

Sub : SR BIPC(CHAINA & ELITE)

Time : 3 Hrs

NEET GRAND TEST - 1

Date : 25-01-2019

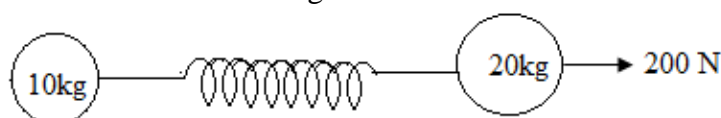
Max. Marks: 720

**IMPORTANT INSTRUCTIONS :**

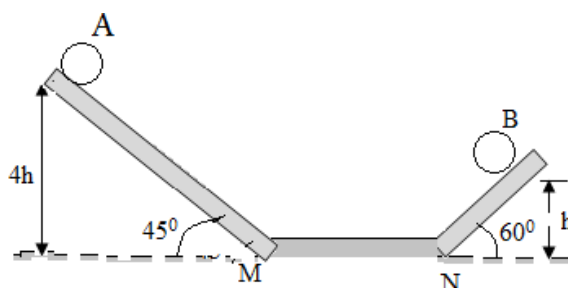
- ☐ The Test is of 3 Hours Duration.
- ☐ The Test consists of 180 Questions. The Maximum Marks are 720.
- ☐ There are Four parts in the question paper consisting of Physics, Chemistry, Botany and Zoology.
- ☐ For each correct answer **4 Marks** and each incorrect answer **-1 Mark**.

**PHYSICS**

- Two resistors of resistance  $R_1 = (100 \pm 3)\Omega$  and  $R_2 = (200 \pm 4)\Omega$  are connected in parallel. The equivalent resistance of the parallel combination is  
 1)  $(66.7 \pm 1.8)\Omega$     2)  $(66.7 \pm 4.0)\Omega$     3)  $(66.7 \pm 3.0)\Omega$     4)  $(66.7 \pm 7.0)\Omega$
- A body is projected vertically downward from A, the top of the tower reach the ground in  $t_1$  seconds. If it is projected upward with same velocity, it reaches the ground in  $t_2$  seconds. At what time will it reach the ground if it is dropped from A ?  
 1)  $\sqrt{t_1/t_2}$     2)  $\sqrt{t_2/t_1}$     3)  $\sqrt{t_1 t_2}$     4)  $t_1 t_2$
- A projectile can have the same range R for two angles of projection. If  $t_1$  and  $t_2$  be the times of flight in the two cases, then the product of two times of flight becomes  
 1)  $t_1 t_2 \propto R^2$     2)  $t_1 t_2 \propto R$     3)  $t_1 t_2 \propto \frac{1}{R}$     4)  $t_1 t_2 \propto \frac{1}{R^2}$
- Two masses of 10 kg and 20 kg respectively are tied together by a massless spring. A force of 200 N is applied on a 20 kg mass as shown in figure. At the instant shown, the acceleration of 10 kg mass is  $12 \text{ m/s}^2$ , the acceleration of 20 kg mass is

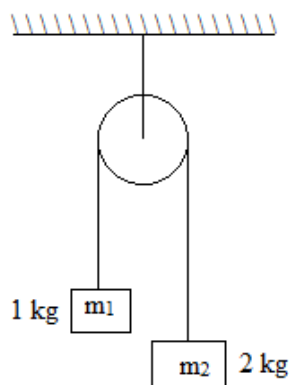


- 1) Zero    2)  $10 \text{ m/s}^2$     3)  $4 \text{ m/s}^2$     4)  $12 \text{ m/s}^2$
- Two identical balls A and B are released from the positions show in figure. They collide elastically on horizontal position MN. The ratio of the heights attained by A and B after collision will be (neglect friction)

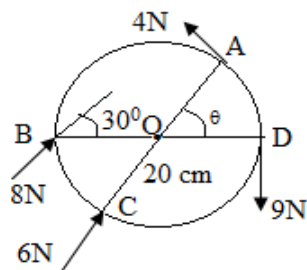


- 1) 1:4    2) 2:1    3) 4:13    4) 2:5
- A vehicle of mass m is moving on a rough horizontal road with momentum P. If the coefficient of friction between the tyres and the road be  $\mu$ , the stopping distance is  
 1)  $\frac{P}{2\mu mg}$     2)  $\frac{P^2}{2\mu mg}$     3)  $\frac{P}{2\mu m^2 g}$     4)  $\frac{P^2}{2\mu m^2 g}$

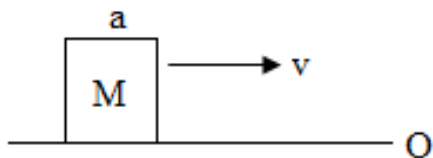
7. Two masses  $m_1 = 1\text{ kg}$  and  $m_2 = 2\text{ kg}$  are connected by a light inextensible string and suspended by means of a weightless pulley as shown in the figure. Assuming that both the masses start from rest, the distance travelled by the center of mass in two seconds is (Take  $g = 10\text{ m s}^{-2}$ )



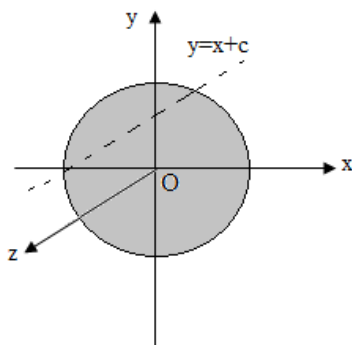
- 1)  $\frac{20}{9}m$       2)  $\frac{40}{9}m$       3)  $\frac{2}{3}m$       4)  $\frac{1}{3}m$
8. Wheel of radius 20 cm has four forces applied to it as shown in fig. Then, the torque produced by these forces about O is



- 1) 5.4 Nm anticlockwise      2) 1.8 Nm clockwise  
3) 1.8 Nm anticlockwise      4) 5.4 Nm clockwise
9. A cubical block of side  $a$  is moving with velocity  $v$  on a horizontal smooth plane as shown in figure. If it hits a ridge at point O. The angular speed of the block after it hits O is

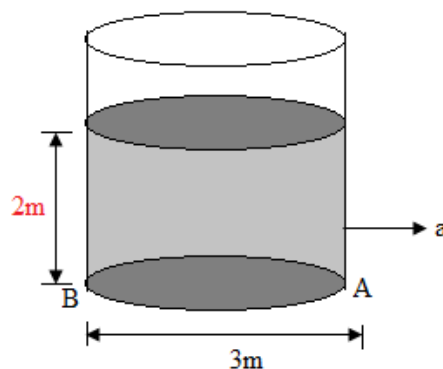


- 1)  $3v/(4a)$       2)  $3v/(2a)$       3)  $\sqrt{3}v / \sqrt{2}a$       4) Zero
10. A uniform disc of radius  $R$  lies in the  $x$ - $y$  plane, with its centre at origin. Its moment of inertia about  $z$ -axis is equal to its moment of inertia about line  $y=x+c$ . The value of  $c$  will be

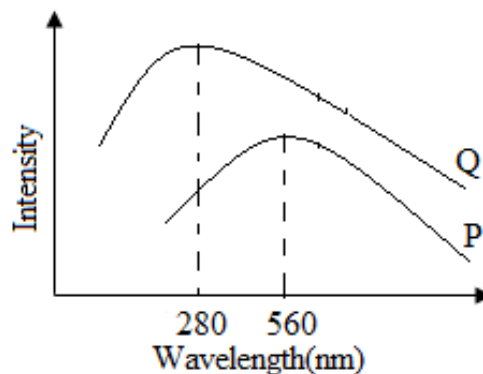


- 1)  $-\frac{R}{2}$       2)  $\pm \frac{R}{\sqrt{2}}$       3)  $\frac{+R}{4}$       4)  $-R$

11. A small body of superdense material, whose mass is twice the mass of the earth but whose size is very small compared to the size of the earth, starts from rest at a height  $H \ll R$  above the earth's surface, and reaches the earth's surface in time  $t$ . Then  $t$  is equal to
- 1)  $\sqrt{2H/g}$       2)  $\sqrt{H/g}$       3)  $\sqrt{2H/3g}$       4)  $\sqrt{4H/3g}$
12. A particle of mass  $M$  is situated at the centre of spherical shell of mass  $M$  and radius  $a$ . The magnitude of the gravitational potential at a point situated at  $a/2$  distance from the centre will be
- 1)  $\frac{2GM}{a}$       2)  $\frac{3GM}{a}$       3)  $\frac{4GM}{a}$       4)  $\frac{GM}{a}$
13. The pressure applied from all directions on a cube is  $P$ . How much its temperature should be raised to maintain the original volume? The volume elasticity of the cube is  $\beta$  and the coefficient of volume expansion is  $\alpha$
- 1)  $\frac{P}{\alpha\beta}$       2)  $\frac{P\alpha}{\beta}$       3)  $\frac{P\beta}{\alpha}$       4)  $\frac{\alpha\beta}{P}$
14. The minimum horizontal acceleration of the container so that the pressure at the point A of the container becomes atmospheric is (The tank is of sufficient height)



