

## NEET 2016 Phase 1 – Previous Year Question Paper

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### Physics · 45 Qs

1. Two identical charged spheres suspended from a common point by two massless strings of length  $l$  are initially at a distance  $d$  ( $d \ll l$ ) apart because of their mutual repulsion. The charges begin to leak from both the spheres at a constant rate. As a result, the spheres approach each other with a velocity  $v$ . Then  $v$  varies as a function of the distance  $x$  between the spheres as

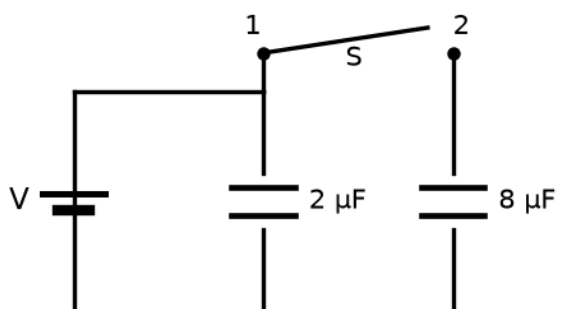
(1)  $v \propto x^{1/2}$

(2)  $v \propto x$

(3)  $v \propto x^{-1/2}$

(4)  $v \propto x^{-1}$

2. A capacitor of  $2 \mu\text{F}$  is charged as shown in the diagram. When the switch  $S$  is turned to position 2, the percentage of its stored energy dissipated is:



(1) 0%

(2) 20%

(3) 75%

(4) 80%

3. If the velocity of a particle is  $v = At + Bt^2$ , where A and B are constants, then the distance travelled by it between 1 s and 2 s is:

(1)  $\frac{3}{2}A + \frac{7}{3}B$

(2)  $3A + 7B$

(3)  $\frac{A}{2} + \frac{B}{3}$

(4)  $\frac{3}{2}A + 4B$

4. If the magnitude of the sum of two vectors is equal to the magnitude of the difference of the two vectors, the angle between these vectors is:

(1)  $0^\circ$

(2)  $90^\circ$

(3)  $45^\circ$

(4)  $180^\circ$

5. A particle of mass 10 g moves along a circle of radius 6.4 cm with a constant tangential acceleration. The magnitude of this acceleration, if the kinetic energy of the particle becomes equal to  $8 \times 10^{-4}$  J by the end of the second revolution after the beginning of the motion, is:

(1)  $0.1 \text{ m/s}^2$

(2)  $0.15 \text{ m/s}^2$

(3)  $0.18 \text{ m/s}^2$

(4)  $0.2 \text{ m/s}^2$

6. A particle moves so that its position vector is given by  $\vec{r} = \cos \omega t \hat{x} + \sin \omega t \hat{y}$ , where  $\omega$  is a constant. Which of the following is true?

(1) Velocity and acceleration both are perpendicular to  $\vec{r}$

(2) Velocity and acceleration both are parallel to  $\vec{r}$

(3) Velocity is perpendicular to  $\vec{r}$  and acceleration is directed towards the origin

(4) Velocity is perpendicular to  $\vec{r}$  and acceleration is directed away from the origin

7. A car is negotiating a curved road of radius R. The road is banked at an angle  $\theta$  and the coefficient of friction between the tyres and the road is  $\mu_s$ . The maximum safe velocity on this road is:

(1)  $\sqrt{(gR^2 \cdot (\mu_s + \tan\theta)) / (1 - \mu_s \tan\theta)}$

(2)  $\sqrt{(gR \cdot (\mu_s + \tan\theta)) / (1 - \mu_s \tan\theta)}$

(3)  $\sqrt{((g/R) \cdot (\mu_s + \tan\theta)) / (1 - \mu_s \tan\theta)}$

(4)  $\sqrt{((g/R^2) \cdot (\mu_s + \tan\theta)) / (1 - \mu_s \tan\theta)}$

8. What is the minimum velocity with which a body of mass m must enter a vertical loop of radius R so that it can complete the loop?

