

## Target Test Series for NEET-2021

Time: 3 Hr.

### NEET FULL TEST-03

MM: 720

#### INSTRUCTIONS :

- ☞ There are three sections in this paper, consisting Physics (45 questions), Chemistry (45 questions) and Biology (90 questions).
- ☞ For each correct answer 4 marks awarded and for each incorrect answer, one mark will be deducted.
- ☞ Mark only one correct answer out of four alternatives.
- ☞ Use Blue/Black Ball Point Pen only for writing particulars/markings.
- ☞ Use of Calculator is not allowed.
- ☞ Dark the circle in the space provided only.
- ☞ Use of white fluid or any other material which damage the answer sheet, is not permissible on the Answer Sheet.

#### USEFUL CONSTANTS

Boltzmann constant (k)	= $1.38 \times 10^{-23} \text{ J K}^{-1}$	Avogadro's number ( $N_A$ )	= $6.02 \times 10^{23} \text{ mol}^{-1}$
Planck's constant (h)	= $6.63 \times 10^{-34} \text{ J s}$	Speed of light in vacuum (c)	= $3 \times 10^8 \text{ m s}^{-1}$
Rest mass of electron ( $m_e$ )	= $9.1 \times 10^{-31} \text{ kg}$	1 unified atomic mass unit (u)	= $1.66 \times 10^{-27} \text{ kg}$
1 eV	= $1.6 \times 10^{-19} \text{ J}$	1 nm	= $10^{-9} \text{ m}$
Charge of Electron (e)	= $1.6 \times 10^{-19} \text{ C}$	Gas constant (R)	= $8.31 \text{ J mol}^{-1} \text{ K}^{-1}$

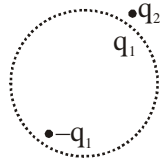
#### TOPIC :

**Physics** : Open Mock Test - Complete Syllabus - NEET  
**Chemistry** : Open Mock Test - Complete Syllabus - NEET  
**Biology** : Open Mock Test - Complete Syllabus - NEET

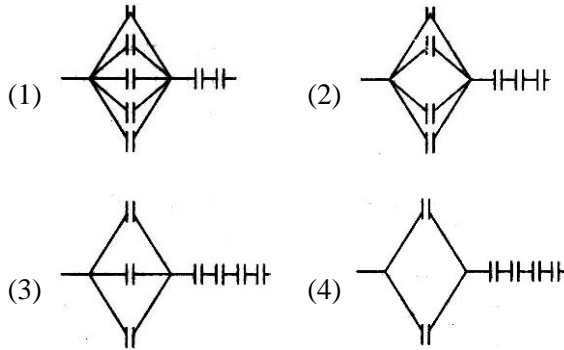
## PHYSICS

1. A Gaussian surface in the figure is shown by dotted line. The electric field on the surface will be:

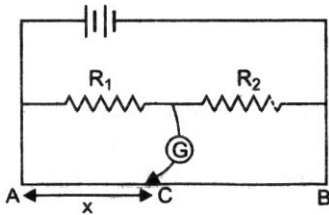
- (1) due to  $q_1$  and  $q_2$  only  
 (2) due to  $q_2$  only  
 (3) zero  
 (4) due to all



2. Seven capacitors, each of capacitance  $2\mu\text{F}$ , are to be connected in a configuration to obtain an effective capacitance of  $\left(\frac{10}{11}\right)\mu\text{F}$ . Which of the combinations shown in figure will achieve the desired result?



3. In the shown arrangement of the experiment of the metre bridge if AC corresponding to null deflection of galvanometer is  $x$ , what would be its value if the radius of the wire AB is doubled?



- (1)  $x$  (2)  $x/4$   
 (3)  $4x$  (4)  $2x$

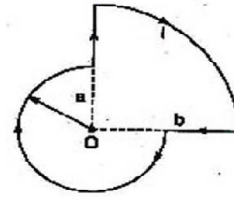
4. A particle of charge  $q$  and mass  $m$  moves in a circular orbit of radius  $r$  with angular speed  $\omega$ . The ratio of the magnitude of its magnetic moment to that of its angular momentum depends on:

- (1)  $\omega$  and  $q$  (2)  $\omega$ ,  $q$  and  $m$   
 (3)  $q$  and  $m$  (4)  $\omega$  and  $m$

5. The nuclei of which one of the following pairs of nuclei are isotones:

- (1)  ${}_{34}\text{Se}^{74}$ ,  ${}_{31}\text{Ga}^{71}$  (2)  ${}_{20}\text{Ce}^{40}$ ,  ${}_{16}\text{S}^{32}$   
 (3)  ${}_{36}\text{Sr}^{64}$ ,  ${}_{38}\text{Sr}^{65}$  (4) None

6. The magnetic induction at the centre O of the figure below is:



- (1)  $\frac{\mu_0 i}{2a} + \frac{\mu_0 i}{2b} \otimes$  (2)  $\frac{3\mu_0 i}{8a} + \frac{\mu_0 i}{8b} \otimes$   
 (3)  $\frac{3\mu_0 i}{8a} - \frac{\mu_0 i}{8b} \otimes$  (4)  $\frac{3\mu_0 i}{8a} + \frac{\mu_0 i}{8b} \otimes$

7. Two beams of light having intensities  $I$  and  $4I$  interfere to produce a fringe pattern on a screen. The phase difference between the beams is  $\pi/2$  at point A and  $\pi$  at point B. Then, the difference between the resultant intensities at A and B is:

- (1)  $2I$  (2)  $4I$   
 (3)  $5I$  (4)  $7I$

8. A particle of mass  $m$  kg and charge  $q$  coulomb is accelerated from rest through  $V$  volt; then the de-Broglie wavelength  $\lambda$  associated with it is given by

- (1)  $\lambda = \frac{h}{\sqrt{mV}}$  (2)  $\lambda = \frac{h}{\sqrt{mq}}$   
 (3)  $\lambda = \frac{h}{\sqrt{2mqV}}$  (4)  $\lambda = \frac{h}{\sqrt{2mV}}$

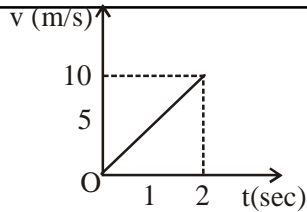
9. A convex lens is in contact with concave lens. The magnitude of the ratio of their focal lengths is  $2/3$ . Their equivalent focal length is  $30$  cm. What are their individual focal lengths?

- (1)  $-15, 10$  (2)  $-10, 15$   
 (3)  $75, 50$  (4)  $-75, 50$

10. A particle experiences a force  $\vec{F} = Ar^2\hat{r}$ , where  $\hat{r}$  is the unit vector along position vector  $\vec{r}$ . The dimensional formula of  $A$  is

- (1)  $[\text{MLT}^{-2}]$  (2)  $[\text{ML}^{-3}\text{T}^{-2}]$   
 (3)  $[\text{ML}^{-2}\text{T}^{-1}]$  (4)  $[\text{ML}^{-1}\text{T}^{-2}]$

11. A small body is released from rest on a smooth inclined plane at  $t = 0$ . Velocity versus time graph of the body is as shown in the figure. The angle of inclination of the plane with the horizontal is:



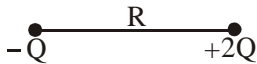
(1)  $30^\circ$

(2)  $45^\circ$

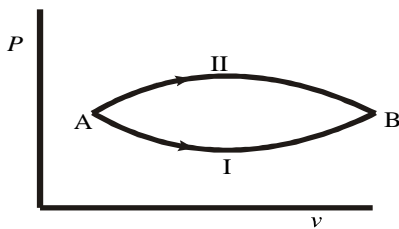
(3)  $\tan^{-1}\left(\frac{1}{2}\right)$

(4)  $\tan^{-1}(5)$

12. The point charges  $-Q$  and  $2Q$  are placed at a distance  $R$  apart. Where should a third point charge be placed so that it is in equilibrium:

(1) At a point on the right of  $2Q$ (2) At a point on the left of  $-Q$ (3) between  $-Q$  and  $2Q$ (4) At a point on a line perpendicular to line joining  $-Q$  and  $2Q$ .

13. A system goes from A to B via two processes I and II as shown in figure. If  $\Delta U_1$  and  $\Delta U_2$  are the changes in internal energies in the processes I and II respectively, then

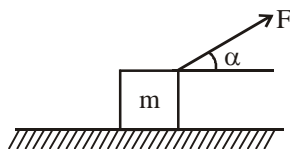
(1) relation between  $\Delta U_1$  and  $\Delta U_2$  can not be determined

(2)  $\Delta U_1 = \Delta U_2$

(3)  $\Delta U_2 < \Delta U_1$

(4)  $\Delta U_2 > \Delta U_1$

14. At the instant  $t = 0$  a force  $F = kt^2$  ( $k$  is a constant) acts on a small body of mass  $m$  resting on a smooth horizontal plane. The time, when body leaves the surface is :



(1)  $\sqrt{\frac{mg \sin \alpha}{k}}$

(2)  $\sqrt{\frac{mg}{k \cos \alpha}}$

(3)  $\sqrt{\frac{mg}{k \sin \alpha}}$

(4)  $\sqrt{mg k \sin \alpha}$

15. The interference pattern is obtained with two coherent light sources of intensity ratio  $n$ . The value of  $\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$  is

(1)  $\frac{2\sqrt{n}}{n+1}$

(2)  $\frac{2\sqrt{n}}{n-1}$

(3)  $\frac{2n}{\sqrt{n}+1}$

(4)  $\frac{2n}{\sqrt{n}-1}$

16. A thick rope of density  $\rho$  and length  $L$  is hung from a rigid support. The increase in length of the rope due to its own weight is ( $Y$  is the Young's modulus)

(1)  $\frac{1}{4Y} \rho L^2 g$

(2)  $\frac{1}{2Y} \rho L^2 g$

(3)  $\frac{\rho L^2 g}{Y}$

(4)  $\frac{\rho L g}{Y}$

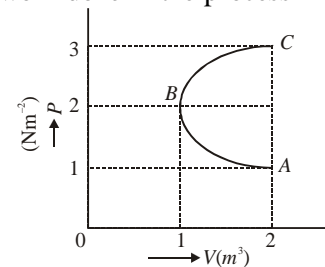
17. In the  $P$ - $V$  diagram shown in figure,  $ABC$  is a semicircle. The work done in the process  $ABC$  is