- 1)  $\frac{3}{2}g$       2)  $\frac{4}{3}g$       3)  $\frac{4}{2}g$       4)  $\frac{3}{4}g$
15. The emission spectrum of a black body at two different temperatures are shown by curves P and Q (as shown in figure). The ratio of the areas under the two curves P and Q will be

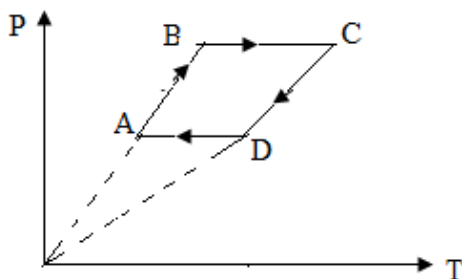


- 1) 1:16      2) 4:9      3) 81:256      4) 16:81
16. The ratio of the densities of the two bodies is 3:4 and the ratio of specific heat is 4:3. Find the ratio of their thermal capacities for unit volume
- 1) 1:2      2) 1:1      3) 2:3      4) 16:9
17. One mole of an ideal gas undergoes a process  $P = P_0 \left[ 1 + \left( \frac{2V_0}{V} \right)^2 \right]^{-1}$ , where  $P_0, V_0$  are constants.

Change in temperature of the gas when volume is changed from  $V=V_0$  to  $V=2V_0$  is

- 1)  $\frac{4}{5} \frac{P_0 V_0}{nR}$       2)  $\frac{3}{4} \frac{P_0 V_0}{nR}$       3)  $\frac{2}{3} \frac{P_0 V_0}{nR}$       4)  $\frac{9}{7} \frac{P_0 V_0}{nR}$

18. Six moles of an ideal gas performs a cycle shown in figure. If the temperature are  $T_A=600$  K,  $T_B=800$  K,  $T_C=2200$  K and  $T_D=1200$  K, the work done per cycle is



- 1) 20 kJ                      2) 30 kJ                      3) 40 kJ                      4) 60 kJ
19. One mole of an ideal gas undergoes a process in which  $T = T_0 + aV^3$ , where  $T_0$  and 'a' are positive constants and V is molar volume. The volume for which pressure will be minimum is
- 1)  $\left(\frac{T_0}{2a}\right)^{1/3}$                       2)  $\left(\frac{T_0}{3a}\right)^{1/3}$                       3)  $\left(\frac{a}{2T_0}\right)^{2/3}$                       4)  $\left(\frac{a}{3T_0}\right)^{2/3}$
20. The period of oscillation of a simple pendulum of length  $l$  suspended from the roof of the vehicle which moves down without friction on an inclined plane of inclination  $\alpha$ , is given by
- 1)  $\pi \sqrt{\frac{l}{g \cos \alpha}}$                       2)  $\frac{1}{2\pi} \sqrt{\frac{l}{g \cos \alpha}}$                       3)  $2\pi \sqrt{\frac{l}{g \cos \alpha}}$                       4)  $\frac{1}{\pi} \sqrt{\frac{l}{2g \cos \alpha}}$
21. A police car moving at 22 m/s, chases a motorcyclist. The police man sounds his horn at 176 Hz, while both of them move towards a stationary siren of frequency 165 Hz. Calculate the speed of the motorcycle, if it is given that he does not observe any beats (velocity of sound = 330 m/sec)

Police Car



22 m/s (176 Hz)

Motorcycle

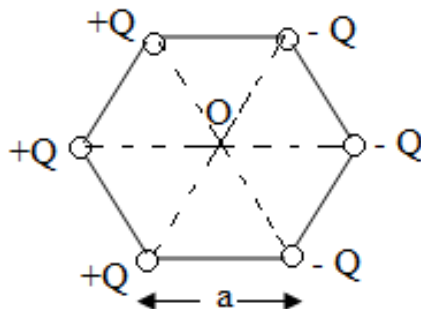


→  $V_0$

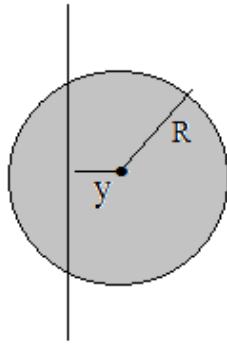
Stationary siren (165 Hz)



- 1) 33 m/s                      2) 22 m/s                      3) Zero                      4) 11 m/s
22. The fundamental frequency of a closed pipe is 220 Hz. If 1/4 of the pipe is filled with water, the frequency of the first overtone of the pipe now is
- 1) 220 Hz                      2) 440 Hz                      3) 880 Hz                      4) 1760 Hz
23. Six charges are placed at the vertices of a regular hexagon as shown in the figure. The electric field on the line passing through point O and perpendicular to the plane of the figure as a function of distance  $x$  from point O is

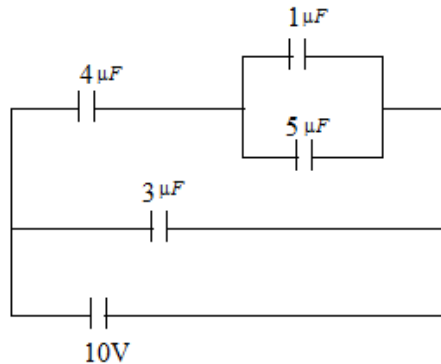


- 1) 0                      2)  $\frac{Qa}{\pi \epsilon_0 x^3}$                       3)  $\frac{2Qa}{\pi \epsilon_0 x^3}$                       4)  $\frac{\sqrt{3}Qa}{\pi \epsilon_0 x^3}$
24. A uniformly charged and infinitely long line having a linear charge density ' $\lambda$ ' is placed at a normal distance  $y$  from a point O. Consider a sphere of radius  $R$  with O as centre and  $R > y$ . Electric flux through the surface of the sphere is

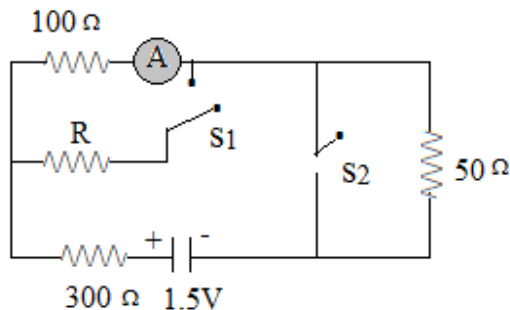


- 1) Zero      2)  $\frac{2\lambda R}{\epsilon_0}$       3)  $\frac{2\lambda\sqrt{R^2 - y^2}}{\epsilon_0}$       4)  $\frac{\lambda\sqrt{R^2 - y^2}}{\epsilon_0}$

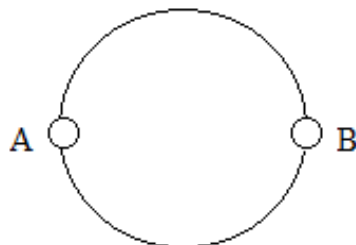
25. The charge on  $4 \mu F$  capacitor in the given circuit is (in  $\mu C$ )



- 1) 12      2) 24      3) 36      4) 32
26. In the circuit show in figure the reading of ammeter is the same with both switches open as with both closed. Then find the resistance R. (ammeter is ideal)



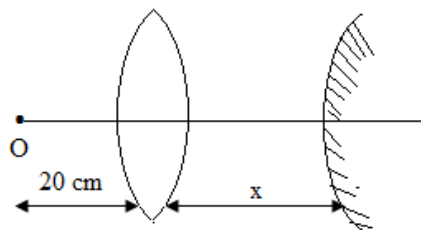
- 1)  $550 \Omega$       2)  $400 \Omega$       3)  $350 \Omega$       4)  $600 \Omega$
27. A wire of resistance  $12 \Omega m^{-1}$  is bent to form a complete circle of radius 10 cm. The resistance between its two diametrically opposite points A and B as shown in the figures is



- 1)  $0.6 \pi \Omega$       2)  $3 \Omega$       3)  $6 \pi \Omega$       4)  $6 \Omega$
28. A long straight wire along the z-axis carries a current I in the negative z direction. The magnetic vector field  $\vec{B}$  at a point having coordinates (x,y) in the  $z = 0$  plane is