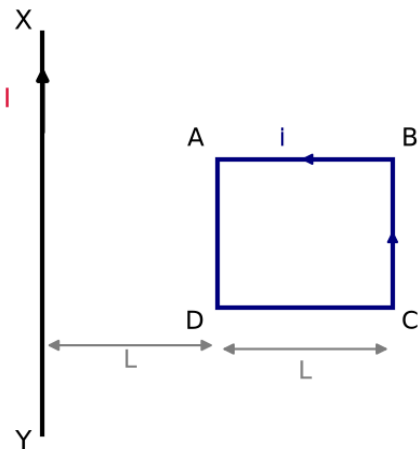
(1)  $\sqrt{gR}$

(2)  $\sqrt{2gR}$

(3)  $\sqrt{3gR}$

(4)  $\sqrt{5gR}$

9. A square loop ABCD carrying a current  $i$  is placed near and coplanar with a long straight conductor XY carrying a current  $I$ . The net force on the loop will be:



- (1)  $2\mu_0 iI/3\pi$  (2)  $\mu_0 iI/2\pi$   
 (3)  $2\mu_0 iIL/3\pi$  (4)  $\mu_0 iIL/2\pi$

10. A long straight wire of radius  $a$  carries a steady current  $I$ . The current is uniformly distributed over its cross-section. The ratio of the magnetic fields  $B$  and  $B'$  at radial distances  $a/2$  and  $2a$  respectively, from the axis of the wire, is:

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

11. The magnetic susceptibility is negative for:

- (1) diamagnetic material only (2) paramagnetic material only  
 (3) ferromagnetic material only (4) paramagnetic and ferromagnetic materials

12. A body of mass  $1$  kg begins to move under the action of a time-dependent force  $F=(2t\hat{i}+3t^2\hat{j})$  N, where  $\hat{i}$  and  $\hat{j}$  are unit vectors along the  $x$  and  $y$  axes. What power will be developed by the force at time  $t$ ?

- (1)  $(2t^2+4t^4)$  W (2)  $(2t^3+3t^4)$  W  
 (3)  $(2t^3+3t^5)$  W (4)  $(2t^2+3t^3)$  W

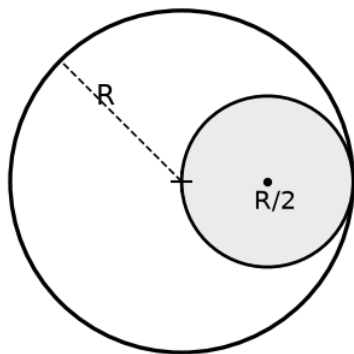
13. What is the minimum velocity with which a body of mass  $m$  must enter a vertical loop of radius  $R$  at the lowest point so that it can complete the loop?

- (1)  $\sqrt{gR}$  (2)  $\sqrt{2gR}$   
 (3)  $\sqrt{3gR}$  (4)  $\sqrt{5gR}$

14. A particle of mass  $10$  g moves along a circle of radius  $6.4$  cm with a constant tangential acceleration. The magnitude of this acceleration, if the kinetic energy of the particle becomes equal to  $8 \times 10^{-4}$  J by the end of the second revolution after the beginning of the motion, is

- (1)  $0.15$  m/s<sup>2</sup> (2)  $0.18$  m/s<sup>2</sup>  
 (3)  $0.1$  m/s<sup>2</sup> (4)  $0.2$  m/s<sup>2</sup>