(1) Zero

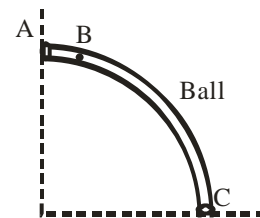
(2) 4 J

(3)  $\frac{\pi}{2}$  J

(4)  $-\frac{\pi}{2}$  J



18. A tube  $AC$  forms a quarter circle in a vertical plane. The ball  $B$  has an area of cross section slightly smaller than that of the tube and can move without friction through it. Balls placed at  $A$  and is slightly displaced. The ball is



(1) always in contact with the inner wall

(2) always in contact with the outer wall

(3) initially in contact with the inner wall and at some point it comes in contact with the outer wall

(4) initially in contact with the outer wall and finally comes in contact with the inner wall

19. If energy  $E$ , velocity  $V$  and time  $T$  are taken as the fundamental units, the dimensional formula for surface tension is :

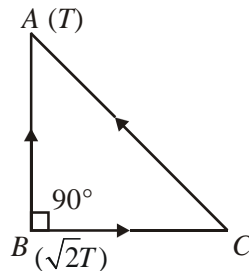
- (1)  $EV^{-2}T^{-2}$  (2)  $E^{-2}VT^{-2}$   
 (3)  $E^{-2}V^{-2}T$  (4)  $E^{-2}V^{-2}T^{-2}$

20. The temperature of a body is increased from  $27^{\circ}\text{C}$  to  $127^{\circ}\text{C}$ . The radiation emitted by it increases by a factor of :

- (1) (256 / 81) (2) (15 / 9)  
 (3) (4 / 3) (4) (12 / 27)

21. Three rods of identical cross-sectional area and made from the same metal form the sides of an isosceles triangle  $ABC$  right angled at  $B$  as shown in figure. The points  $A$  and  $B$  are maintained at temperatures  $T$  and  $\sqrt{2}T$  respectively in the steady state. Assuming that only heat conduction takes place, temperature of point  $C$  will be

- (1)  $\frac{T}{\sqrt{2}-1}$   
 (2)  $\frac{T}{\sqrt{2}+1}$   
 (3)  $\frac{3T}{\sqrt{2}+1}$   
 (4)  $\frac{T}{\sqrt{3}(\sqrt{2}-1)}$



22. In an LCR circuit, the capacitance is made one fourth, then what should be change in inductance, so that the circuit remains in resonance

- (1) 8 times (2) 1/4 times  
 (3) 2 times (4) 4 times

23. In a full wave rectifiers, input a.c. current has a frequency 'v'. The output frequency of current is?

- (1) v/2 (2) v  
 (3) 2 v (4) None.

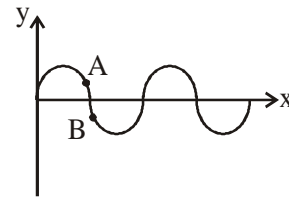
24. The phenomenon of radioactivity is

- (1) Exothermic change which increases or decreases with temperature  
 (2) Increases on applied pressure.  
 (3) Nuclear process does not depend on external factors  
 (4) None of the above.

25. A specimen of silicon is to be made  $p$ -type semiconductor. For this, one atom of indium per  $5 \times 10^7$  silicon atoms is added. If number density of silicon is  $5 \times 10^{28}$  atoms/ $\text{m}^3$ , the number of indium atoms per  $\text{cm}^3$  is

- (1)  $10^{21}$  (2)  $10^{15}$   
 (3)  $10^9$  (4)  $10^{31}$

26. Two particles (A and B) are plotted on the transverse wave as shown below. Both the particles at this instant of time are moving

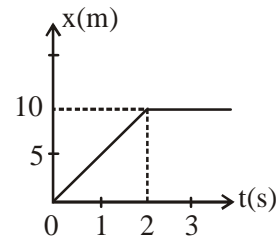


- (1) Upward  
 (2) Downward  
 (3) A-upward, B-downward  
 (4) A-downward, B-upward

27. A magnetic needle free to rotate in a vertical plane, orients itself its axis vertical at a certain place of Earth. The horizontal component of Earth at this place is

- (1) 0.32 G (2) 0.64 G  
 (3) 0.96 G (4) Zero

28. The position time graph of a body of mass 2 kg is shown in figure.

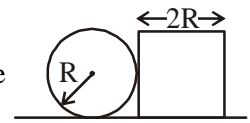


What is the impulse on the body at  $t = 2\text{s}$ ?

- (1)  $5 \text{ kg ms}^{-1}$  (2)  $+10 \text{ kg ms}^{-1}$   
 (3)  $-10 \text{ kg ms}^{-1}$  (4) zero

29. A circular plate of radius  $R$  is kept in contact with square plate of edge  $2R$  as shown in figure. The density of the material and the thickness are same everywhere. The CM of the composite system will be:

- (1) at the point of contact  
 (2) inside the circular plate  
 (3) inside the square plate  
 (4) outside the system



30. The length of a metal wire is  $l_1$  when the tension in it is  $T_1$  and is  $l_2$  when the tension is  $T_2$ . The unstretched length of the wire is

- (1)  $\sqrt{l_1 l_2}$  (2)  $\frac{l_1 + l_2}{2}$   
 (3)  $\frac{l_1 T_2 - l_2 T_1}{T_2 - T_1}$  (4)  $\frac{l_1 T_2 + l_2 T_1}{T_2 + T_1}$

31. Temperature of an ideal gas is 300 K. The change in temperature of the gas when its volume changes from  $V$  to  $2V$  in the process  $P = \alpha V$  (here  $\alpha$  is a positive constant) is

- (1) 900 K (2) 1200 K  
(3) 600 K (4) 300 K

32. In a Young's double slit experiment, 12 fringes are observed to be formed in a certain segment of the screen when light of wavelength 600 nm is used. The wave length changed to 400 nm, then the number of fringes seen is

- (1) 12 (2) 18  
(3) 24 (4) 30

33. If the electron in a hydrogen atom jumps from an orbit with level  $n_1 = 3$  to an orbit with level  $n_2 = 2$  the emitted radiation has a wavelength given by

- (1)  $\lambda = \frac{R}{6}$  (2)  $\lambda = \frac{36}{5R}$   
(3)  $\lambda = \frac{6}{R}$  (4)  $\lambda = \frac{5R}{36}$

34. A plane mirror is placed on  $x$ - $y$  plane. A ball is moving with a velocity vector  $2\hat{i} + 3\hat{j} + 4\hat{k}$ . The Velocity of image relative to ball will be

- (1)  $4\hat{i} + 6\hat{j} + 8\hat{k}$  (2)  $4\hat{i} + 6\hat{j} - 8\hat{k}$   
(3)  $8\hat{k}$  (4)  $-8\hat{k}$

35. A cylindrical rod having temperature  $T_1$  and  $T_2$  at its ends. The rate of flow of heat is  $Q$  cal/ sec. If all the dimensions are doubled keeping  $T_1$  and  $T_2$  constant the rate of flow of heat  $Q'$  will be:

- (1)  $4Q$  (2)  $2Q$   
(3)  $Q/4$  (4)  $Q/2$

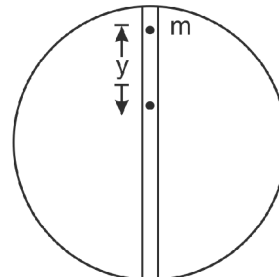
36. A thief is running away on a straight road on a jeep moving with a speed of 9 m/s. A police man chases him on a motor cycle moving at a speed of 10 m/s. If the instantaneous separation of jeep from the motor cycle is 100 m, how long will it take for the policemen to catch the thief

- (1) 1 second (2) 19 second  
(3) 90 second (4) 100 second

37. If  $y = at^2$  and  $x = 2at$  where  $x, y, t$  are variables and  $a$  is a constant then  $\frac{dy}{dx}$  is equal to

- (1)  $t$  (2)  $1/t$   
(3) 1 (4) 0

38. Suppose a vertical tunnel is dug along the diameter of the earth assumed to be a sphere of uniform mass having density  $\rho$ . If a body of mass  $m$  is thrown in this tunnel, its acceleration at a distance  $y$  from the centre is given by

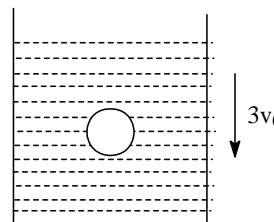


- (1)  $\frac{4\pi}{3} g \rho y$  (2)  $\frac{3}{4} \pi G \rho y$   
(3)  $\frac{4}{3} \pi \rho y$  (4)  $\frac{4}{3} \pi G \rho y$

39. A satellite is revolving round the earth with orbital speed  $v_0$ . If it stops suddenly, the speed with which it will strike the surface of earth would be ( $v_e =$  escape velocity of a particle on earth's surface.)

- (1)  $\frac{v_e^2}{v_0}$  (2)  $2v_0$   
(3)  $\sqrt{v_e^2 - v_0^2}$  (4)  $\sqrt{v_e^2 - 2v_0^2}$

40. A container filled with viscous liquid is moving vertically downwards with constant speed  $3v_0$ . At the instant shown, a sphere of radius  $r$  in the liquid is moving vertically downwards at speed  $v_0$  (with respect to ground). The coefficient of viscosity is  $\eta$ . There is no relative motion between the liquid and the container. Then at the shown instant, the magnitude of viscous force acting on sphere is



- (1)  $6\pi\eta r v_0$  (2)  $12\pi\eta r v_0$   
(3)  $18\pi\eta r v_0$  (4)  $24\pi\eta r v_0$

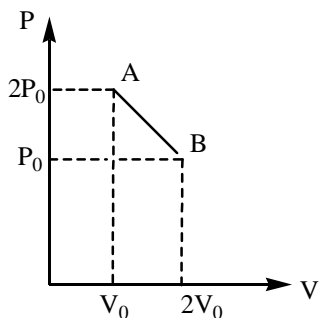
41. Eight spherical rain drops of same mass and radius are falling down with a terminal speed of  $6 \text{ cm s}^{-1}$ . If they coalesce to form one big drop, its terminal speed is \_\_\_\_ . Neglect the buoyancy due to air

- (1)  $1.5 \text{ cm s}^{-1}$                       (2)  $6 \text{ cm s}^{-1}$   
 (3)  $24 \text{ cm s}^{-1}$                       (4)  $32 \text{ cm s}^{-1}$

42. A uniform rod of mass  $m$ , length  $L$ , area of cross-section  $A$  and Young's modulus  $Y$  hangs from the ceiling. Its elongation under its own weight will be

- (1) zero                                      (2)  $\frac{mgL}{2AY}$   
 (3)  $\frac{mgL}{AY}$                                       (4)  $\frac{2mgL}{AY}$

43.  $n$  Moles of an ideal gas undergo a process  $A \rightarrow B$  as shown on the figure. Maximum temperature of the gas during the process is:



- (1)  $\frac{3P_0V_0}{2nR}$                                       (2)  $\frac{9P_0V_0}{4nR}$   
 (3)  $\frac{9P_0V_0}{2nR}$                                       (4)  $\frac{9P_0V_0}{nR}$

44. A gas undergoes a process in which its pressure  $P$  and volume  $V$  are related as  $\sqrt{P}V^n = \text{constant}$ . The bulk modulus of the gas in this process is:

- (1)  $nP$     (2)  $P^{1/n}$   
 (3)  $P/n$     (4)  $P^n$

45. An ideal gas undergoes a process in which  $PV^{-a} = \text{constant}$ , where  $V$  is the volume occupied by the gas initially at pressure  $P$ . At the end of the process, 'rms' speed of gas molecules has become  $a^{1/2}$  times of its initial value. What will be the value of  $C_V$  so that energy transferred in the form of heat to the gas is 'a' times of the initial energy.