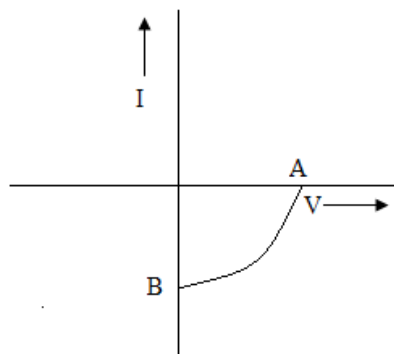
- 1)  $\frac{\mu_0 I (y\hat{i} - x\hat{j})}{2\pi(x^2 + y^2)}$       2)  $\frac{\mu_0 I (x\hat{i} + y\hat{j})}{2\pi(x^2 + y^2)}$       3)  $\frac{\mu_0 I (x\hat{j} + y\hat{i})}{2\pi(x^2 + y^2)}$       4)  $\frac{\mu_0 I (x\hat{i} - y\hat{j})}{2\pi(x^2 + y^2)}$

29. When a proton is released from rest in a room, it starts with an initial acceleration  $a_0$  towards west. When it is projected towards north with a speed  $v_0$  it moves with an initial acceleration  $3a_0$  towards west. The electric and magnetic fields in the room are
- $\frac{ma_0}{e}$  west,  $\frac{2ma_0}{eV_0}$  up
  - $\frac{ma_0}{e}$  west,  $\frac{2ma_0}{eV_0}$  down
  - $\frac{ma_0}{e}$  east,  $\frac{3ma_0}{eV_0}$  up
  - $\frac{ma_0}{e}$  east,  $\frac{3ma_0}{eV_0}$  down
30. A thin rectangular magnet suspended freely has a period of oscillation equal to  $T$ . Now it is broken into two equal halves (each having half of the original length) and one piece is made to oscillate freely in the same field. If its period of oscillation is  $T'$ , then ratio  $\frac{T'}{T}$  is
- $\frac{1}{4}$
  - $\frac{1}{2\sqrt{2}}$
  - $\frac{1}{2}$
  - 2
31. A conducting circular loop is placed in a uniform magnetic field of induction  $B$  tesla with its plane normal to the field of induction  $B$  tesla with its plane normal to the field. Now, radius of the loop starts shrinking at the rate  $(dr/dt)$ . Then the induced e.m.f at the instant when the radius is  $r$  is
- $\pi r B \left( \frac{dr}{dt} \right)$
  - $2\pi r B \left( \frac{dr}{dt} \right)$
  - $\pi r^2 B \left( \frac{dr}{dt} \right)$
  - $\frac{\pi B r^2}{2} \left( \frac{dr}{dt} \right)$
32. The r.m.s current in an AC circuit is  $2A$ . If the wattless current be  $\sqrt{3}A$ , what is the power factor?
- $\frac{1}{\sqrt{3}}$
  - $\frac{1}{\sqrt{2}}$
  - $\frac{1}{2}$
  - $\frac{1}{3}$
33. A point object  $O$  is placed at a distance of  $20\text{ cm}$  from a convex lens of focal length  $10\text{ cm}$  as shown in figure. At what distance  $x$  from the lens should a concave mirror of focal length  $60\text{ cm}$ , be placed so that final image coincides with the object?



- 10 cm
  - 40 cm
  - 20 cm
  - final image can never coincide with the object in the given conditions
34. An object is placed at a distance of  $40\text{ cm}$  from a concave mirror of focal length  $15\text{ cm}$ . If the object is displaced through a distance of  $20\text{ cm}$  towards the mirror, the displacement of the image will be
- $36\text{ cm}$  towards the mirror
  - $30\text{ cm}$  away from the mirror
  - $30\text{ cm}$  towards from the mirror
  - $36\text{ cm}$  away from the mirror
35. In an astronomical telescope in normal adjustment a straight black line of length  $L$  is drawn on inside part of objective lens. The eyepiece forms a real image of this line. The length of this image is  $l$ . The magnification of the telescope is
- $\frac{L}{l}$
  - $\frac{L}{l} + 1$
  - $\frac{L}{l} - 1$
  - $\frac{L+l}{L-l}$
36. Which of the following is not due to total internal reflection
- Difference between apparent and real depth of a pond
  - Mirage on hot summer days
  - Brilliance of diamond
  - Working of optical fibre
37. In a Young's double slit experiment,  $I_0$  is the intensity at the central maximum and  $\beta$  is the fringe width. The intensity at a point  $P$  distance  $x$  from the centre will be
- $I_0 \cos^2 \frac{\pi x}{\beta}$
  - $4I_0 \cos^2 \frac{\pi x}{\beta}$
  - $I_0 \cos^2 \frac{\pi x}{\beta}$
  - $\frac{I_0}{4} \cos^2 \frac{\pi x}{\beta}$

38. Two polaroids are placed in the path of unpolarised beam of intensity  $I_0$  such that no light is emitted from the second Polaroid. If a third Polaroid whose polarization axis makes an angle  $\theta$  with the polarization axis of first Polaroid, is placed between these polaroids then the intensity of light emerging from the last polaroids will be
- 1)  $\left(\frac{I_0}{8}\right) \sin^2 2\theta$       2)  $\left(\frac{I_0}{4}\right) \sin^2 2\theta$       3)  $\left(\frac{I_0}{2}\right) \cos^2 \theta$       4)  $I_0 \cos^4 \theta$
39. An electron of mass  $m$  and a photon have same energy  $E$ . The ratio of de-Broglie wavelengths associated with them is
- 1)  $\frac{1}{C} \left(\frac{E}{2m}\right)^{\frac{1}{2}}$       2)  $\left(\frac{E}{2m}\right)^{\frac{1}{2}}$       3)  $C(2mE)^{\frac{1}{2}}$       4)  $\frac{1}{C} \left(\frac{2m}{E}\right)^{\frac{1}{2}}$
40. In a photoemissive cell with exciting wavelength  $\lambda$ , the fastest electron has speed  $v$ . If the exciting wavelength is changed to  $3\lambda/4$ , the speed of the fastest emitted electron will be
- 1)  $v \left(\frac{3}{4}\right)^{1/2}$       2)  $v \left(\frac{4}{3}\right)^{1/2}$       3)  $< v \left(\frac{4}{3}\right)^{1/2}$       4)  $> v \left(\frac{4}{3}\right)^{1/2}$
41. When the electron in the hydrogen atom jumps from 2<sup>nd</sup> orbit to 1<sup>st</sup> orbit, the wavelength of radiation emitted is  $\lambda$ . When the electrons jump from 3<sup>rd</sup> orbit to 1<sup>st</sup> orbit, the wavelength of emitted radiation would be
- 1)  $\frac{27}{32} \lambda$       2)  $\frac{32}{27} \lambda$       3)  $\frac{2}{3} \lambda$       4)  $\frac{3}{2} \lambda$
42. A radioactive nucleus undergoes a series of decays according to the scheme  
 $A \xrightarrow{\alpha} A_1 \xrightarrow{\beta} A_2 \xrightarrow{\alpha} A_3 \xrightarrow{\gamma} A_4$   
 If the mass number and atomic number of  $A$  are 180 and 72 respectively, then what are these number for  $A_4$ ?
- 1) 172 and 69      2) 174 and 70      3) 176 and 69      4) 176 and 70
43. In a common emitter (CE) amplifier having a voltage gain  $G$ , the transistor used has transconductance 0.03 mho and current gain 25. If the above transistor is replaced with another one with transconductance 0.02 mho and current gain 20, the voltage gain will be
- 1)  $\frac{2}{3} G$       2) 1.5  $G$       3)  $\frac{1}{3} G$       4)  $\frac{5}{4} G$
44. The given graph represents  $V - I$  characteristic for a semiconductor device.

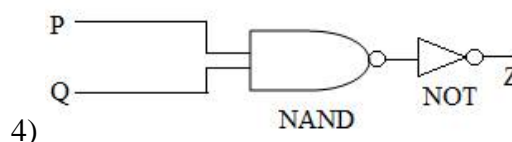
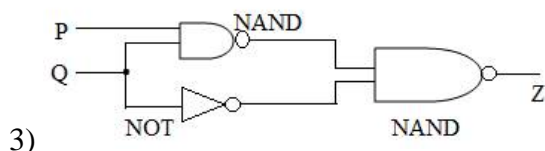
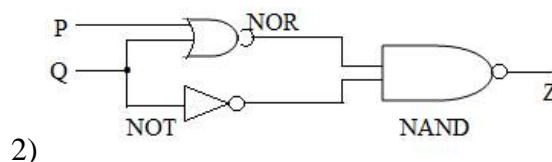
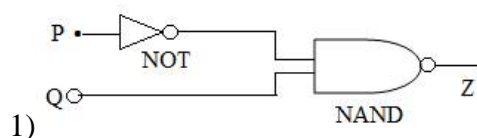


Which of the following statement is correct?