15. A long solenoid has 1000 turns. When a current of 4 A flows through it, the magnetic flux linked with each turn of the solenoid is  $4 \times 10^{-3}$  Wb. The self-inductance of the solenoid is:
- (1) 4 H (2) 3 H  
(3) 2 H (4) 1 H
- 
16. A solid sphere of mass  $m$  and radius  $R$  rotates about its diameter. A solid cylinder of the same mass and radius rotates about its geometric axis with twice the sphere's angular speed. The ratio of their rotational kinetic energies (sphere : cylinder) is:
- (1) 2 : 3 (2) 1 : 5  
(3) 1 : 4 (4) 3 : 1
- 
17. Two rotating bodies A and B (masses  $m$  and  $2m$ , moments of inertia  $I_A$  and  $I_B$  with  $I_B > I_A$ ) have equal rotational kinetic energy. If  $L_A$  and  $L_B$  are their angular momenta, then:
- (1)  $L_A = L_B/2$  (2)  $L_A = 2 L_B$   
(3)  $L_B > L_A$  (4)  $L_A > L_B$
- 
18. A uniform disc of radius 50 cm at rest is free to rotate about a perpendicular axis through its centre. Given a constant angular acceleration  $2.0 \text{ rad/s}^2$ , its net linear acceleration ( $\text{m/s}^2$ ) at a rim point at the end of 2.0 s is about:
- (1) 8.0 (2) 7.0  
(3) 6.0 (4) 3.0
- 
19. A particle of mass 10 g moves on a circle of radius 6.4 cm with constant tangential acceleration. If its kinetic energy becomes  $8 \times 10^{-4}$  J by the end of the second revolution, the tangential acceleration is:
- (1)  $0.1 \text{ m/s}^2$  (2)  $0.15 \text{ m/s}^2$   
(3)  $0.18 \text{ m/s}^2$  (4)  $0.2 \text{ m/s}^2$
- 
20. From a disc of mass  $M$  and radius  $R$ , a circular hole of radius  $R/2$  whose rim passes through the centre is cut out. The moment of inertia of the remaining disc about an axis perpendicular to the plane and passing through the centre O is:



Disc: mass  $M$ , radius  $R$ ; hole radius  $R/2$  (rim through centre O)

- (1)  $15 MR^2/32$  (2)  $13 MR^2/32$   
(3)  $11 MR^2/32$  (4)  $9 MR^2/32$

21. A light rod of length  $l$  carries two masses  $m_1$  and  $m_2$  at its ends. The moment of inertia of the system about an axis perpendicular to the rod through the centre of mass is:

(1)  $m_1 m_2 l^2 / (m_1 + m_2)$

(2)  $(m_1 + m_2) l^2 / (m_1 m_2)$

(3)  $(m_1 + m_2) l^2$

(4)  $\sqrt{(m_1 m_2)} l^2$

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22. A small signal voltage  $V(t) = V_0 \sin \omega t$  is applied across an ideal capacitor  $C$ :

(1) Current  $I(t)$ , lags voltage  $V(t)$  by  $90^\circ$

(2) Over a full cycle the capacitor  $C$  does not consume any energy from the voltage source

(3) Current  $I(t)$  is in phase with voltage  $V(t)$ .

(4) Current  $I(t)$  leads voltage  $V(t)$  by  $180^\circ$

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23. An inductor  $20 \text{ mH}$ , a capacitor  $50 \mu\text{F}$  and a resistor  $40 \Omega$  are connected in series across a source of emf  $V = 10 \sin 340 t$ . The power loss in A.C. circuit is :

(1)  $0.51 \text{ W}$

(2)  $0.67 \text{ W}$

(3)  $0.76 \text{ W}$

(4)  $0.89 \text{ W}$

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24. An inductor  $20 \text{ mH}$ , a capacitor  $100 \mu\text{F}$  and a resistor  $50 \Omega$  are connected in series across a source of emf,  $V = 10 \sin 314 t$ . The power loss in the circuit is

(1)  $2.74 \text{ W}$

(2)  $0.43 \text{ W}$

(3)  $0.79 \text{ W}$

(4)  $1.13 \text{ W}$

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25. The ratio of escape velocity at earth ( $v_e$ ) to the escape velocity at a planet ( $v_p$ ) whose radius and mean density are twice that of earth is:

(1)  $1 : 2$

(2)  $1 : 2\sqrt{2}$

(3)  $1 : 4$

(4)  $1 : \sqrt{2}$

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26. At what height from the surface of earth the gravitational potential and the value of  $g$  are  $-5.4 \times 10^7 \text{ J kg}^{-1}$  and  $6.0 \text{ m s}^{-2}$  respectively? (Radius of earth =  $6400 \text{ km}$ )

(1)  $2600 \text{ km}$

(2)  $1600 \text{ km}$

(3)  $1400 \text{ km}$

(4)  $2000 \text{ km}$

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27. Out of the following options which one can be used to produce a propagating electromagnetic wave?