- (1)  $\frac{(a^2 + 1)R}{a^2 - 1}$                                       (2)  $\frac{(a^2 + 1)R}{(a^2 + 1)}$   
 (3)  $\frac{(a + 1)R}{(a - 1)}$                                       (4)  $\frac{(a - 1)R}{(a + 1)}$

## CHEMISTRY

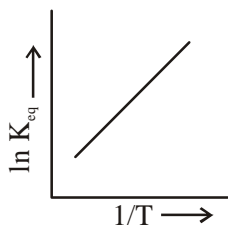
46. Equivalent weight of a metal oxide is 20, the equivalent weight of sulphate of same metal will be  
 (1) 60 (2) 69  
 (3) 108 (4) 54
47. Rate of radioactive decay is  
 (1) independent of time  
 (2) dependent of temperature  
 (3) dependent on catalyst  
 (4) dependent on the amount of element not yet decayed
48. Compound  $\text{PdCl}_4 \cdot 6\text{H}_2\text{O}$  is a hydrated complex, 1 molal aqueous solution of it has freezing point 269.28 K. Assuming 100% ionization of complex, calculate the molecular formula of the complex ( $K_f$  for water = 1.86 K kg mole<sup>-1</sup>)  
 (1)  $[\text{Pd}(\text{H}_2\text{O})_6]\text{Cl}_4$   
 (2)  $[[\text{Pd}(\text{H}_2\text{O})_4\text{Cl}_2]\text{Cl}_2 \cdot 2\text{H}_2\text{O}$   
 (3)  $[\text{Pd}(\text{H}_2\text{O})_3\text{Cl}_3]\text{Cl} \cdot 3\text{H}_2\text{O}$   
 (4)  $[\text{Pd}(\text{H}_2\text{O})_2\text{Cl}_4] \cdot 4\text{H}_2\text{O}$
49. Given the half cell reactions  
 $\text{Cu}^+(\text{aq.}) + e \rightarrow \text{Cu}(\text{s}), E^\circ = +0.52 \text{ V}$   
 $\text{Cu}^{+2}(\text{aq.}) + 2e^- \rightarrow \text{Cu}(\text{s}), E^\circ = +0.16 \text{ V}$   
 the equilibrium constant for the disproportionation reaction  $2\text{Cu}^+(\text{aq.}) \rightarrow \text{Cu}(\text{s}) + \text{Cu}^{+2}(\text{aq.})$  at 298K is  
 (1)  $6 \times 10^4$  (2)  $6 \times 10^6$   
 (3)  $1.2 \times 10^6$  (4)  $1.2 \times 10^{-6}$
50. White phosphorus reacts with calcium to form a certain compound which on hydrolysis produces  
 (1)  $\text{PH}_3$   
 (2)  $\text{H}_3\text{PO}_4$   
 (3)  $\text{P}_4\text{O}_6$  (4)  $\text{P}_4\text{O}_{10}$
51. Select the incorrect statement among the following.  
 (1) Aspirin is both analgesic and antipyretic  
 (2) Ampicillin is natural antibiotic  
 (3) Sulphadiazine is a synthetic antibacterial  
 (4) Some disinfectants can be used as antiseptics in lower concentrations
52. Ionic radii are  
 (1) directly proportional to square of effective nuclear charge  
 (2) inversely proportional to effective nuclear charge  
 (3) inversely proportional to square of effective nuclear charge  
 (4) directly proportional to effective nuclear charge
53. The pH of  $10^{-10} \text{ M HCl}$  is  
 (1) 10 (2) 4  
 (3) 7 (4) 14
54. If the specific conductivity of N/50 KCl solution at 298 K is  $0.003285 \text{ ohm}^{-1} \text{ cm}^{-1}$  and resistance of a cell containing this solution is 100 ohm. The cell constant of the cell is  
 (1)  $0.3285 \text{ ohm}^{-1} \text{ cm}^{-1}$  (2) 0.3285 ohm  
 (3)  $0.3285 \text{ cm}^{-1}$  (4)  $0.03285 \text{ cm}^{-1}$
55. The correct order of relative rates of hydrogenation of alkenes is  
 (1) Ethylene > propene > 2-butene > 2-methyl-2-butene  
 (2) 2-methyl-2-butene > 2-butene > Propene > Ethylene  
 (3) 2-butene > propene > ethylene > 2-methyl-2-butene  
 (4) Propene > 2-butene > ethylene > 2-methyl-2-butene
56. The dissociation of  $\text{NH}_4\text{OH}$  can be suppressed by adding  
 (1)  $\text{NH}_4\text{Cl}$  (2)  $\text{NH}_4\text{NO}_3$   
 (3) NaOH (4) All of these
57. Which statement is incorrect?  
 (1)  $\text{Ni}(\text{CO})_4$  – Tetrahedral, paramagnetic  
 (2)  $[\text{Ni}(\text{CN})_4]^{2-}$  - Square planar, diamagnetic  
 (3)  $[\text{Ni}(\text{CO})_4]^{2-}$  - Tetrahedral, diamagnetic  
 (4)  $[\text{NiCl}_4]^{2-}$  - Tetrahedral, paramagnetic
58. Which of the following will not give positive chromyl chloride test?  
 (1) Copper chloride,  $\text{CuCl}_2$   
 (2) Mercuric chloride,  $\text{HgCl}_2$   
 (3) Zinc chloride,  $\text{ZnCl}_2$   
 (4) Anilinium chloride  $\text{C}_6\text{H}_5\text{NH}_3\text{Cl}$
59. Zinc is used to protect iron from rusting. This is because:

- (1)  $E_{\text{red}}^{\circ}$  is zinc is greater than that of Fe  
 (2)  $E_{\text{oxd}}^{\circ}$  of zinc is greater than that of Fe  
 (3)  $E_{\text{red}}^{\circ}$  of Zn is nearly equal to that of Fe  
 (4) Zn is cheap

60. Among  $\text{KO}_2$ ,  $\text{NO}_2^-$ ,  $\text{BaO}_2$  and  $\text{NO}_2^+$  unpaired electron is present in

- (1)  $\text{NO}_2^+$  and  $\text{BaO}_2$       (2)  $\text{KO}_2$  and  $\text{BaO}_2$   
 (3)  $\text{KO}_2$  only              (4)  $\text{BaO}_2$  only

61. A schematic plot of  $\ln K_{\text{eq}}$  versus inverse of temperature for a reaction is shown below:



The reaction must be:

- (1) exothermic  
 (2) endothermic  
 (3) one with negligible enthalpy change  
 (4) highly spontaneous at ordinary temperature

62. The reaction  $A \xrightarrow{k} \text{Product}$ , is zero order while the reaction  $B \xrightarrow{k} \text{Product}$ , is first order reaction.

For what initial concentration of A are the half lives of the two reactions equal?

- (1)  $(\log_4 4)M$               (2)  $2M$   
 (3)  $2 \log 2M$               (4)  $\ln 2M$

63. For a liquid, enthalpy of fusion is  $1.435 \text{ kcal mol}^{-1}$  and molar entropy change is  $5.26 \text{ cal mol}^{-1} \text{ K}^{-1}$ . The melting point of the liquid is

- (1)  $0^\circ\text{C}$                       (2)  $-273^\circ\text{C}$   
 (3)  $173 \text{ K}$                     (4)  $100^\circ\text{C}$

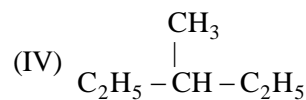
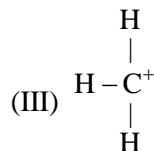
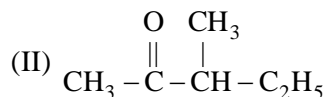
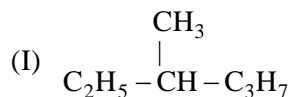
64. If NaCl is doped with  $10^{-4} \text{ mol\%}$  of  $\text{SrCl}_2$ , the concentration of cation vacancies will be ( $N_A = 6.023 \times 10^{23}$ ):

- (1)  $6.02 \times 10^{16} \text{ mol}^{-1}$       (2)  $6.02 \times 10^{17} \text{ mol}^{-1}$   
 (3)  $6.02 \times 10^{14} \text{ mol}^{-1}$       (4)  $6.02 \times 10^{15} \text{ mol}^{-1}$

65. Compressibility factor for a gas under critical condition is:

- (1)  $3/8$                         (2)  $8/3$   
 (3)  $1$                           (4)  $1/4$

66. Among the following four structures I to IV



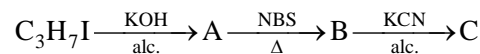
it is true that

- (1) only III is a chiral compound  
 (2) only II and IV are chiral compounds  
 (3) all four are chiral compounds  
 (4) only I and II are chiral compounds

