No	Yes	Yes
Uphill transport	No	No	Yes
Requires ATP energy	No	No	Yes

197. (1) **[NC-I-43]**

Zygote of fern (2n),

Moss protonema (n),

Rhizoids of moss (n)

prothallus of fern (n)

Gemma of marchantia (n)

Egg of liverwort (n)

PEN of dicot (3n)

198. (1) **[NCERT-I-92]**

The cortical layers in dicot stem are made up of parenchyma.

199. (4) **[NCERT-I-85]**

The meristem which occurs between mature tissues is known as intercalary meristem. Both apical meristems and intercalary meristems are primary meristems because they appear early in life of a plant and contribute to the formation of the primary plant body.

200. (3) **[NCERT-I-87, 88]**

Phloem in angiosperms is composed sieve tube elements, companion cells, phloem parenchyma and phloem fibres. Gymnosperms have albuminous cells and sieve cells.They lack sieve tubes and companion cells.

195. (3) **[NCERT-I-54]**

LVksdksMZ ftldk mYys[k eq[k esa fLFkr gksrk gSA

196. (1) **[NCERT-I-178]**

तालिका 11.1 विभिन्न परिवहन तंत्रों की तुलना

गुण	साधारण विसरण	सुसाध्य परिवहन	सक्रिय परिवहन
विशिष्ट झिल्लिका प्रोटीन की आवश्यकता	नहीं	हाँ	हाँ
उच्च वर्णात्मिक	नहीं	हाँ	हाँ
परिवहन संतृप्त	नहीं	हाँ	हाँ
शिखरोपरि (अपहिल) परिवहन	नहीं	नहीं	हाँ
एटीपी ऊर्जा की आवश्यकता	नहीं	नहीं	हाँ

197. (1) **[NC-I-43]**

iQZd ekt kbxksV (2n),

Ekkl izksVksusek (n),

ekl dkeywkk (n)

iQZd dk izFkjy (n)

ekdsUFkk,dhtsk (n)

ylojoVZd dk v.Mk (n)

f}cht i=k izFkfed Hkzw.k lsd lewg (3n)

198. (1) **[NCERT-I-92]**

o"kh; o`f) rFkk gkfu ikfoZd ls.Mj ds mipe f}cht i=k ruus esa Qsu dh Hkwfedk dh crkb;sA

199. (4) **[NCERT-I-85]**

- vUrjkZ foHkT; ksrd izFkfed foHkT; ksrd gSA
- ikoZ foHkT; ksrd] vUrjiyo; ,oa dkWZ/kf}rh; d foHkT; ksrd gSA

200. (3) **[NCERT-I-87, 88]**

ft Eukas esa VSfjQkbM~ds Ýyse esa xqPN dksf'kdk ugha gksrh gSA

,fUt;ksLi esa ds Ýyse esa xqPN dksf'kdk gksrh gSA