(1) A charge moving at constant velocity

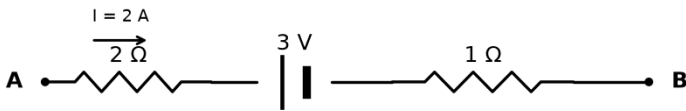
(2) A stationary charge

(3) A chargeless particle

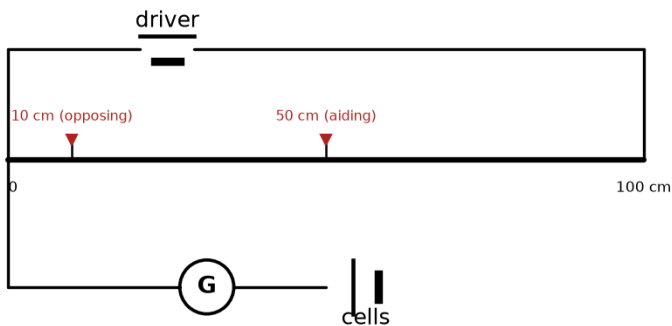
(4) An accelerating charge

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28. The potential difference ( $V_A - V_B$ ) between points A and B in the figure (current 2 A from A to B through  $2\ \Omega$ , a 3 V cell, then  $1\ \Omega$ ) is:



- (1) -3 V (2) +3 V  
 (3) +6 V (4) +9 V
- 
29. The charge through a resistance  $R$  varies with time as  $Q = at - bt^2$  ( $a, b$  positive constants). The total heat produced in  $R$  is:
- (1)  $a^3R/(6b)$  (2)  $a^3R/(3b)$   
 (3)  $a^3R/(2b)$  (4)  $a^3R/b$
- 
30. A filament bulb (500 W, 100 V) is to be used in a 230 V supply. A resistance  $R$  is connected in series so it works perfectly at 500 W. The value of  $R$  is:
- (1)  $230\ \Omega$  (2)  $46\ \Omega$   
 (3)  $26\ \Omega$  (4)  $13\ \Omega$
- 
31. A potentiometer wire is 100 cm long with a constant PD across it. Two cells in series give balance at 50 cm (aiding) and 10 cm (opposing). The ratio of emfs is:



- (1) 5 : 1 (2) 5 : 4  
 (3) 3 : 4 (4) 3 : 2



36. A black body is at a temperature of 5760 K. The energy of the radiation emitted by the body at wavelength 250 nm is  $U_1$ , at 500 nm is  $U_2$  and at 1000 nm is  $U_3$ . Wien's constant  $b = 2.88 \times 10^6 \text{ nm}\cdot\text{K}$ . Which of the following is correct?
- (1)  $U_1 = 0$  (2)  $U_3 = 0$   
(3)  $U_1 > U_2$  (4)  $U_2 > U_1$
- 
37. The coefficients of linear expansion of brass and steel rods are  $\alpha_1$  and  $\alpha_2$ ; their lengths are  $l_1$  and  $l_2$  respectively. If  $(l_2 - l_1)$  is to remain the same at all temperatures, the required condition is:
- (1)  $\alpha_1^2 l_2 = \alpha_2^2 l_1$  (2)  $\alpha_1 l_2^2 = \alpha_2 l_1^2$   
(3)  $\alpha_1 l_2 = \alpha_2 l_1$  (4)  $\alpha_1 l_1 = \alpha_2 l_2$
- 
38. A piece of ice falls from a height  $h$  so that it melts completely. Only one-quarter of the heat produced is absorbed by the ice, and all the gravitational energy is converted into heat. The value of  $h$  is: (latent heat of ice =  $3.4 \times 10^5 \text{ J kg}^{-1}$ ,  $g = 10 \text{ N kg}^{-1}$ )
- (1) 34 km (2) 544 km  
(3) 136 km (4) 68 km
- 
39. The intensity at the maximum in a Young's double slit experiment is  $I_0$ . Distance between two slits is  $d = 5\lambda$ , where  $\lambda$  is the wavelength of light used in the experiment. What will be the intensity in front of one of the slits on the screen placed at a distance  $D = 10d$ ?
- (1)  $I_0$  (2)  $I_0/4$   
(3)  $3I_0/4$  (4)  $I_0/2$
- 
40. In a diffraction pattern due to a single slit of width 'a', the first minimum is observed at an angle  $30^\circ$  when light of wavelength  $5000 \text{ \AA}$  is incident on the slit. The first secondary maximum is observed at an angle of
- (1)  $\sin^{-1}(1/4)$  (2)  $\sin^{-1}(2/3)$   
(3)  $\sin^{-1}(1/2)$  (4)  $\sin^{-1}(3/4)$
- 
41. An electron of mass  $m$  and a photon have the same energy  $E$ . The ratio of the de Broglie wavelengths associated with them is ( $c$  being the velocity of light):
- (1)  $(1/c) \cdot (E/2m)^{1/2}$  (2)  $(E/2m)^{1/2}$   
(3)  $c \cdot (2mE)^{1/2}$  (4)  $(1/c) \cdot (2m/E)^{1/2}$
- 
42. When a metallic surface is illuminated with radiation of wavelength  $\lambda$ , the stopping potential is  $V$ . If the same surface is illuminated with radiation of wavelength  $2\lambda$ , the stopping potential is  $V/4$ . The threshold wavelength for the metallic surface is:
- (1)  $4\lambda$  (2)  $5\lambda$   
(3)  $(5/2)\lambda$  (4)  $3\lambda$
- 
43. A refrigerator works between  $4^\circ\text{C}$  and  $30^\circ\text{C}$ . It is required to remove 600 calories of heat every second in order to keep the temperature of the refrigerated space constant. The power required is: (Take  $1 \text{ cal} = 4.2 \text{ J}$ )
- (1) 2.365 W (2) 23.65 W  
(3) 236.5 W (4) 2365 W

44. A gas is compressed isothermally to half its initial volume. The same gas is compressed separately through an adiabatic process until its volume is again reduced to half. Then:
- (1) Compressing the gas isothermally will require more work to be done  
 (2) Compressing the gas through an adiabatic process will require more work to be done  
 (3) Compressing the gas isothermally or adiabatically will require the same amount of work  
 (4) Which of the cases (whether compression through isothermal or through adiabatic process) requires more work will depend upon the atomicity of the gas
45. When an  $\alpha$ -particle of mass 'm' moving with velocity 'v' bombards a heavy nucleus of charge 'Ze', its distance of closest approach from the nucleus depends on m as:
- (1)  $1/m$   
 (2)  $1/\sqrt{m}$   
 (3)  $1/m^2$   
 (4) m