67. In Friedal-Craft's alkylation besides  $\text{AlCl}_3$  the other reactants are

- (1)  $\text{C}_6\text{H}_6 + \text{NH}_3$               (2)  $\text{C}_6\text{H}_6 + \text{CH}_4$   
 (3)  $\text{C}_6\text{H}_6 + \text{CH}_3\text{Cl}$           (4)  $\text{C}_6\text{H}_6 + \text{CH}_3\text{COCl}$

68. Identify C in the following series



- (1)  $(\text{CH}_3)_2\text{C}=\text{CH}_2$           (2)  $\text{CH}_2 = \text{CH}-\text{CH}_2\text{CN}$   
 (3)  $\text{Br}-\text{CH} = \text{CH}-\text{CN}$       (4)  $\begin{array}{c} \text{CH}_2 = \text{CH} - \text{CHCN} \\ | \\ \text{Br} \end{array}$

69.  $\text{Zn} | \text{Zn}^{2+} (\text{C}_1) || \text{Zn}^{2+} (\text{C}_2) | \text{Zn}$ . For this cell  $\Delta G$  is negative

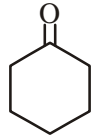
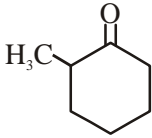
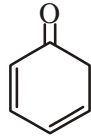
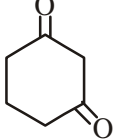
- (1)  $\text{C}_1 = \text{C}_2$                   (2)  $\text{C}_1 > \text{C}_2$   
 (3)  $\text{C}_2 > \text{C}_1$                   (4) None of these

70. The structure of glycine (amino acid) (Zwitter ion) select the correct statement of the following.

- (1) Glycine, as well as other amino acids are amphoteric.  
 (2) The acidic functional group in amino acids is  $-\text{NH}_3^+$   
 (3) The basic functional group in amino acids is  $-\text{CO}_2^-$   
 (4) All the statements are correct

71. Which of the following has lowest pKa value ?

- (1) Picric acid                  (2) p-Nitrophenol


- (3) Ethyl alcohol      (4) Acetylene
72. If  $\lambda_1$  &  $\lambda_2$  denote the de-Broglie wavelength of two particles with same masses but charges in the ratio of 1 : 2. After they are accelerated from rest through the same potential difference, then the relation between  $\lambda_1$  &  $\lambda_2$
- (1)  $\lambda_1 = \lambda_2$       (2)  $\lambda_1 < \lambda_2$   
 (3)  $\lambda_1 > \lambda_2$   
 (4) Cannot be predicted
73. In a solid AB having NaCl structure, 'A' atoms occupy f.c.c. lattice. If all the face centered atoms along one of the axes are removed then the resultant stoichiometry of the solid is
- (1)  $AB_2$       (2)  $A_2B$   
 (3)  $A_4B_3$       (4)  $A_3B_4$
74. Formaldehyde can be distinguished from acetaldehyde by the use of
- (1) Schiff's reagent  
 (2) Tollen's reagent  
 (3) Fehling's solution  
 (4) Iodine in presence of a base
75. Which of the following is not a natural polymer?
- (1) Glycogen      (2) Cellulose  
 (3) Pepsin      (4) Polybutadiene
76. Neoprene is a polymer of
- (1) *cis*-isoprene      (2) butadiene  
 (3) *trans*-isoprene      (4) chloroprene
77. In haemoglobin, 0.56% of Fe is present by mass. What should be the minimum molecular mass of haemoglobin if atomic mass of Fe is 56 ?
- (1) 1000      (2) 635  
 (3) 10000      (4) 112
78. The correct sequence regarding dipole moment is
- (1)  $CH_3F > CH_3Cl > CH_3I > CH_3Br$   
 (2)  $CH_3Cl > CH_3Br > CH_3I > CH_3F$   
 (3)  $CH_3Cl > CH_3F > CH_3Br > CH_3I$   
 (4)  $CH_3F > CH_3Cl > CH_3Br > CH_3I$
79. What is the decreasing order of strength of the bases  $OH^-$ ,  $NH_2^-$ ,  $HC \equiv C^-$  and  $CH_3-CH_2^-$  ?
- (1)  $CH_3CH_2^- > NH_2^- > HC \equiv C^- > OH^-$
- (2)  $HC \equiv C^- > CH_3CH_2^- > NH_2^- > OH^-$   
 (3)  $OH^- > NH_2^- > HC \equiv C^- > CH_3CH_2^-$   
 (4)  $NH_2^- > HC \equiv C^- > OH^- > CH_3CH_2^-$
80. Out of  $N_2O$ ,  $SO_2$ ,  $I_3^+$ ,  $I_3^-$ ,  $H_2O$ ,  $NO_2^-$  and  $N_3^-$ , the linear species are
- (1)  $NO_2^-$ ,  $I_3^+$ ,  $H_2O$       (2)  $H_2O$ ,  $I_3^-$ ,  $N_3^-$   
 (3)  $N_2O$ ,  $I_3^-$ ,  $N_3^-$       (4)  $N_3^-$ ,  $I_3^+$ ,  $SO_2$
81. Which one of the following ions has electronic configuration  $[Ar]3d^6$ ?
- (1)  $Ni^{3+}$       (2)  $Mn^{3+}$   
 (3)  $Fe^{3+}$       (4)  $Co^{3+}$
82. In the following reaction, consider the following statements:
- $$2Cr(OH)_3 + 3H_2O + 4OH^- \rightarrow 2CrO_4^{2-} + 8H_2O$$
- I there is colour change from green precipitate to yellow coloured solution  
 II. oxidation number of Cr changes from +3 to +6.  
 III. oxidation number of O in  $H_2O$  changes from -2 to -1.
- Select the correct statement(s)
- (1) I only      (2) I and II only  
 (3) II only      (4) I and III only
83. In borax test, which compound is formed?
- (1) Orthoborate      (2) Metaborate  
 (3) Double oxide      (4) Teraborate
84. In which process does the nitrogen undergo oxidation?
- (1)  $N_2 \rightarrow 2NH_3$       (2)  $N_2O_4 \rightarrow 2NO_2$   
 (3)  $NO_3^- \rightarrow N_2O_5$       (4)  $NO_2^- \rightarrow NO_3^-$
85. What weight of solute (M. wt. 60) is required to dissolve in 180 g of water to reduce the vapour pressure to 4/5th of pure water?
- (1) 150 g      (2) 200 g  
 (3) 100 g      (4) 250 g
86. Which of the following compounds most easily form an enolate?
- (1)       (2)   
 (3)       (4) 

87. Which of the following would convert butanoyl chloride,  $\text{CH}_3\text{CH}_2\text{CH}_2\text{COCl}$  to 1-butanol  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$ ?
- (1)  $\text{LiAlH}_4$ , then  $\text{H}_3\text{O}^+$
  - (2)  $\text{NaBH}_4$ , then  $\text{H}_3\text{O}^+$
  - (3)  $\text{H}_2$ -Pd/ $\text{BaSO}_4$
  - (4) None of these
88. When a small amount of solid calcium phosphide  $\text{Ca}_3\text{P}_2$  is added to water, what are the most likely products?
- (1) Aqueous  $\text{Ca}^{2+}$  and  $\text{OH}^-$  ions and gaseous  $\text{PH}_3$
  - (2) Aqueous  $\text{Ca}^{2+}$  and  $\text{OH}^-$  ions and gaseous  $\text{H}_3\text{PO}_3$
  - (3) Solid  $\text{CaH}_2$  and aqueous  $\text{H}_3\text{PO}_2$
  - (4) Solid  $\text{CaO}$  and aqueous  $\text{PH}_3$
89. Which of the following is not a redox reaction?
- (1)  $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$
  - (2)  $\text{O}_2 + 2\text{H}_2 \rightarrow 2\text{H}_2\text{O}$
  - (3)  $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \frac{1}{2}\text{H}_2$
  - (4)  $\text{MnCl}_3 \rightarrow \text{MnCl}_2 + \frac{1}{2}\text{Cl}_2$
90. Select incorrect statement:
- (1) Formation of micelles takes place above kraft temperature
  - (2) Formation of micelles takes place below CMC
  - (3) Micelles are macromolecular colloids
  - (4) The electrical charge on a colloid particle is indicated by electrophoresis

## BIOLOGY

91. Sclereids are present in  
 (1) Pulp of mango (2) Endodermis of Root  
 (3) Leaves of tea (4) Phloem
92. Which is correct pair for edible part?  
 (1) Tomato - Thalamus  
 (2) Mango -Seed  
 (3) Apple - Thalamus  
 (4) Banana - Epicarp
93. What is difference in origin of ascospores and basidiospores respectively?  
 (1) Exogenous, endogenous  
 (2) Endogenous, Exogenous  
 (3) Holocarpic, Eucarpic  
 (4) Endogenous, holocarpic
94. Which of the following plant activity is not an example of growth promotion activity?  
 (1) Germination of seeds  
 (2) Cell division  
 (3) Delay in senescence  
 (4) Abscission
95. What is the most common type of permanent tissue found in almost all plants ?  
 (1) Sclerenchyma (2) Collenchyma  
 (3) Xylem (4) Parenchyma
96. How many protons pumps will operate in outer chamber of mitochondria if pyruvic acid is completely oxidised?  
 (1) 28 (2) 30  
 (3) 32 (4) 26
97. Axillary bud develops by activity of  
 (1) Lateral meristem  
 (2) Shoot Apical meristem  
 (3) Root Apical meristem  
 (4) Intercalary meristem
98. Consider the following four statements (A-D) and select the option which includes the correct one only:-  
 (A) Auxins also induce parthenocarpy in tomato  
 (B) Cytokinins help to produce new leaves  
 (C) Ethephon hastens fruit ripening in tomatoes  
 (D) Cytokinin helps to overcome the apical dominance  
 (1) A and B only (2) C and D only  
 (3) A and C only (4) A, B, C and D
99. Protoxylem is towards pith and metaxylem towards periphery in  
 (1) Exarch condition (2) Endarch condition  
 (3) Mesarch condition (4) Radial condition
100. Heterospory and development of the zygotes into young embryos within female gametophytes is the precursor to  
 (1) Seed habit (2) Terrestrial habit  
 (3) Bryophytes (4) All of these
101. The functionally independent unit of nature, showing characteristic energy flow and nutrient cycling is  
 (1) Organism (2) Species  
 (3) Community (4) Ecosystem
102. Which of the following is pollinated by water?  
 (1) *Viola* (2) *Yucca*  
 (3) *Zostera* (4) *Commelina*.
103. A mutant micro-organism unable to synthesize a compound required for its growth but able to grow on the compound provided is known as.  
 (1) Auxotroph (2) Prototroph  
 (3) Autotroph (4) None of these
104. Which type of productivity is used in the growth of plant?  
 (1) GPP (2) GSP  
 (3) NPP (4) NSP
105. Fig is pollinated by  
 (1) Wind (2) Self  
 (3) Water (4) Insects
106. Pulvinus is associated with members of family  
 (1) Brassicaceae (2) Fabaceae  
 (3) Liliaceae (4) Solanaceae
107. Which of the following statements is/are correct regarding mass or bulk flow?  
 (a) It is a long distance transport method  
 (b) It occurs from one point to another as a result of pressure difference between two points  
 (c) In this method, unlike diffusion, all the substances are swept along at the same pace  
 (d) It can be achieved either through a positive or negative hydrostatic pressure gradient  
 (1) a and b (2) a, b, c and d  
 (3) b, c, and d (4) c and d