- 1) It is  $V - I$  characteristic for solar cell where point A represents open circuit voltage and point B short circuit current
- 2) It is for a solar cell and points A and B represent open circuit voltage and current, respectively
- 3) It is for a photodiode and points A and B represent open circuit voltage and current, respectively
- 4) It is for an LED and points A and B represents open circuit voltage and short circuit current respectively

45. A combination of logic gates has the truth table below

P	Q	Z
0	0	0
0	1	1
1	0	1
1	1	1



### CHEMISTRY

46. 1 mole of iron (Fe) reacts completely with 0.65 mole  $O_2$  to give a mixture of only FeO and  $Fe_2O_3$ . Mole ratio of ferrous oxide to ferric oxide formed is  
 1) 3:2                      2) 4:3                      3) 20:13                      4) 1:2
47. Mole fraction of ethyl alcohol in aqueous ethyl alcohol solution is 0.25. Hence, the percentage of ethyl alcohol by weight is  
 1) 54%                      2) 25%                      3) 75%                      4) 46%
48. In a multi electron atom, which of the following orbitals described by the three quantum numbers will have the same energy in the absence of magnetic and electric fields  
 A)  $n=1, l=0, m=0$       B)  $n=2, l=0, m=0$       C)  $n=2, l=1, m=1$       D)  $n=3, l=2, m=1$   
 E)  $n=3, l=2, m=0$   
 1) D and E                      2) B and C                      3) C and D                      4) A and B
49. If  $Be^{3+}$  and a proton are accelerated by the same potential., then their de Broglie wavelengths have the ratio (assume mass of proton = mass of neutron)  
 1) 1:2                      2) 1:4                      3) 1:1                      4)  $1:3\sqrt{3}$
50. The correct order of ionic size of  $N^{3-}, Na^+, F^-, Mg^{2+}$  and  $O^{2-}$  is  
 1)  $Mg^{2+} > Na^+ > F^- > O^{2-} < N^{3-}$                       2)  $N^{3-} < F^- > O^{2-} > Na^+ > Mg^{2+}$   
 3)  $Mg^{2+} < Na^+ < F^- < O^{2-} < N^{3-}$                       4)  $N^{3-} > O^{2-} > F^- > Na^+ < Mg^{2+}$
51. Match the following
- |    | <u>Molecule</u> |    | <u>Bond angle</u> |
|----|-----------------|----|-------------------|
| A) | $CH_4$          | 1) | $180^\circ$       |
| B) | $BeCl_2$        | 2) | $109^\circ 28'$   |
| C) | $SO_3$          | 3) | $103^\circ$       |
| D) | $OF_2$          | 4) | $120^\circ$       |
- |    | A | B | C | D |
|----|---|---|---|---|
| 1) | 1 | 2 | 3 | 4 |
| 3) | 2 | 1 | 4 | 3 |
- |    | A | B | C | D |
|----|---|---|---|---|
| 2) | 4 | 3 | 1 | 2 |
| 4) | 2 | 1 | 3 | 4 |
52. Which of the following has pyramidal shape?  
 1)  $XeO_3$                       2)  $XeF_4$                       3)  $XeF_2$                       4)  $XeF_6$
53. At low pressure , if  $RT = 2\sqrt{aP}$  , then the volume occupied by one mole of real gas is  
 1)  $\frac{2RT}{P}$                       2)  $\frac{2P}{2R}$                       3)  $\frac{RT}{2P}$                       4)  $\frac{RT}{P}$
54. An open vessel at  $27^\circ C$  is heated until  $3/8^{th}$  of the air in it has been expelled. Assuming that the volume remains constant, calculate the temperature at which the vessel was heated.  
 1)  $307^\circ C$                       2)  $107^\circ C$                       3)  $480^\circ C$                       4)  $207^\circ C$



55. A cylinder of gas supplied by Bharat Petroleum is assumed to contain 14 kg of butane. If a normal family requires 20,000 kJ of energy per day for cooking, butane gas in the cylinder last for ....days ( $\Delta H_c$  of  $C_4H_{10} = -2658 \text{ KJ mol}^{-1}$ )  
 1) 15 days                      2) 20 days                      3) 50 days                      4) 32 days

56. For the following equilibrium  $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$  vapour density is found to be 85.0. The percentage dissociation of  $PCl_5$  is nearly  
 1) 25                      2) 23                      3) 50                      4) 10.5

57.  $M(OH)_x$  has  $K_{sp}=4 \times 10^{-12}$  and solubility  $10^{-4}$  M. Hence, x is  
 1) 1                      2) 2                      3) 3                      4) 4

58. Oxidation state of 'C' in carbon suboxide is  
 1) +2/3                      2) +4/3                      3) +4                      4) -4/3

59. The distance between an octahedral and tetrahedral void in fcc lattice would be  
 1)  $\sqrt{3}a$                       2)  $\frac{\sqrt{3}a}{2}$                       3)  $\frac{\sqrt{3}a}{3}$                       4)  $\frac{\sqrt{3}a}{4}$

60. The correct statement among the following is:  
 i)  $NaBH_4$  produce  $B_2H_6$  on reaction with  $I_2$   
 ii) Reaction between  $B_2H_6$  and  $NMe_3$  is an acid base reaction  
 iii)  $B_2H_6$  is produced on industrial scale by reaction with  $BF_3$ , NaH  
 iv) Boranes on hydrolysis produce  $B_2H_6$  and  $H_2$  gas  
 1) All are correct                      2) Only i & ii are correct  
 3) Only iv is correct                      4) Only i, ii, iii are correct

61. Y gram of non-volatile organic substance of molecular mass M is dissolved in 250 g benzene. Molal elevation constant of benzene is  $K_b$ . Elevation in its boiling point is given by(i=1)  
 1)  $\frac{M}{K_b Y}$                       2)  $\frac{4K_b Y}{M}$                       3)  $\frac{K_b Y}{4M}$                       4)  $\frac{K_b Y}{M}$

62. The volume of strength of 4N  $H_2O_2$  solution is  
 1) 11.2                      2) 22.4                      3) 5.6                      4) 16.8

63. The reduction electrode potentials change is found to be 0.591 V at  $25^\circ\text{C}$ . The equilibrium constant of the reaction is ( $n = 1e^-$ )  
 1)  $1.0 \times 10^{30}$                       2)  $1.0 \times 10^5$                       3)  $1.0 \times 10^{10}$                       4)  $1.0 \times 10^1$

64. Incorrect statement among the following is  
 1) Pure CO is prepared by dehydration of formic acid with conc.  $H_2SO_4$   
 2) Commercially CO is prepared by passing steam over red hot coke  
 3) CO is a powerful reducing agent and reduces almost all metal oxides other than IA, IIA group elements, Al etc...  
 4) CO is a Lewis acid

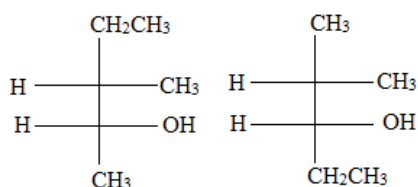
65. For a reaction the units of rate constant and that of rate are same, hence the order of reaction is  
 1) 0                      2) 1                      3) 2                      4) 3

66. The Tyndall effect associated with colloidal particles is due to  
 1) Presence of electrical charges                      2) Scattering of light  
 3) Absorption of light                      4) Reflection of light

67. Keto-enol tautomerism is observed in  
 1)  $C_6H_5 - \overset{\overset{O}{||}}{C} - H$                       2)  $C_6H_5 - \overset{\overset{O}{||}}{C} - CH_3$                       3)  $C_6H_5 - \overset{\overset{O}{||}}{C} - C_6H_5$                       4)  $C_6H_5 - \overset{\overset{O}{||}}{C} - \underset{\underset{CH_3}{|}}{C} - C_6H_5$

68. Which of the following has the most acidic hydrogen?  
 1) 3-hexanone                      2) 2,4-hexanedione                      3) 2,5-hexanedione                      4) 2,3-hexanedione

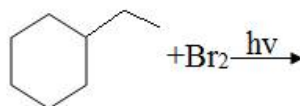
69. What is the relationship between the compounds shown?



- 1) Same compound  
3) Diastereomers

- 2) Enantiomers  
4) Structural isomers

70. What is the major product of the reaction

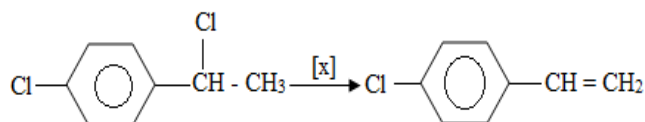


- 1) 2) 3) 4)

71. What is the major organic product in the reaction  $CH_3 - C \equiv CH \xrightarrow{2 \text{ moles } HBr}$

- 1)  $BrCH_2CH_2CH_2Br$  2)  $CH_3CBr_2CH_3$  3)  $CH_3CH_2CHBr$  4)  $CH_2CHBrCH_2Br$

72. In the given reaction sequence:



[X] will not be

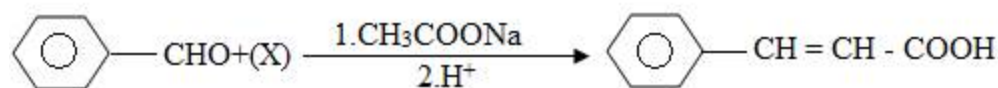
- 1) alc. KOH/  $\Delta$  2)  $C_2H_5O^-/\Delta$  3) alc. NaOH/  $\Delta$  4)  $NaNH_2/\Delta$

73. Which of the following alcohols will be oxidized by  $Br_2/KOH$ ?

- 1)  $CH_3OH$  2) 3) 4)

74. Which of the following compounds will be most easily attacked by an electrophile

- 1) 2) 3) 4)



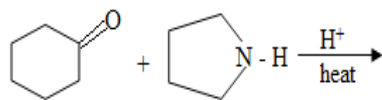
75. Identify the compound (X).