### Chemistry · 35 Qs

46. Which of the following statements about the composition of the vapour over an ideal 1 : 1 molar mixture of benzene and toluene is correct? Assume that the temperature is constant at 25 °C. (Given vapour pressure data at 25 °C,  $C_6H_6 = 12.8$  kPa,  $C_6H_5CH_3 = 3.85$  kPa)
- (1) The vapour will contain a higher percentage of benzene.  
 (2) The vapour will contain a higher percentage of toluene.  
 (3) The vapour will contain equal amounts of benzene and toluene.  
 (4) Not enough information is given to make a prediction.
47. At 100 °C the vapour pressure of a solution of 6.5 g of a solute in 100 g water is 732 mm. If  $K_b = 0.52$ , the boiling point of this solution will be:
- (1) 101 °C  
 (2) 100 °C  
 (3) 102 °C  
 (4) 103 °C
48. The pressure of  $H_2$  required to make the potential of the  $H_2$  electrode zero in pure water at 298 K is:
- (1)  $10^{-14}$  atm  
 (2)  $10^{-12}$  atm  
 (3)  $10^{-10}$  atm  
 (4)  $10^{-4}$  atm
49. The electronic configurations of Eu (Atomic no. 63), Gd (Atomic No. 64) and Tb (Atomic No. 65), respectively, are:
- (1)  $[Xe]4f^7 6s^2$ ,  $[Xe]4f^8 6s^2$  and  $[Xe]4f^8 5d^1 6s^2$   
 (2)  $[Xe]4f^6 5d^1 6s^2$ ,  $[Xe]4f^7 5d^1 6s^2$  and  $[Xe]4f^9 6s^2$   
 (3)  $[Xe]4f^6 5d^1 6s^2$ ,  $[Xe]4f^7 5d^1 6s^2$  and  $[Xe]4f^8 5d^1 6s^2$   
 (4)  $[Xe]4f^7 6s^2$ ,  $[Xe]4f^7 5d^1 6s^2$  and  $[Xe]4f^9 6s^2$
50. Two electrons occupying the same orbital are distinguished by:
- (1) Principal quantum number  
 (2) Magnetic quantum number  
 (3) Azimuthal quantum number  
 (4) Spin quantum number

51. The rate of a first-order reaction is  $0.04 \text{ mol L}^{-1} \text{ s}^{-1}$  at 10 s and  $0.03 \text{ mol L}^{-1} \text{ s}^{-1}$  at 20 s after initiation of the reaction. The half-life period of the reaction is:
- (1) 24.1 s (2) 34.1 s  
(3) 44.1 s (4) 54.1 s
- 
52. The addition of a catalyst during a chemical reaction alters which of the following quantities?
- (1) Entropy (2) Internal energy  
(3) Enthalpy (4) Activation energy
- 
53. In which of the following options the order of arrangement does NOT agree with the variation of property indicated against it?
- (1)  $\text{Al}^{3+} < \text{Mg}^{2+} < \text{Na}^+ < \text{F}^-$  (increasing ionic size) (2)  $\text{B} < \text{C} < \text{N} < \text{O}$  (increasing first ionization enthalpy)  
(3)  $\text{I} < \text{Br} < \text{Cl} < \text{F}$  (increasing electron gain enthalpy) (4)  $\text{Li} < \text{Na} < \text{K} < \text{Rb}$  (increasing metallic radius)
- 
54. Consider the molecules  $\text{CH}_4$ ,  $\text{NH}_3$  and  $\text{H}_2\text{O}$ . Which of the given statements is false?
- (1) The H–C–H bond angle in  $\text{CH}_4$ , the H–N–H bond angle in  $\text{NH}_3$ , and the H–O–H bond angle in  $\text{H}_2\text{O}$  are all greater than  $90^\circ$ . (2) The H–O–H bond angle in  $\text{H}_2\text{O}$  is larger than the H–C–H bond angle in  $\text{CH}_4$ .  
(3) The H–O–H bond angle in  $\text{H}_2\text{O}$  is smaller than the H–N–H bond angle in  $\text{NH}_3$ . (4) The H–C–H bond angle in  $\text{CH}_4$  is larger than the H–N–H bond angle in  $\text{NH}_3$ .
- 
55. Which one of the following orders is correct for the bond dissociation enthalpy of halogen molecules?
- (1)  $\text{I}_2 > \text{Br}_2 > \text{Cl}_2 > \text{F}_2$  (2)  $\text{Cl}_2 > \text{Br}_2 > \text{F}_2 > \text{I}_2$   
(3)  $\text{Br}_2 > \text{I}_2 > \text{F}_2 > \text{Cl}_2$  (4)  $\text{F}_2 > \text{Cl}_2 > \text{Br}_2 > \text{I}_2$
- 
56. Predict the correct order among the following (repulsion between electron pairs as per VSEPR theory):
- (1) Lone pair–lone pair > lone pair–bond pair > bond pair–bond pair (2) Lone pair–lone pair > bond pair–bond pair > lone pair–bond pair  
(3) Bond pair–bond pair > lone pair–bond pair > lone pair–lone pair (4) Lone pair–bond pair > bond pair–bond pair > lone pair–lone pair
- 
57. Match the compounds in Column I with the hybridization and shape in Column II and mark the correct option.  
Column I: (a)  $\text{XeF}_6$ , (b)  $\text{XeO}_3$ , (c)  $\text{XeOF}_4$ , (d)  $\text{XeF}_4$   
Column II: (i) Distorted octahedral, (ii) Square planar, (iii) Pyramidal, (iv) Square pyramidal
- (1) a-i, b-iii, c-iv, d-ii (2) a-i, b-ii, c-iv, d-iii  
(3) a-iv, b-iii, c-i, d-ii (4) a-iv, b-i, c-ii, d-iii
- 
58. The lone pair of electrons in the given carbanion,  $\text{CH}_3-\text{C}\equiv\text{C}^-$ , is present in which of the following orbitals?
- (1)  $2p$  (2)  $sp^3$   
(3)  $sp^2$  (4)  $sp$