108. In photosynthesis, the electrons that are moved from photosystem II must be replaced. This is achieved by electrons available
- (1) from the photosystem I
  - (2) from the NADPH + H<sup>+</sup>
  - (3) from the splitting of water
  - (4) from the cytochrome
109. Select the incorrect statement
- (1) If solute concentration increases solute potential decreases
  - (2) The magnitude of osmotic pressure and osmotic potential is same but the sign is opposite
  - (3) For a plasmolysed cell  $DPD = OP + TP$
  - (4) In a flaccid cell TP is positive
110. The technical term used for the androecium in a flower of pea (*Pisum sativum*) is
- (1) Polyadelphous
  - (2) Monadelphous
  - (3) Diadelphous
  - (4) Polyandraous
111. Mostly homosporous plants occur in:-
- (1) Pteridophytes
  - (2) Gymnosperms
  - (3) Bryophytes
  - (4) Angiosperms
112. The chief producers in the ocean are
- (1) Golden algae
  - (2) Dinoflagellates
  - (3) Chlorophytes
  - (4) BGA
113. What is similar to larval stage in the life cycle of the moss plant which is prostrate, chlorophyllous and photoautotrophic?
- (1) Leaves like
  - (2) Moss capsule
  - (3) Protonema
  - (4) Theca
114. In root nodules of legumes, Leghaemoglobin is important because
- (1) It transfers oxygen to root nodules
  - (2) It act as oxygen scavenger
  - (3) It provides energy for nitrogen fixation
  - (4) It acts as a catalyst and helps in nodule differentiation
115. A phenomenon that helps some plants in minimising water lose while maximising the availability of CO<sub>2</sub> is
- (1) To keep their stomata open during light
  - (2) Operation of C<sub>4</sub> photosynthetic pathway
  - (3) Closure of stomata during water deficiency
  - (4) No operation of photorespiration at low temperature
116. Which of the following statement is correct?
- (1) In tomato fruit is a capsule
  - (2) Seeds of orchids have oily endosperm
  - (3) Placentation in *Dianthus* is free central
  - (4) Tetradynamous condition is found in pea
117. Consider following four (a-d) statements and choose correct option
- (a) In stroma lamella only PS-I is present
  - (b) C<sub>4</sub> plants loose nearly half of water for fixing same amount of CO<sub>2</sub> than C<sub>3</sub> plants
  - (c) Cu (Copper) is essential for overall metabolism in plant
  - (d) Ethylene increase male flowers in cucumber
- (1) a, b, c and d
  - (2) a, c and d
  - (3) a, b and c
  - (4) a and b
118. *Saprolegnia* belongs to which fungal class
- (1) Ascomycetes
  - (2) Basidiomycetes
  - (3) Deuteromycetes
  - (4) Phycomycetes
119. Select the false statement
- (1) Bacteriophages are generally double stranded DNA viruses
  - (2) Plant viruses are generally single stranded RNA viruses
  - (3) Mycoplasma is resistant to penicillin
  - (4) Mycoplasma is resistant to tetracycline
120. Select the incorrect statement
- (1) In Mendel's cross all plants of F<sub>1</sub> were homozygous
  - (2) Genes segregate during gamete formation.
  - (3) At 5' -end of a polynucleotide free phosphate moiety is present
  - (4) Alpha -lactalbumin rich milk was obtained from transgenic cow Rosie
121. Which of the following can not be recognition sequence of a restriction endonuclease?
- (1) GAATTC  
CTTAAG
  - (2) AAGCTT  
TTCGAA
  - (3) GCCGCC  
CGGCGG
  - (4) GGATCC  
CCTAGG
122. Embryo culture is mostly used for-
- (1) Establishing suspension culture
  - (2) Recovery of interspecific hybrids
  - (3) Somatic hybridisation

- (4) Haploid plant production
123. Mycobiont and phycobiont are components of
- (1) Mycorrhiza (2) Root  
(3) Lichens (4) BGA
124. Prolongation of radicle gives rise to:-
- (1) Fibrous root system (2) Primary root  
(3) Food storing root (4) Pillar root
125. In the diagram given here:
- (c)
- 
- The correct option is:-
- (1) (a) RNA polymerase I, (b) Peptidyl transferase, (c) DNA polymerase III  
(2) (a) RNA polymerase II, (b) Peptidyl transferase, (c) DNA polymerase  
(3) (a) RNA polymerase III, (b) Peptidyl transferase (c) Reverse transcriptase  
(4) (a) RNA polymerase I, (b) Peptidyl transferase (c) Reverse transcriptase
126. Potato spindle tuber disease is caused by
- (1) Virus (2) Viroid  
(3) Bacteria (4) Fungus
127. Leguminous plants possess
- (1) Napiform roots (2) Nodulated roots  
(3) Tuberos roots (4) Fusiform roots
128. If deficiency symptoms of element 'A' appear first in older tissues and of element 'B' appear first in younger tissues, then choose the correct option from the following regarding these elements-
- (1) A = Nitrogen, B = Magnesium  
(2) A = Calcium, B = Sulphur  
(3) A = Sulphur, B = Potassium  
(4) A = Magnesium, B = Calcium
129. The element required for the activation of DNA as well as DNA polymerase is
- (1)  $\text{Ca}^{++}$  (2)  $\text{Mg}^{++}$   
(3)  $\text{Cu}^{++}$  (4)  $\text{K}^+$
130. What will be the number of genotype when a trait is found controlled by 15 alleles
- (1) 120 (2) 80  
(3) 204 (4) 104
131. The fungus without mycelium is
- (1) *Puccinia* (2) *Phytophthora*
- (3) *Rhizopus* (4) *Saccharomyces*
132. Match the list of items of **Column I** with **Column II** and select the correct match
- | <b>Column I</b>            | <b>Column II</b>  |
|----------------------------|-------------------|
| A. <i>Ulothrix</i>         | (p) Unicellular   |
| B. <i>Spirogyra</i>        | (q) Filamentous   |
| C. <i>Chlamydomonas</i>    | (r) Colonial form |
| D. <i>Volvox</i>           | (s) Kelps         |
| E. Some giant marine forms |                   |
- Which combination is correct
- (1) A-q, B - q, C - p, D- r, E-s  
(2) A-p, B - q, C - r, D- r, E-s  
(3) A-p, B - p, C - q, D- r, E-s  
(4) A-s, B - s, C - r, D- r, E-p
133. Mango belongs to class dicot of angiosperms and belongs to order:
- (1) *Poales* (2) *Sapindales*  
(3) *Ranales* (4) *Parietales*
134. Endosperm, a product of double fertilization in angiosperms is absent in the seeds of
- (1) Wheat (2) Orchids  
(3) Maize (4) Castor
135. The problem of necrosis and gradual senescence, while performing tissue culture can be overcome by
- (1) spraying auxins (2) spraying cytokinins  
(3) suspension culture (4) subculture
136. Which structure of man is similar to spiracle of cockroach?
- (1) Nostrils (2) Bronchioles  
(3) Lungs (4) Alveoli
137. Match the type of cells listed under Column I and their secretions given under Column II. Choose the answer which gives the correct combination of the alphabets of the two columns.
- | <b>Column I</b>  | <b>Column II</b>  |
|------------------|-------------------|
| (Type of cells)  | (Secretions)      |
| A. Peptic cells  | p. Mucus          |
| B. Oxyntic cells | q. Alkaline fluid |
| C. Goblet cells  | r. Pro-enzymes    |
|                  | s. HCl            |
- (1) A = q, B = p, C = s (2) A = s, B = r, C = q  
(3) A = s, B = p, C = q (4) A = r, B = s, C = p
138. Match the following
- (A) Parotid gland (i) Duct of Rivinus  
(B) Submandibular gland (ii) Duct of Stenson

(C) Sublingual gland (iii) Duct of Wharton

(1) A-i, B-ii, C-iii (2) A-ii, B-iii, C-i

(3) A-iii, B-i, C-ii (4) A-i, B-iii, C-ii

139. Match the enzyme with their respective substrate and choose the right one among options given

**Column I**

A. Lipase

B. Nuclease

C. Carboxypeptidase

D. Dipeptidases

**Column II**

i. Dipeptides

ii. Fats

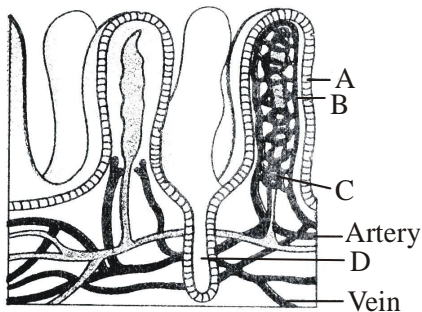
iii. Nucleic acids

iv. Proteins, peptones and proteoses.