- 1)  $CH_3COOH$  2)  $(CH_3CO)_2O$  3)  $BrCH_2COOH$  4)  $CHO - COOH$

76. here x is

- 1) 2) 3) 4)

77. Which of the following does not undergo Hell – Volhard – Zelinsky reaction  
 1)HCOOH                      2)CCl<sub>3</sub>COOH                      3)C<sub>6</sub>H<sub>5</sub>COOH                      4)All
78. Which of the following will be the favoured product from the reaction shown below?



- 1) 2) 3) 4)
79. The conversion of aqueous benzene diazonium salt in to bromobenzene is best affected by heating with  
 1)HBr                      2)Br<sub>2</sub>                      3)N-bromosuccinimide                      4)HBr/cuprous bromide
80. Which of the following statement is /are wrong?  
 i)Sulphur is estimated by Carius ,method as BaSO<sub>4</sub>  
 ii)Duma's method is used in the estimation of N<sub>2</sub>  
 iii)Kjeldahl's method is used for all nitrogen – containing organic compounds.  
 iv)Phosphorous is estimated by Carius method as Mg(NH<sub>4</sub>)<sub>2</sub>PO<sub>4</sub>.  
 1) i and ii                      2)iii and iv                      3)ii and iv                      4)i,ii and iii
81. Match the following

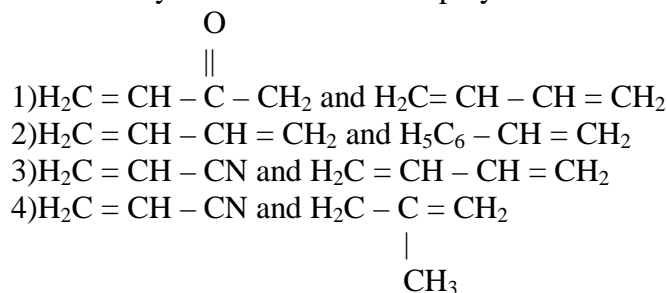
**List-I**

- A) Alanine  
 B) Threonine  
 C) Arginine  
 D) Aspartic acid  
 1) A-I, B-II, C-III, D-IV  
 3) A-II, B-III, C-I, D-IV

**List-II**

- I) non essential, neutral  
 II)essential, neutral  
 III)essential, basic  
 IV)non essential,acidic  
 2) A-II, B-I, C-IV, D-III  
 4) A-I, B-III, C-II, D-IV

82. Buna – N synthetic rubber is a copolymer of

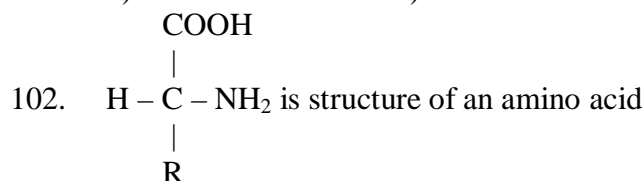


83. Which one of the following statements is incorrect?  
 1)Pure sodium metal dissolves in liquid ammonia to give blue solution  
 2)NaOH reacts with glass to give sodium silicate  
 3)Aluminium reacts with excess of NaOH to give Al(OH)<sub>3</sub>  
 4)NaHCO<sub>3</sub> on heating gives Na<sub>2</sub>CO<sub>3</sub>
84. Which of the following on thermal decomposition yields a basic as well as an acidic oxide?  
 1)KClO<sub>3</sub>                      2)CaCO<sub>3</sub>                      3)(NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>                      4)NaNO<sub>3</sub>
85. Which one of the following ores is best concentrated by froth-floatation method?  
 1)Galena                      2)Cassiterite                      3)Magnetite                      4)Malachite
86. The true statement for the acids of phosphorus H<sub>3</sub>PO<sub>2</sub>,H<sub>3</sub>PO<sub>3</sub>, and H<sub>3</sub>PO<sub>4</sub> is  
 1)The order of their acidity is H<sub>3</sub>PO<sub>4</sub>>H<sub>3</sub>PO<sub>3</sub>>H<sub>3</sub>PO<sub>2</sub>  
 2)All of them are reducing in nature  
 3)All of them are tribasic acids                      4)The geometry of phosphorus is tetrahedral in all the three

87. Which among the following is peroxo acid of sulphur?  
 i)  $\text{H}_2\text{SO}_3$                       ii)  $\text{H}_2\text{SO}_5$                       iii)  $\text{H}_2\text{S}_2\text{O}_8$                       iv)  $\text{H}_2\text{SO}_4$   
 1) Only i                      2) Only ii                      3) Both ii and iii                      4) Only iv
88. Which of the following shows maximum +8 oxidation state?  
 1) Re                      2) Os                      3) W                      4) Ir
89. Assign the hybridization, shape and magnetic moment of  $\text{K}_2[\text{Cu}(\text{CN})_4]$ :  
 1)  $\text{sp}^3$ , tetrahedral, 1.73 B.M.                      2)  $\text{dsp}^2$ , square planar, 1.73 B.M.  
 3)  $\text{sp}^3$ , tetrahedral, 2.44 B.M.                      4)  $\text{dsp}^2$ , square planar, 2.44 B.M.
90. Which of the following can exhibit geometrical isomerism?  
 1)  $[\text{MnBr}_4]^{2-}$                       2)  $[\text{Pt}(\text{NH}_3)_3\text{Cl}]^+$                       3)  $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$                       4)  $[\text{Fe}(\text{H}_2\text{O})_5\text{NOS}]^{2+}$

### BOTANY

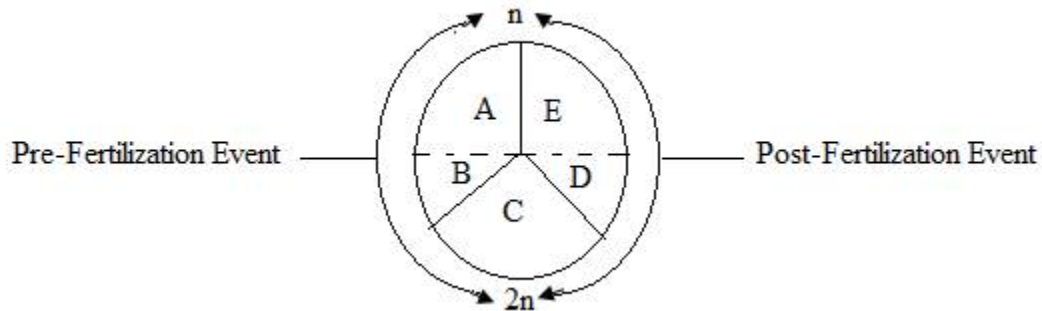
91. Which of the following is not a stem modification?  
 1) Pitcher of *Nepenthes*                      2) Thorns of Citrus  
 3) Tendrils of Cucumber                      4) Flattened structure of *Opuntia*
92. Nucellar embryo is  
 1) Apomictic, diploid                      2) Amphimictic, diploid  
 3) Amphimictic, haploid                      4) Apomictic, haploid
93. Siphonogamy in tracheophytes  
 1) brings pollen grains together  
 2) eliminates dependence on water  
 3) carries sperms  
 4) protects embryo
94. The best defined function of manganese is  
 1) synthesis of auxins  
 2) activates the enzymes of  $\text{N}_2$  metabolism  
 3) activates the enzymes of photosynthesis and respiration  
 4) involvement in photolysis of water
95. There are 450 nucleotides on m-RNA including initiation codon to termination codon. How many charged tRNA's will come to site of protein synthesis  
 1) 450                      2) 150                      3) 149                      4) 449
96. Pentose sugar occurs in  
 1) RNA and DNA                      2) RNA, and ATP                      3) ATP and DNA                      4) RNA, DNA and ATP
97. Products formed due to break down of glucose in different conditions are  
 1)  $\text{CO}_2$ ,  $\text{H}_2\text{O}$                       2) lactic acid                      3) ethyl alcohol                      4) all the above
98. Bonds in DNA that are broken by endonuclease and joined by ligases are respectively  
 1) ester, hydrogen                      2) hydrogen, ester                      3) ester, ester                      4) peptide, ester
99. Common features of heart wood and sap wood include  
 1) presence of tannin and resin deposition                      2) resistance to microbes  
 3) presence of dead tissues                      4) conduction of water and minerals
100. Alleles of a character are found on  
 1) same chromosomes                      2) homologous chromosomes  
 3) heterologous chromosome                      4) 2 (or) 3
101. A genetically engineered bacterium used successfully in bioremediation of oil spills is a species of  
 1) *Trichoderma*                      2) *Pseudomonas*                      3) *Bacillus*                      4) *Monascus*