59. [NEET 2016 Phase 1 · NEET 2017 · NEET 2019 · NEET 2019 Odisha · NEET 2020 · NEET 2021 · NEET 2023 Phase 2]  
Which of the following statements is not correct about diborane?

- (1) There are two 3-centre-2-electron bonds. (2) The four terminal B–H bonds are two-centre two-electron bonds.  
(3) The four terminal hydrogen atoms and the two boron atoms lie in one plane. (4) Both the boron atoms are  $sp^2$  hybridised.

60. Which one of the following statements is correct when  $SO_2$  is passed through acidified  $K_2Cr_2O_7$  solution?

- (1) The solution turns blue. (2) The solution is decolourized.  
(3)  $SO_2$  is reduced. (4) Green  $Cr_2(SO_4)_3$  is formed.

61. The electronic configurations of Eu (Atomic no. 63), Gd (Atomic No. 64) and Tb (Atomic No. 65) are:

- (1)  $[Xe] 4f^7 6s^2$ ,  $[Xe] 4f^8 6s^2$  and  $[Xe] 4f^8 5d^1 6s^2$  (2)  $[Xe] 4f^6 5d^1 6s^2$ ,  $[Xe] 4f^7 5d^1 6s^2$  and  $[Xe] 4f^9 6s^2$   
(3)  $[Xe] 4f^6 5d^1 6s^2$ ,  $[Xe] 4f^7 5d^1 6s^2$  and  $[Xe] 4f^8 5d^1 6s^2$  (4)  $[Xe] 4f^7 6s^2$ ,  $[Xe] 4f^7 5d^1 6s^2$  and  $[Xe] 4f^9 6s^2$

62. Which of the following has the longest C–O bond length? (Free C–O bond length in CO is 1.128 Å.)

- (1)  $Ni(CO)_4$  (2)  $[Co(CO)_4]^-$   
(3)  $[Fe(CO)_4]^{2-}$  (4)  $[Mn(CO)_6]^+$

63. For the following reactions:

- (a)  $CH_3CH_2CH_2Br + KOH(aq) \rightarrow CH_3CH=CH_2 + KBr + H_2O$   
(b)  $CH_3CHBrCH_2CH_3 + KOH(aq) \rightarrow CH_3CH(OH)CH_2CH_3 + KBr$   
(c)  $C_6H_{10}(\text{cyclohexene}) + Br_2 \rightarrow \text{trans-1,2-dibromocyclohexane}$

Which of the following statements is correct?