(1) A-ii, B-iii, C-i, D-iv (2) A-iii, B-iv, C-ii, D-i

(3) A-iii, B-i, C-iv, D-ii (4) A-ii, B-iii, C-iv, D-i

140. The below diagram represents a section of small intestinal mucosa showing villi, Identify A, B, C and D –



(1) A-Villi, B-Lacteal, C-Capillaries, D-Crypts

(2) A-Lacteal, B-Villi, C-Capillaries, D-Crypts

(3) A-Villi, B-Lacteal, C-Crypts, D-Capillaries

(4) A-Crypts, B-Lacteal, C-Capillaries, D-Villi

141. Chromatin is composed of:

(1) DNA and histones only

(2) DNA and small amounts of RNA

(3) DNA, small amount of RNA and histones

(4) DNA small amount of RNA histones and nonhistone proteins

142. Which of the following animals is not only a living fossil, but also consider as connecting link?

(1) Sphenodon (2) Limulus

(3) Neopilina (4) Latimeria

143. Haversian system absent in

(1) Spongy bone of mammals

(2) Compact bone of mammals

(3) Both (1) & (2)

(4) None of these

144. The plant cells :

(1) Always have a secondary cell wall and the primary one may disappear

(2) Have channels between cells that allow cytoplasm to pass from cell to cell

(3) Develop turgor pressure when water enters the nucleus

(4) Do not have cell to cell junctions like animal cells

145. Peroxisome contains:

(1) Hydrolyzing enzymes

(2) Oxidising enzymes (Oxidases)

(3) Transferases

(4) Isomerases

146. In salivary gland, chromosomes somehow or other the original chromonemata goes on dividing longitudinally repeatedly so that they show not 2 or 4 chromonemata as in normal chromosomes but a large number of them. This is termed **polyteny**. Such repeated division of chromonemata threads without actual cell division may be termed:

(1) Endomitosis

(2) Brachymeiosis

(3) Free cell formation

(4) Amitosis

147. What is amitosis:

(1) Division of nucleus without spindle formation

(2) Division in which chromosomes are distributed unequally

(3) Division in which chiasmata is formed

(4) Division in which mitotic spindle is formed

148. Crossing over takes place between:

(1) Non sister chromatids of homologous chromosomes

(2) Sister chromatids of non-homologous chromosomes

(3) Between non-homologous chromosomes

(4) Between two chromatids of a chromosome

149. In a relaxed urinary bladder, the epithelium appears stratified with 4 to 6 layers of mostly pear-shaped cells with interdigitations, is characteristic of

(1) Transitional epithelium

(2) Neurosensory epithelium

(3) Pigmented epithelium

(4) All of these

150. Match the columns

(i) Chondrocyte

(A) Bone forming

(ii) Osteocyte

(B) Cartilage forming

(iii) Osteoblasts

(C) Bone maintaining

(iv) Osteoclast

(D) Bone eating

- (1) (i) A, (ii) B, (iii) C, (iv) D  
 (2) (i) B, (ii) C, (iii) C, (iv) A  
 (3) (i) B, (ii) C, (iii) A, (iv) D  
 (4) (i) D, (ii) B, (iii) A, (iv) C

151. Match the types of WBC listed in column I with the shape of nucleus given under column II. Choose the answer which gives the correct combination of alphabets of two columns.

**Column I**  
**Type of WBC**

- A Neutrophils  
 B Eosinophils  
 C Basophils  
 D Monocytes

**Column II**  
**Shape of Nucleus**

- P Kidney shaped  
 Q S- shaped  
 R 3-5 lobes  
 S 2 lobes  
 T disc shaped

- (1) A = R, B = T, C = P, D = Q  
 (2) A = T, B = R, C = Q, D = S  
 (3) A = Q, B = P, C = T, D = R  
 (4) A = R, B = S, C = Q, D = P

152. Adult echinoderms are \_\_\_\_\_ symmetrical but larvae are \_\_\_\_\_ symmetrical

- (1) Bilaterally, Radially (2) Radially, Biradially  
 (3) Radially, Bilaterally (4) Biradially, Bilaterally

153. Match the animals given in column I with their respiratory organs given in column II

**Column-I**

- a. Silkworm  
 b. *Limulus*  
 c. Scorpion  
 d. *Pila*

**Column-II**

- (i) Book lungs  
 (ii) Pulmonary sac, ctenidia  
 (iii) Trachea  
 (iv) Book gills

- (1) a(iv), b(iii), c(i), d(ii) (2) a(ii), b(i), c(iv), d(iii)  
 (3) a(iii), b(i), c(iv), d(ii) (4) a(iii), b(iv), c(i), d(ii)

154. Match the name of the animal (column I) with one characteristic (column II), and phylum (column III) to which it belongs.

**Column I**

- (1) *Adamsia*  
 (2) *Pila*  
 (3) *Nereis*  
 (4) Scorpion

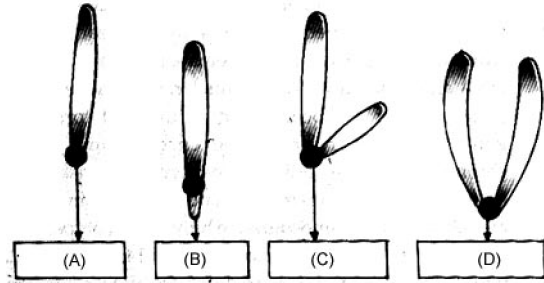
**Column II**

- Radially Symmetrical exists in polyp stage  
 Unsegmented body, radula present  
 Monoecious segmented  
 Book gills viviparous

**Column III**

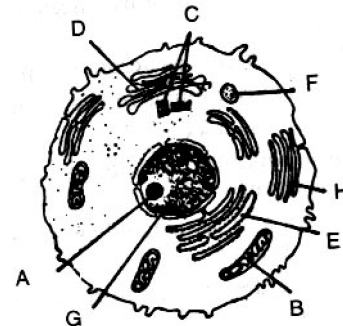
- Porifera  
 Mollusca  
 Annelida  
 Arthropoda

155. Choose the correct sequences of the following chromosomes in the given below diagram :



- (1) A- Telocentric, B - Metacentric, C - Submetacentric, D - Acrocentric  
 (2) A- Metacentric, B - Acrocentric, C -Telocentric, D - Submetacentric  
 (3) A- Telocentric, B - Acrocentric, C - Submetacentric, D - Metacentric  
 (4) A- Metacentric, B - Acrocentric, C - Submetacentric, D - Telocentric

156. In the diagram of an ultrastructure of a typical animal cell, the various parts have been indicated by alphabets. Choose the answer in which these alphabets have been correctly matched with the various parts which they indicate



- (1) A - nucleolus, B - mitochondria, C - Centrioles, D - smooth endoplasmic reticulum, E - golgi complex, F - lysosome, G - chromatin, H - rough endoplasmic reticulum  
 (2) A - nucleolus, B - mitochondrion, C - centrioles, D - golgi complex, E - rough endoplasmic reticulum, F - lysosome, G - chromatin, H - smooth endoplasmic reticulum  
 (3) A - nucleolus, B - mitochondrion, C - centrioles, D - golgi complex, E - rough endoplasmic reticulum, F - vacuole, G - chromatin, H - smooth endoplasmic reticulum  
 (4) A - nucleolus, B - mitochondrion, C - centrioles, D - smooth endoplasmic reticulum, E - rough endoplasmic reticulum, F - vacuole, G - chromatin, H - golgi complex

157. Match the entries in column I with those in column II and choose the correct answer from the following

**Column - I****Column - II**

- |                |  |
|----------------|--|
| A. Uremia      | 1. Excess of protein level in urine        |
| B. Haematuria  | 2. Presence of high ketone bodies in urine |
| C. Ketonuria   | 3. Presence of blood cells in urine        |
| D. Glycosuria  | 4. Presence of glucose in urine            |
| E. Proteinuria | 5. Presence of urea in blood               |

- (1) A - 4, B - 5, C - 3, D - 2, E - 1  
 (2) A - 5, B - 3, C - 2, D - 4, E - 1  
 (3) A - 5, B - 3, C - 4, D - 1, E - 4  
 (4) A - 2, B - 1, C - 3, D - 4, E - 5

158. In uremia, artificial kidney is used for removing accumulated waste products like urea by the process, called

- (1) micturition (2) ureotelism  
 (3) reverse dialysis (4) haemodialysis

159. ADH responsible for reabsorption of water and reduction of urine secretion is synthesized by

- (1) hypothalamus  
 (2) anterior pituitary gland  
 (3) posterior pituitary gland  
 (4) juxta-glomerular apparatus

160. Arthritis is caused by

- (1) Lack of synovial fluid  
 (2) Deposition of uric acid crystal in synovial cavity  
 (3) Ossification of articular cartilage  
 (4) All of these

161. Match Column - I with Column - II and select the correct option from the codes given below. Column - I Column - II

**Column - I****Column - II**

- |                  |               |
|------------------|---------------|
| A. True ribs     | (i) 3 pairs   |
| B. False ribs    | (ii) 2 pairs  |
| C. Floating ribs | (iii) 7 pairs |
- (1) A-(i), B-(ii), C-(iii) (2) A-(iii), B-(i), C-(ii)  
 (3) A-(iii), B-(ii), C-(i) (4) A-(ii), B-(i), C-(iii)

162. Match the following and choose correct one

**Column I****Column II**

- |                        |                    |
|------------------------|--------------------|
| A. Sternum             | i. Vertebrae       |
| B. Glenoid cavity      | ii. Pectoral       |
| C. Cartilaginous unit  | iii. Flat bones    |
| D. Freely movable unit | iv. Synovial fluid |

- (1) A-i, B-ii, C-iii, D-iii (2) A-ii, B-i, C-iv, D-iii  
 (3) A-iii, B-ii, C-i, D-iv (4) A-iv, B-ii, C-iii, D-i

163. Adaptive radiation refers to

- (1) Darwinian variations are small and directionless  
 (2) Fitness is the end result of the ability to adapt and gets selected by nature  
 (3) All mammals except whales and camels have seven cervical vertebrae  
 (4) Mutations are random and directional

164. The extinct human who lived 1,00,000 to 40,000 years ago, in Europe, Asia and parts of Africa, with short stature, heavy eyebrows, retreating forehead, large jaws with heavy teeth, stocky bodies a lumbering gait and stooped posture was

- (1) Cro-magnon humans (2) *Ramapithecus*  
 (3) *Homo habilis* (4) Neanderthal human

165. Aldosterone helps in the :

- (1) Conservation of sodium and water and elimination of potassium  
 (2) Elimination of sodium, potassium and water  
 (3) Conservation of sodium, potassium and water  
 (4) Conservation of potassium and water and elimination of sodium

166. Which of the following serves as a second messenger for slowing contraction of the heart muscles in response to acetylcholine