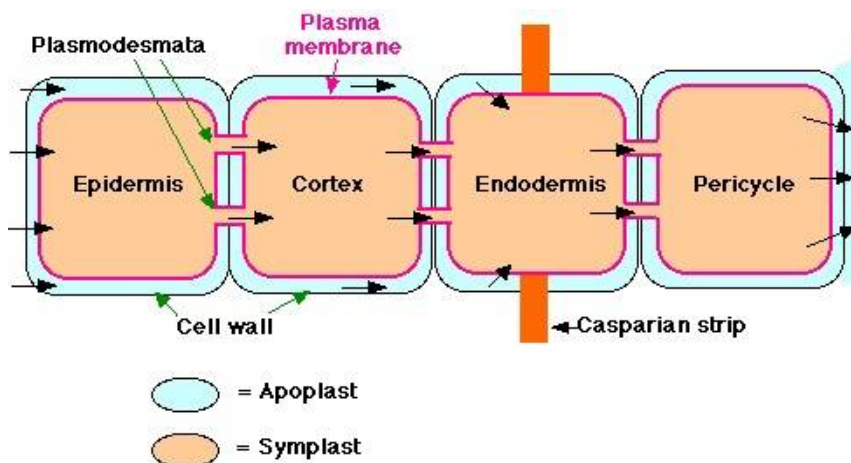
Based on different 'R' group the following amino acids are formed. Select the correct amino acid according to different 'R' group:

- 1)  $\text{R} \rightarrow \text{H}$  (alanine)                      2)  $\text{R} \rightarrow \text{CH}_3$  (glycine)  
 3)  $\text{R} \rightarrow \text{CH}_2\text{OH}$  (serine)                      4)  $\text{R} \rightarrow \text{CH}_3\text{CH}_2\text{COOH}$  (valine)

103. Select the **mis-match**:
- |                                 |                                |
|---------------------------------|--------------------------------|
| 1) Perigynous flower – Plum     | 2) Epigynous flower – Guava    |
| 3) Hypogynous flower - Cucumber | 4) Superior ovary – China rose |
104. Diagnostic character of the angiospermic family to which *Petunia* belongs are all, except
- |                         |                                       |
|-------------------------|---------------------------------------|
| 1) gamopetalous corolla | 2) swollen placenta with single ovule |
| 3) axile placentation   | 4) endospermic seeds                  |
105. Spliceosomes are not found in cells of
- |           |          |             |            |
|-----------|----------|-------------|------------|
| 1) plants | 2) fungi | 3) bacteria | 4) animals |
|-----------|----------|-------------|------------|
106. Select the right option in which the events (A,B,C,D and E) in life of general reproduction are **correctly** identified.



- 1) A-Gametogenesis, B- Zygote formation, C-Fertilization, D-Gametic transfer, E-Embryogenesis
- 2) A-Gametogenesis, B-Gamete transfer, C-Fertilization, D-Embryogenesis, E-Zygote formation
- 3) A-Gamete transfer, B-Gametogenesis, C-Fertilization, D-Zygote formation, E-Embryogenesis
- 4) A-Gametogenesis, B-Gamete transfer, C-Fertilization, D-Zygote formation, E-Embryogenesis
107. When PS-I is excited with the light of wavelength greater than 680nm, photophosphorylation occurs due to cyclic flow of electrons, results in synthesis of
- |                                   |                                |             |                 |
|-----------------------------------|--------------------------------|-------------|-----------------|
| 1) NADPH + H <sup>+</sup> and ATP | 2) only NADPH + H <sup>+</sup> | 3) only ATP | 4) NADH and ATP |
|-----------------------------------|--------------------------------|-------------|-----------------|
108. Study the following diagram:



In the above diagram identify the cells with high water potential and low DPD respectively

- |                                      |                                 |
|--------------------------------------|---------------------------------|
| 1) epidermal cell and pericycle      | 2) pericycle and epidermal cell |
| 3) epidermal cell and epidermal cell | 4) pericycle and pericycle      |
109. Which one of the cellular part is **correctly** described?
- |                                                                                  |
|----------------------------------------------------------------------------------|
| 1) Cristae---Folding of inner membrane of chloroplast                            |
| 2) Golgi Complex--- Site for formation of glycoproteins and glycolipids actively |
| 3) R E R---Involved in cells synthesizing steroid hormones                       |
| 4) Centriole--- Peripheral fibril (microtubule) is a doublet                     |

110. Living mechanical tissue is absent in  
 1) *Ficus*                      2) *Hibiscus*                      3) Sun flower                      4) Maize
111. Transgenic papaya is resistant to disease caused by  
 1) a prokaryotic                      2) a unicellular eukaryote  
 3) an infectious acellular particle                      4) a protozoan
112. Select the **mis-match** from the following:  
 1) Sac fungus – *Neurospora*                      2) Smut fungi – *Puccinia*  
 3) Imperfect fungus – *Trichoderma*                      4) Club fungus – *Lycoperdon*
113. Which of the following is **wrongly** matched in the given table:  

<u>Crop</u>	<u>Variety</u>	<u>Resistant to</u>
1) <i>Brassica</i>	Pusa Swarnim	White rust
2) Chilli	Pusa Sadabahar	Leaf curl
3) Flat bean	Pusa Gaurav	Aphids
4) Bhindi	Pusa A - 4	Shoot and Fruit borer
114. Which of the following is not found in all seed plants?  
 1) Alternation of generation                      2) Double fertilization  
 3) Ovule converting into a seed                      4) Dependent gametophytic generation
115. Out of 16 off springs, how many different types of non-parental phenotypes and total kinds of genotypes are formed respectively?  
 1) Phenotypes 4, genotypes 16                      2) Phenotypes 9, genotypes 4  
 3) Phenotypes 2, genotypes 9                      4) Phenotypes 4, genotypes 2
116. Brassicaceae resembles Liliaceae in  
 1) having same number of microsporophylls in a flower  
 2) having same number of megasporophylls in a flower  
 3) having same number of ovarian cavities in a flower  
 4) more than one option is correct
117. Secondary succession  
 1) does not follow any sequential steps                      2) never predictable and is always slow  
 3) occurs in area which never had any vegetation                      4) is faster than primary succession
118. Frame shift mutation occurs when  
 1) base is substituted                      2) base is deleted/added  
 3) anticodons are absent                      4) transversion takes place
119. The biocatalyst ribozyme is synthesized by a process called  
 1) Transcription                      2) Reverse transcription  
 3) Replication                      4) Translation
120. A safe place for laying eggs act as floral rewards in some plant/s of angiosperms like  
 1) *Yucca*                      2) *Amorphophallus*                      3) *Ficus*                      4) All of these
121. During 'Blue-white colony' selection, blue coloured colonies present in chromogenic substrate containing medium indicate  
 1) transformed but non-recombinant                      2) transformed but recombinant  
 3) non transformed but recombinant                      4) non-transformed but non-recombinant
122. In which of the following phases each chromosome is made up of two chromatids?  
 1) Prophase, Metaphase -II                      2) Prophase, Anaphase-II  
 3) Telophase, Anaphase-I                      4) Metaphase, Anaphase
123. A column of water within xylem vessels of tall trees does not break under its weight because of  
 1) positive root pressure                      2) capillarity of water  
 3) tensile strength of water                      4) lignification of xylem vessels
124. Which of the following cells lack RubisCO enzyme?  
 1) Mesophyll cells of CAM plants                      2) Bundle sheath cells of  $C_4$  plants  
 3) Mesophyll cells of  $C_3$  plants                      4) Mesophyll cells of  $C_4$  plants
125.  $\alpha$  -ketoglutaric acid +  $\text{NH}_4^+$  + NADPH  $\rightarrow$  ..... +  $\text{H}_2\text{O}$  + NADP  
 Choose the **correct** word for the blank and correct name of the process from the following options:

- 1) Aspartate, transamination  
3) Glutamate, reductive amination
- 2) Glutamine, transamination  
4) Asparagine, reductive amination
126. Which of the following is used as quick referral system in taxonomic studies?  
1) Keys 2) Herbarium 3) Manuals 4) Monographs
127. **Statement-(S-I):** Frequency of crossing over is useful in designing chromosome maps  
**Statement –(S-II):** Recombination frequencies are directly proportional of the distance between genes  
1) Both S- I and S -II are correct  
2) S- I is correct but S -II is incorrect  
3) S- I is incorrect but S- II is correct  
4) Both S- I and S- II are incorrect
128. Wall less protists among the following are:  
1) *Chlamydomonas* and *Chlorella*  
2) *Nostoc* and *Anabaena*  
3) *Paramecium* and *Amoeba*  
4) Diatoms and Dinoflagellates
129. Match the following :
- | <u>List - I</u>      |  |  |  | <u>List - II</u>           |  |  |  |
|----------------------|--|--|--|----------------------------|--|--|--|
| A) <i>Pinus</i>      |  |  |  | I) Monoecious gametophyte  |  |  |  |
| B) <i>Cycas</i>      |  |  |  | II) Monoecious sporophyte  |  |  |  |
| C) <i>Sphagnum</i>   |  |  |  | III) Dioecious gametophyte |  |  |  |
| D) <i>Marchantia</i> |  |  |  | IV) Dioecious sporophyte   |  |  |  |
- The **correct** match is:
- |    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |    | <b>A</b> | <b>B</b> | <b>C</b> | <b>D</b> |
|----|----------|----------|----------|----------|----|----------|----------|----------|----------|
| 1) | II       | III      | I        | IV       | 2) | II       | IV       | I        | III      |
| 3) | II       | III      | IV       | I        | 4) | II       | I        | IV       | III      |
130. An idealistic sigmoid growth curve is typical of  
1) plant organs 2) cells in culture 3) many higher plants 4) all the above
131. Phytohormones that respectively promote root hair formation and shoot formation are  
1) Auxin and cytokinin 2) Auxin and gibberellins  
3) Ethylene and cytokinin 4) Ethylene and gibberellins
132. Read the following:  
Intrafascicular cambium, vascular cambium of dicot root, interfascicular cambium, cork cambium, procambium, apical meristems. How many of the above meristems are formed by de-differentiation?  
1) 1 2) 4 3) 3 4) 2
133. In angiosperms all the 4 microspores of tetrad are covered by a layer which is formed by  
1) callose 2) cellulose 3) sporopollenin 4) pectocellulose
134. Functioning of statin is based on  
1) Allosteric inhibition 2) Non-competitive inhibition  
3) Competitive inhibition 4) End product inhibition
135. Who suggested an intermediate RNA molecule would be needed to read the codons on messenger RNA?  
1) M.Nirenberg 2) H.G Khorana 3) Crick 4) Kornberg

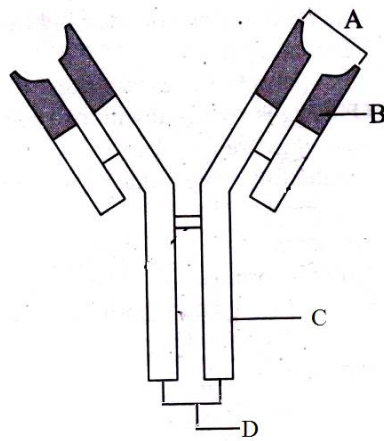
### **ZOOLOGY**

136. What is common to viper, vulture and dolphin?  
1) Homiothermy 2) 4 chambered heart  
3) Bicephalic ribs 4) Internal fertilization
137. Which of the following pairs are correctly matched?  
A. *Crocodylus* – 3-meninges B. *Pleurobrachia* – Comb plates  
C. *Obelia* – Metastasis D. *Psittacula* – Air sacs  
1) Only A and B 2) A, C and D  
3) B, C and D 4) Only B and D
138. Select the **correct** statement from the following  
1) Mutations are nonrandom and directionless  
2) Darwinian variations are small and directional  
3) Branching descent and natural selection are the two key concepts of Lamarckian theory of evolution  
4) The work of Darwin on populations influenced Thomas Malthus

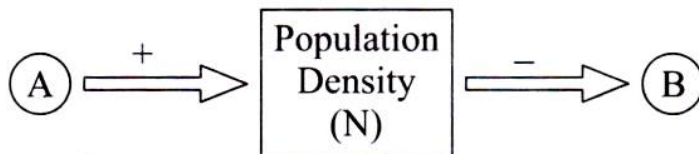
139. Which one of the following not a matching pair of a body feature and the animal possessing it?  
 1) Mammary gland - *Ornithorhynchus*                      2) Muscular pharynx - *Anchylostoma*  
 3) Ventral nerve cord - *Periplaneta*                      4) Visceral hump - *Ophiura*
140. The type of antibodies that are involved in allergy  
 1) IgE                      2) IgA                      3) IgD                      4) IgG
141. Which one of the following is a water-soluble vitamin and its related deficiency disease?  
 1) Niacin - Pellagra                      2) Retinol - Xerophthalmia  
 3) Tocopherol - Sterility                      4) Riboflavin - Beri beri
142. Inbreeding depression is overcome by employing  
 1) Out crossing                      2) Cross breeding  
 3) Inter specific hybridization                      4) Line breeding
143. Which one of the following is correct pertaining to reproductive system of man  
 1) Ovary is covered by stroma which encloses thin epithelium  
 2) Enlarged end of penis is called foreskin  
 3) Isthmus is the last part of oviduct  
 4) External thin membrane of uterus is myometrium
144. During the propagation of a nerve impulse, the action potential initiated by the  
 1)  $K^+$  ions from intracellular fluid to extracellular fluid  
 2)  $Na^+$  ions from extracellular fluid to intracellular fluid  
 3)  $K^+$  ions from extracellular fluid to intracellular fluid  
 4)  $Na^+$  ions from intracellular fluid to extracellular fluid
145. Read the following  
 A) Rich in nitrogen                      B) Moist environment  
 C) Anaerobiosis                      D) Rich in lignin and chitin  
 Which of the above factors cause faster rate of decomposition  
 1) A&C                      2) A&D                      3) B&D                      4) A&B
146. 'Sea horse' is  
 1) Poikilothermic sauropsidan with 10 pairs of cranial nerves  
 2) Non tetrapodan anamniote with operculum  
 3) Homeothermic feathered bird without clavicle  
 4) Tetrapodan poikilothermic reptile with 4 chambered heart
147. Connell's field experiments with different species of barnacles support the principle of  
 1) competitive exclusion                      2) competitive release  
 3) resource partitioning                      4) mutualism
148. Match the items in column I with those in column II and choose the correct option from the codes given below
- | <u>Column - I</u>    |     |    |     | <u>Column - II</u> |    |    |     |    |    |
|----------------------|-----|----|-----|--------------------|----|----|-----|----|----|
| A) Thylacine         |     |    |     | i) Russia          |    |    |     |    |    |
| B) Dodo              |     |    |     | ii) Africa         |    |    |     |    |    |
| C) Steller's sea cow |     |    |     | iii) Mauritius     |    |    |     |    |    |
| D) Quagga            |     |    |     | iv) Australia      |    |    |     |    |    |
|                      | A   | B  | C   | D                  |    | A  | B   | C  | D  |
| 1)                   | iii | iv | i   | ii                 | 2) | iv | iii | ii | i  |
| 3)                   | iv  | i  | iii | ii                 | 4) | iv | iii | i  | ii |
149. Amniocentesis is a technique  
 1) by which the essential amino acids in the body can be estimated  
 2) by which any chromosomal anomalies in the foetus can be detected  
 3) in which the sex of the foetus can be reversed  
 4) that can be used for correcting genetic disorders of the foetus



150. The diagram shows an antibody molecule. Identify A to D.

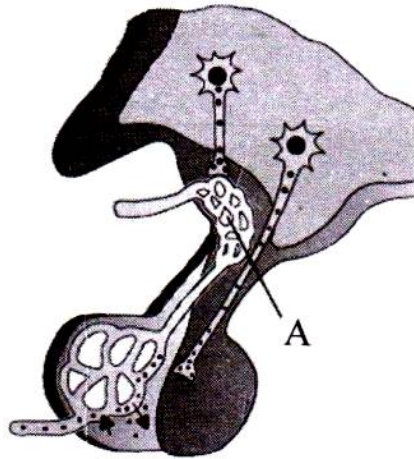


- |    | A                    | B           | C                  | D                   |
|----|----------------------|-------------|--------------------|---------------------|
| 1) | Antigen binding site | Heavy Chain | Light Chain        | F <sub>c</sub> end  |
| 2) | F <sub>c</sub> end   | Light Chain | Heavy Chain        | Paratope            |
| 3) | Epitope              | Paratope    | F <sub>c</sub> end | F <sub>ab</sub> end |
| 4) | F <sub>ab</sub> end  | Light Chain | Heavy Chain        | F <sub>c</sub> end  |
151. In which of the following oral contraceptive pills are incorrectly described
- 1) They are very effective with lesser side effects
  - 2) They alter the quality of cervical mucus
  - 3) They are well accepted by the females
  - 4) They inhibit formation of primary follicles
152. **Statement – I:** Placenta can act as an endocrine tissue  
**Statement – II:** Placenta produces hCG, somatomammotropin, oestrogens, progesterone, etc
- 1) Both I and II statement are correct
  - 2) Both I and II statement are wrong
  - 3) Statement I wrong but II is correct
  - 4) Statement I is correct but statement II is wrong
153. In sperm cell energy source for swimming is confined to
- 1) Tail
  - 2) Head
  - 3) Middle piece
  - 4) 1 and 3
154. The density of a population in a given habitat during a given period, fluctuates due to changes in four basic process. On this basis fill up A and B boxes in the given diagram with correct options