- (1) cAMP (2) cGMP  
 (3) DG(Diacylglycerol) (4) Inositol triphosphate

167. Mark the correct matching of the hormone and the endocrine cells

- |                   |                 |
|-------------------|-----------------|
| I. C-Cell         | A. Inhibin      |
| II. $\beta$ -cell | B. Calcitonin   |
| III. Leydig cell  | C. Insulin      |
| IV. Sertoli cells | D. Testosterone |

- (1) I A, II C, III D, IV B (2) I C, II B, III D, IV A  
 (3) I A, II C, III B, IV D (4) I B, II C, III D, IV A

168. Match the following

- |                   |   |
|-------------------|---|
| a. Frontal lobe   | (i) Decoding and interpretation of sound                |
| b. Parietal lobe  | (ii) Perception of touch pain, heat and cold            |
| c. Temporal lobe  | (iii) Decoding and interpretation of visual information |
| d. Occipital lobe | (iv) Creative ideas, willpower, intellectual insight    |

- (1) a-iv, b-ii, c-i, d-iii (2) a-ii, b-iv, c-i, d-iii  
 (3) a-iii, b-iv, c-i, d-ii (4) a-i, b-ii, c-iii, d-iv



## Target Test Series for NEET-2021

### FULL TEST : 03 ANSWERS

1.	(4)	46.	(1)	91.	(3)	136.	(1)
2.	(1)	47.	(4)	92.	(3)	137.	(4)
3.	(1)	48.	(3)	93.	(2)	138.	(2)
4.	(3)	49.	(3)	94.	(4)	139.	(4)
5.	(1)	50.	(1)	95.	(4)	140.	(1)
6.	(2)	51.	(2)	96.	(1)	141.	(4)
7.	(2)	52.	(2)	97.	(2)	142.	(3)
8.	(3)	53.	(3)	98.	(4)	143.	(1)
9.	(1)	54.	(3)	99.	(2)	144.	(2)
10.	(4)	55.	(1)	100.	(1)	145.	(2)
11.	(1)	56.	(4)	101.	(4)	146.	(1)
12.	(2)	57.	(1)	102.	(3)	147.	(1)
13.	(2)	58.	(2)	103.	(1)	148.	(1)
14.	(3)	59.	(2)	104.	(3)	149.	(1)
15.	(1)	60.	(3)	105.	(4)	150.	(3)
16.	(2)	61.	(1)	106.	(2)	151.	(4)
17.	(3)	62.	(1)	107.	(2)	152.	(3)
18.	(3)	63.	(1)	108.	(3)	153.	(4)
19.	(1)	64.	(2)	109.	(4)	154.	(2)
20.	(1)	65.	(1)	110.	(3)	155.	(3)
21.	(3)	66.	(4)	111.	(3)	156.	(2)
22.	(4)	67.	(3)	112.	(1)	157.	(2)
23.	(3)	68.	(2)	113.	(3)	158.	(4)
24.	(3)	69.	(3)	114.	(2)	159.	(1)
25.	(2)	70.	(4)	115.	(2)	160.	(4)
26.	(1)	71.	(1)	116.	(3)	161.	(2)
27.	(4)	72.	(3)	117.	(3)	162.	(3)
28.	(2)	73.	(4)	118.	(4)	163.	(2)
29.	(3)	74.	(4)	119.	(4)	164.	(4)
30.	(3)	75.	(4)	120.	(1)	165.	(1)
31.	(2)	76.	(4)	121.	(3)	166.	(2)
32.	(2)	77.	(3)	122.	(2)	167.	(4)
33.	(2)	78.	(3)	123.	(3)	168.	(1)
34.	(4)	79.	(1)	124.	(2)	169.	(1)
35.	(2)	80.	(3)	125.	(2)	170.	(2)
36.	(4)	81.	(4)	126.	(2)	171.	(4)
37.	(1)	82.	(2)	127.	(2)	172.	(1)
38.	(4)	83.	(2)	128.	(4)	173.	(4)
39.	(4)	84.	(4)	129.	(2)	174.	(2)
40.	(2)	85.	(1)	130.	(1)	175.	(3)
41.	(3)	86.	(3)	131.	(4)	176.	(1)
42.	(2)	87.	(1)	132.	(1)	177.	(3)
43.	(2)	88.	(1)	133.	(2)	178.	(3)
44.	(3)	89.	(1)	134.	(2)	179.	(3)
45.	(4)	90.	(2)	135.	(2)	180.	(2)

## Hints and Solutions

## Physics

1. Electric field on the surface due to all charges

$$\frac{5C \times \frac{C}{2}}{11C} = \frac{5C}{11} = \left( \frac{10}{11} \mu F \right)$$

$$\frac{R_1}{R_2} = \frac{R_{AC}}{R_{CB}}$$

4. Magnetic moment =
- $IA = \frac{Qw}{2\pi} \times \pi r^2$

$$\text{Angular momentum} = mr^2 w$$

the ratio depends on  $q$  and  $m$

5. The nucleus having equal number of neutrons

$$B = \frac{3}{4} \left( \frac{\mu_0 I}{2a} \right) + \frac{1}{4} \left[ \frac{\mu_0 I}{2b} \right]$$

$$= \frac{3\mu_0 I}{8a} + \frac{\mu_0 I}{8b} \otimes$$

$$I = I_1 + I_2 + 2\sqrt{I_1 I_2} \cos \phi$$

$$\lambda = \frac{h}{p} = \frac{h}{\sqrt{2mk}} = \frac{h}{\sqrt{2mqv}}$$

$$\frac{1}{F} = \frac{1}{f_1} + \frac{1}{f_2}$$

10. Unit vector is dimensionless quantity

$$\text{Dimension of } A = [ML^{-1}T^{-2}]$$

$$11. a = g \sin \theta \quad \dots(i)$$

$a = \text{slope of } v - t \text{ graph}$

$$\Rightarrow 5 = 10 \sin \theta \Rightarrow \sin \theta = \frac{1}{2}$$

$$\theta = 30^\circ$$

12. At a point on the left of charge
- $-Q$

13. Change in internal energy do not depend upon the path followed by the process. It only depends on initial and final states i.e.,
- $\Delta U_1 = \Delta U_2$

$$14. N + Kt^2 \sin \alpha = mg$$

where object leaves the contact

$$N = 0 \Rightarrow t = \sqrt{\frac{mg}{K \sin \alpha}}$$

$$15. \frac{I_{\max}}{I_{\min}} = \frac{(\sqrt{n} + 1)^2}{(\sqrt{n} - 1)^2}$$

$$\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}} = \frac{2\sqrt{n}}{n+1}$$

16. Elongation of wire due to its own wt

$$\Delta L = \frac{FL}{AY} = \frac{mg \left( \frac{L}{2} \right)}{AY}$$

$$\frac{\rho g l^2}{2Y} \quad (M = \rho Al)$$

- 17.
- $W_T = \text{area under the curve BC} - \text{Area under curve}$

$$AB = \frac{\pi}{2} (1)(1) = \frac{\pi}{2} J$$

$$18. mg \cos \theta - N = \frac{mv^2}{R} \quad \dots(i)$$

$$mgR = mgR \cos \theta + \frac{1}{2} mv^2 \quad \dots(ii)$$

We get  $\theta$  at which object leave contact

$$19. E^x V^y T^z = MT^{-2}$$

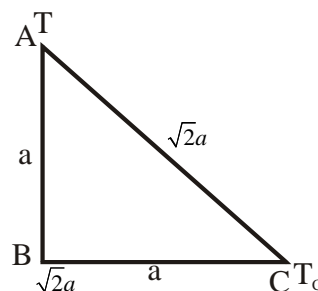
$$\Rightarrow x = 1, y = -2, z = -2$$

20. The energy radiated per second
- $\propto T^4$

$$E_1 \propto (300)^4 ; E_2 \propto (400)^4$$

$$\frac{E_2}{E_1} \propto \frac{256}{81}$$

$$21. \frac{\Delta Q}{\Delta t} = \frac{KA\Delta T}{l}$$



$$\text{for side AC and CB} \left( \frac{\Delta T}{\sqrt{2}a} \right)_{AC} = \left( \frac{\Delta T}{a} \right)_{CB}$$

$$\Rightarrow \frac{T - T_c}{\sqrt{2}a} = \frac{T_c - \sqrt{2}T}{a}$$

$$\Rightarrow T - T_c = \sqrt{2}T_c - 2T$$

$$\Rightarrow 3T = T_c(\sqrt{2} + 1) \Rightarrow \frac{T_c}{T} = \frac{3}{\sqrt{2} + 1}$$

$$T_c = \frac{3T}{\sqrt{2} + 1}$$

$$22. \quad w = \frac{1}{\sqrt{LC}} \quad \frac{w_1}{w_2} = \sqrt{\frac{L_2}{L_1} \times \frac{C_2}{C_1}}$$

$$w_1 = w_2 \quad \frac{L_2}{L_1} = \frac{C_1}{C_2} \Rightarrow \frac{1}{4} = \frac{C_1}{C_2}$$

$$\Rightarrow C_2 = 4C_1$$

23. In full wave rectifier, the frequency changes to double

24. Radioactivity is the nuclear process which occurs due to unstability of the atom & is completely internal & does not depend on external factors

$$25. \quad \text{No. of indium atoms per } m^3 = \frac{5 \times 10^{23}}{5 \times 10^7}$$

$$= 10^{21} \text{ atoms per } m^3$$

$$= 10^{15} \text{ atoms per } cm^3$$

$$x = a \sin \omega t$$

26. it will remain upwards

$$27. \quad \delta = 90^\circ$$

$$B \cos \delta = 0$$

Horizontal component of earth's magnetic field = 0

28. change in momentum = Impulse

$$u = \frac{dx}{dt} = 5 \text{ m/s}$$

$$\text{Impulse} = 2 \times 5 = 10$$

29. Inside the square plate,

$$A_1 4R^2, \quad A_2 = \pi R^2, \quad M_1 4R^2 \rho, \quad M_2 R^2 \rho$$

$$X_{cm} = \frac{M_1 X_1 + M_2 X_2}{M_1 + M_2} = \frac{(-4)R^2 - (\pi R^2)R}{4R^2 - \pi R^2} > R$$

so it lies in square plate

$$30. \quad T_1 \propto (l - l_1); \quad T_2 \propto (l - l_2)$$

$$\frac{T_1}{T_2} = \frac{l - l_1}{l - l_2} \Rightarrow T_1 l - T_1 l_1 = T_2 l - T_2 l_1$$

$$l_1 T_2 - l_2 T_1 = (T_2 - T_1)l$$

$$l = \frac{l_1 T_2 - l_2 T_1}{T_2 - T_1}$$

$$31. \quad v \propto \sqrt{T}$$

$$\frac{V_1}{V_2} = \sqrt{\frac{T_1}{T_2}} \Rightarrow \frac{V}{2V} = \sqrt{\frac{300}{x}} \Rightarrow x = 1200K$$

$$32. \quad n_1 \lambda_1 = n_2 \lambda_2$$

$$12 \times 600 = n_2 \times 400$$

$$\frac{12 \times 600}{400} = n_2 \Rightarrow n_2 = 18$$

$$33. \quad \frac{1}{\lambda} = R \left( \frac{1}{n_1^2} - \frac{1}{n_2^2} \right) = R \left( \frac{1}{4} - \frac{1}{9} \right)$$

$$\lambda = \frac{36}{5R}$$

$$34. \quad V_{\text{image w.r.t}} = V_{\text{image}} - V_{\text{ball}}$$

$$= (2\hat{i} + 3\hat{j} - 4\hat{k}) - (2\hat{i} + 3\hat{j} + 4\hat{k})$$

$$= -8\hat{k}$$

$$35. \quad Q \propto \frac{A(T_1 - T_2)}{l}$$

$$\frac{Q'}{Q} = \frac{A'}{l'} \times \frac{l}{A} = \frac{4A}{2l} \times \frac{l}{A}$$

$$Q' = 2Q$$

$$36. \quad V_{\text{police}} = 10 \text{ m/s} \quad V_{\text{theif}} = 9 \text{ m/s}$$

$$V_{\text{relative}} = 1 \text{ m/s}$$

$$t = \frac{S}{V} = \frac{100}{1} = 100S$$

$$37. \quad y = at^2 \Rightarrow \frac{dy}{dt} = 2at$$

$$x = 2at \Rightarrow \frac{dx}{dt} = 2a$$

$$\frac{dy}{dx} = \frac{dy}{dt} \cdot \frac{dt}{dx} = \frac{2at}{2a} = t$$

$$38. \quad g = \frac{G}{y^2} \times \frac{4}{3} \pi y^3 \rho$$

39. Using conservation of energy

$$\frac{1}{2} mV^2 - \frac{GMm}{R} = -\frac{GMm}{R+h} \dots\dots(i)$$

$$V_0 = \sqrt{\frac{GM}{R+h}} \dots\dots(ii)$$

$$V_e = \sqrt{\frac{2GM}{R}} \dots\dots(iii);$$

$$\text{Solving (i), (ii), (iii)} \quad V = \sqrt{V_e^2 - 2V_0^2}$$

40. Relative to liquid, the velocity of sphere is  $2v_0$  upwards.

$$\begin{aligned} \therefore \text{viscous force on sphere} &= 6\pi nr2v_0 \text{ downwards} \\ &= 12\pi nrv_0 \text{ downwards} \end{aligned}$$

$$41. \quad \frac{4}{3} \pi R^3 = 8 \times 4\pi \frac{r^3}{8}$$

$$R = 2r$$

The terminal speed of the small drop is given by

$$v_1 = \frac{2}{9} \frac{\rho r^2 g}{\eta}$$

The terminal speed of the big drop will be

$$v_1 = \frac{2}{9} \frac{\rho R^2 g}{\eta}$$

$$v_1 = 4v_1 = 4 \times 6 = 24 \text{ cms}^{-1}$$

$$42. \quad \text{Mass of section } BC = \frac{m}{L}(L-y).$$

$$\therefore \text{tension at } B = T = \frac{m}{L}(L-y)g.$$

$\therefore$  elongation of element  $dy$  at  $B$

$$= dx = (dy) \frac{T}{AY} = \frac{m}{L}(L-y)g \frac{dy}{AY}$$

Total elongation

$$= \int dx = \frac{mg}{LAY} \int_0^L (L-y) dy = \frac{mgL}{2YA}$$

43. Since, P-V graph of the process is a straight line and two points  $(V_0, 2P_0)$

And  $(2V_0, P_0)$  are known, therefore its equation will be,

$$(P - P_0) = \frac{(2P_0 - P_0)}{(V_0 - 2V_0)}(V - 2V_0) = \frac{P_0}{V_0}(2V_0 - V)$$

$$\therefore P = 3P_0 - \frac{P_0 V}{V_0}$$

According to equation for ideal gas,  $T = \frac{PV}{nR}$

$$= \left(3P_0 - \frac{P_0 V}{V_0}\right) \frac{V}{nR} = \frac{3P_0 V_0 V - P_0 V^2}{nR V_0}$$

For T to be maximum,  $\frac{dT}{dV} = 0$

$$3P_0 V_0 - 2P_0 V = 0$$

OR

Putting this value in equation (i), we get;

$$T_{\max} = \frac{3P_0 V_0 \left(\frac{3V_0}{2}\right) - P_0 \left(\frac{9}{4} V_0^2\right)}{nR V_0} = \frac{9P_0 V_0}{4nR}$$

$$44. \quad Vp^n = (V + \Delta V)(P + \Delta P)^n$$

$$= Vp^n \left[1 + \frac{\Delta V}{V}\right] \left[1 + n \frac{\Delta P}{P}\right]$$

$$\therefore \frac{\Delta V}{V} = -n \frac{\Delta P}{P}$$

$$\text{Bulk modulus} = \frac{\Delta P}{\Delta V/V} = \frac{P}{n}$$

45.

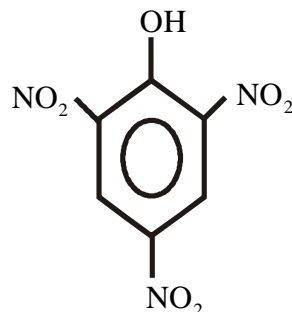
## Chemistry

46. Use equivalent concept
47. conceptual
48. Use:  $\Delta T_f = i k_f m$
49. Find out  $\Delta G^\circ$  values of three reactions, then apply formula  $\Delta G^\circ = -nFE^\circ_{\text{cell}}$ ,  $\Delta G^\circ = -RT \ln k$
50.  $\text{PH}_3$  gas will be formed.
51. Ampicillin is semi synthetic antibiotic.
52. It is inversely prop. to effective nuclear charge.
53. Use  $\text{H}^+$  of  $\text{H}_2\text{O}$  also.
54.  $G = \frac{1}{R} = \frac{k}{\text{cell const}}$
55. Rate of hydrogenation is inversely prop. to stability of alkene
56. due to common ion effect
57. CO is strong ligand, pairing will occur.
58. mercuric chloride does not respond.
- 59.
60. In  $\text{KO}_2$ ,  $\text{O}_2^-$  is present
61.  $k = Ae^{-\Delta H/RT}$
62.  $kt = [A_0] - [A_t]$ , (for zero order)
- $kt = \ln \frac{A_0}{A_t}$  (for first order)
63. Use  $\Delta S_{\text{vap}} = \frac{\Delta H_{\text{vap}}}{T}$
64. One  $\text{SrCl}_2$  will create one cationic vacancy
65. Factual
66. Only I and II contain chiral carbon atom.
67. other reactant should be Benzene and haloalkane.
68.  $\text{C}_3\text{H}_7\text{I} \xrightarrow[\text{KOH}]{\text{Alc}} \text{CH}_3 - \text{CH} = \text{CH}_2 \xrightarrow{\text{NBS}} (\text{A})$
- (B)  $\begin{array}{c} \text{C} \text{H}_2 - \text{CH} = \text{CH}_2 \\ | \\ \text{Br} \end{array} \xrightarrow{\text{KCN}}$
- (C)  $\begin{array}{c} \text{C} \text{H}_2 - \text{CH} = \text{CH}_2 \\ | \\ \text{CN} \end{array}$
69. This is the example of conc cell.

$$E = 2.303 RT \log \frac{C_2}{C_1}$$

$$C_2 > C_1$$

$$\Delta G = nFE$$



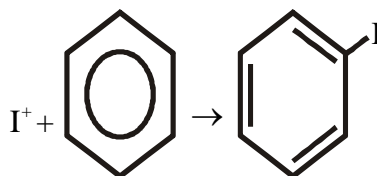
$P_{\text{ka}}$  is Inversely proportional

to acidity

$$72. \lambda = \frac{h}{\sqrt{ev}}$$

$$73. A_3B_4$$

74. Haloform Reaction.



77. 0.56 % \_\_\_\_\_ 56  
Than 100 % \_\_\_\_\_ 10,000

78.  $\text{CH}_3 - \text{F}$  due to small bond length between carbon and F.

83. Metaborate of metal is formed.

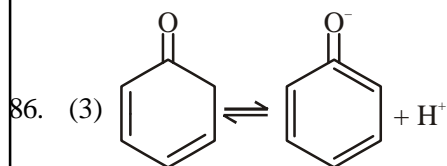
84. (4)

$$85. (1) \because \frac{P^\circ - P_s}{P_s} = \frac{w_A}{w_B} \times \frac{m_B}{m_A}$$

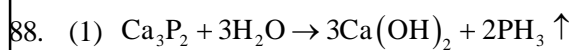
$$P_s = \frac{4P^\circ}{5}, m_A = 60, w_A = ?, w_B = 180 \text{ g}, m_B = 18$$

$$\therefore \frac{P^\circ - \frac{4P^\circ}{5}}{\frac{4P^\circ}{5}} = \frac{W_A \times 18}{60 \times 180}$$

$$\therefore w = \frac{60 \times 180}{4 \times 18} = 150 \text{ g}$$

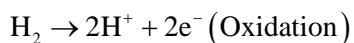
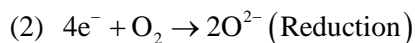


87. (1)  $\text{LiAlH}_4$  reduce an acid chloride to corresponding alcohol.

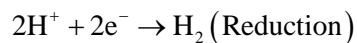
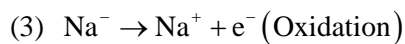


89. (1) Oxidation state of Ca and C are +2 and +4, respectively, in both reactant and product;

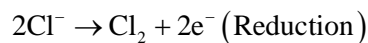
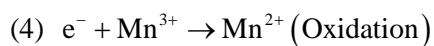
Hence, not redox.



Hence, redox



Hence, redox



Hence, redox

90. (2) Formation of micelles takes place below CMC.