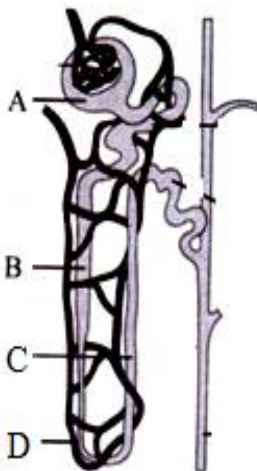


- 1)  $\bar{A}$  = Natality + Immigration, B = Mortality + Emigration
  - 2) A = Natality + Mortality, B = Immigration + Emigration
  - 3) A = Birth rate + Death rate, B = Migration + Emigration
  - 4) A = Natality + Emigration, B = Mortality + Immigration
155. Read the following statements and choose the correct answer  
**Statement (A):** A considerable amount of NPP is utilized by plants in respiration  
**Statement (B):** The annual NPP of the whole biosphere is approximately 170 billion tons of organic matter
- 1) Both A and B are correct
  - 2) Only A is correct
  - 3) Only B is correct
  - 4) Both A and B are incorrect
156. How many of the given statements are wrong?
- A. The rate of diffusion of gas at the respiratory membrane depends upon its solubility as well as on the thickness of membrane
  - B. Total volume of air accommodated in the lungs at the end of a forced inspiration is total lungs capacity
  - C. CO<sub>2</sub> is carried by hemoglobin as carboxyhemoglobin
  - D. Carbonic anhydrase is an enzyme which is present in both RBC and plasma
- 1) One
  - 2) Two
  - 3) Three
  - 4) Four

157. Following is a diagrammatic representation of endocrine gland. The hormone that transport through the part which is labeled as 'A'



- 1)Oxytosin                      2)ADH                      3)Somatostatin                      4)Somatotropin
158. Which of the following is function of catecholamines  
 1)Pupillary construction                      2)Glycogenesis  
 3)Hypoglycemia                      4)Tachycardia
159. Troponin is distributed at regular intervals on the  
 1) Actin                      2)Complex regulatory protein  
 3) Tropomyosin                      4)Heavy mero myosin
160. In man the number of true ribs is  
 1)Equal to the thoracic vertebrae                      2)More than the facial bones  
 3)Less than false ribs                      4)Seven pairs
161. Following is a diagrammatic representation of a nephron. The correct combination related to the labeled structures A, B, C and D are:



	A	B	C	D
1	Absent in cortical nephrons	Descending limb	Ascending limb	Present in cortical nephrons
2	Bowman's capsule	Site of facultative reabsorption	Ascending limb	Reduced in Juxta medullary nephrons
3	Ultrafiltrate	Present in medulla	Ascending limb	Vasa recta
4	Glomerulus	Present in cortex	Present in medulla	Highly developed in cortical nephrons

162. Identify the type of hormones based on the functions given below

I) Stimulates the pancreas to release water and bicarbonates

II) Differentiation of T-lymphocytes

III) Increase calcium levels in the blood

Choose the **correct** option

1) I – Gastrin, II – Melatonin, III – Calcitonin

2) I – Secretin, II – Cholecystokinin, III – Thyroxin

3) I – Gastrin, II – Thyroxin, III – PTH

4) I – Secretin, II – Thymosin, III – Parathormone

163. Which of the following character is applicable for the picture given below



1) Incomplete gut

3) Presence of urinary bladder

2) Presence of sinus venous

4) Claspers on pelvic fins

164. External genitalia of male cockroach are

1) Present in 6<sup>th</sup> and 7<sup>th</sup> abdominal segments

2) Chitinous and asymmetrical

3) Sites for spermatogenesis

4) With small and long tubules

165. In man pneumotaxic centre

1) Can increase the duration of inspiration

2) Is present on medulla

3) Is also called as chemosensitive area

4) Can moderate the functions of respiratory rhythm centre

166. Mammals from colder climates generally have shorter ears and limbs to minimize heat loss. This is called the

1) Van't Hoff's rule

2) Allen's rule

3) Gloger's rule

4) Lindeman's rule

167. Match the following

**List – I**

A) Vault

B) Saheli

C) Lippes loop

D) Multiload- 375

**List – II**

i) Non steroid oral pill

ii) Copper releasing IUD

iii) Hormone releasing IUD

iv) Female barrier

v) Non medicated IUD

The **correct** match is:

	A	B	C	D
1)	iv	i	v	ii
3)	v	ii	iii	I

	A	B	C	D
2)	iii	i	iv	v
4)	i	ii	iii	iv

168. Read the following

A) Chlorophyte ancestry

B) Rhynia type plants

C) Silo phyton

D) Tracheophyte ancestors

Arrange them in a sequence with respect to their evolution

1) A-B-C-D

2) D-A-B-C

3) A-D-B-C

4) A-C-D-B

169. In a Hardy-weinberg population of 250 individuals 40 exhibit the recessive phenotype. Find out the number of heterozygotes in the population

1) 80

2) 90

3) 160

4) 120

170. Cannabinoids are  
 1) taken by inhalation and oral ingestion  
 2) extracted from *Papaver somniferum*  
 3) obtained from 'coca' plant  
 4) not used in doping
171. Which one of the following is an autoimmune disorder  
 1) Down's syndrome  
 2) Typhoid fever  
 3) Osteoporosis  
 4) Psoriasis
172. First time the gene therapy was tried on a 4 years old girl in 1990 to treat which of the following enzyme deficiency ?  
 1) Cytosine deaminase  
 2) Glutamate trihydrogenase  
 3) Tyrosine deaminase  
 4) Adenosine deaminase
173. Which of the following recombinant protein has been used to treat emphysema?  
 1)  $\beta$  - galactosidase  
 2) Alpha - lactalbumin  
 3)  $\alpha$  - 1 - antitrypsin  
 4) Adenosine deaminase
174. Ex situ conservation includes  
 I) Zoos II) Seed banks III) Tissue culture IV) Sanctuary  
 Choose the correct option  
 1) I & II only 2) II and III only 3) I & IV only 4) I, II and III
175. Read the following  
 A) Sympathetic nerves B) Parasympathetic nerves  
 C) Adrenalin D) Noradrenalin  
 Which of the above increase the cardiac output  
 1) A, C and D 2) Only A & C 3) A, B and C 4) Only A and D
176. Read the following and select the correct one  
 1) Dense irregular connective tissue has collagen fibres but without fibroblasts  
 2) Cartilage and bone are specialized connective tissues  
 3) Areolar tissue present beneath the skin is regular fibrous connective tissue  
 4) Adipose is a type of dense fibrous connective tissue
177. Sita's father is colour blind, but her husband is not, what is the chance that her sons will have the disease  
 1) 0% 2) 25% 3) 50% 4) 100%
178. Match the following
- |                    |                                     |
|--------------------|-------------------------------------|
| <b>List – I</b>    | <b>List – II</b>                    |
| A) Cri-du-chat     | i) Trisomy of 18 <sup>th</sup> pair |
| B) Patau syndrome  | ii) 5P <sup>-</sup> syndrome        |
| C) Edward syndrome | iii) Autosomal recessive            |
| D) Thalassaemia    | iv) Abnormal Hb                     |
|                    | v) Trisomy of 13 <sup>th</sup> pair |
- The correct match is:
- |    |     |   |    |    |    |    |     |    |   |
|----|-----|---|----|----|----|----|-----|----|---|
|    | A   | B | C  | D  |    | A  | B   | C  | D |
| 1) | iii | i | iv | v  | 2) | i  | iii | iv | v |
| 3) | ii  | v | I  | iv | 4) | ii | iv  | i  | v |
179. A woman with B<sup>+</sup> blood group married a man with A<sup>+</sup> blood group. The mother of both are of O<sup>-</sup> blood group. The probability of AB<sup>-</sup> blood group in children is  
 1) 3/16 2) 4/16 3) 1/2 4) 1/16
180. 'Joint Forest Management' concept was introduced in India during  
 1) 1970s 2) 1960s 3) 1990s 4) 1980s

\*\*\*\*\* ALL THE BEST \*\*\*\*\*

Knowing is not enough, we must apply.