- (1) a and b are elimination reactions and c is addition reaction (2) a is elimination, b is substitution and c is addition reaction  
(3) a is elimination, b and c are substitution reactions (4) a is substitution, b and c are addition reactions

64. The correct thermodynamic conditions for the spontaneous reaction at all temperatures is:

- (1)  $\Delta H < 0$  and  $\Delta S = 0$  (2)  $\Delta H > 0$  and  $\Delta S < 0$   
(3)  $\Delta H < 0$  and  $\Delta S > 0$  (4)  $\Delta H < 0$  and  $\Delta S < 0$

65. Consider the following liquid–vapour equilibrium: Liquid  $\rightleftharpoons$  Vapour. Which of the following relations is correct?

- (1)  $\frac{d \ln G}{dT^2} = \frac{\Delta H_v}{RT^2}$  (2)  $\frac{d \ln P}{dT} = -\frac{\Delta H_v}{RT}$   
(3)  $\frac{d \ln P}{dT^2} = -\frac{\Delta H_v}{T^2}$  (4)  $\frac{d \ln P}{dT} = \frac{\Delta H_v}{RT^2}$

66. The reaction



can be classified as:

- (1) Williamson ether synthesis reaction (2) Alcohol formation reaction  
(3) Dehydration reaction (4) Williamson alcohol synthesis reaction

67. The correct statement regarding a carbonyl compound with a hydrogen atom on its  $\alpha$ -carbon is:

- |  |  |
|--|--|
| (1) A carbonyl compound with a hydrogen atom on its $\alpha$ -carbon never equilibrates with its corresponding enol.   | (2) A carbonyl compound with a hydrogen atom on its $\alpha$ -carbon rapidly equilibrates with its corresponding enol, and this process is known as aldehyde-ketone equilibration. |
| (3) A carbonyl compound with a hydrogen atom on its $\alpha$ -carbon rapidly equilibrates with its corresponding enol, and this process is known as carbonylation. | (4) A carbonyl compound with a hydrogen atom on its $\alpha$ -carbon rapidly equilibrates with its corresponding enol, and this process is known as keto-enol tautomerism.         |

68. The product formed by the reaction of an aldehyde with a primary amine is:

- |                     |                   |
|---------------------|-------------------|
| (1) Schiff base     | (2) Ketone        |
| (3) Carboxylic acid | (4) Aromatic acid |

69. The correct statement regarding the basicity of aryl amines is:

- |  |  |
|--|--|
| (1) Aryl amines are generally less basic than alkyl amines because the nitrogen lone-pair electrons are delocalized by interaction with the aromatic ring $\pi$ electron system. | (2) Aryl amines are generally more basic than alkyl amines because the nitrogen lone-pair electrons are not delocalized by interaction with the aromatic ring $\pi$ electron system. |
| (3) Aryl amines are generally more basic than alkyl amines because of aryl group.  | (4) Aryl amines are generally more basic than alkyl amines, because the nitrogen atom in aryl amines is $sp$ -hybridized.  |

70. In a protein molecule various amino acids are linked together by:

- |                               |                              |
|-------------------------------|------------------------------|
| (1) $\alpha$ -glycosidic bond | (2) $\beta$ -glycosidic bond |
| (3) Peptide bond              | (4) Dative bond              |

71. The correct statement regarding RNA and DNA, respectively is:

- |   |   |
|---|---|
| (1) The sugar component in RNA is arabinose and the sugar component in DNA is 2'-deoxyribose. | (2) The sugar component in RNA is ribose and the sugar component in DNA is 2'-deoxyribose.    |
| (3) The sugar component in RNA is arabinose and the sugar component in DNA is ribose.         | (4) The sugar component in RNA is 2'-deoxyribose and the sugar component in DNA is arabinose. |

72. Which one given below is a non-reducing sugar?

- |             |             |
|-------------|-------------|
| (1) Maltose | (2) Lactose |
| (3) Glucose | (4) Sucrose |

73. [NEET 2016 Phase 1 · NEET 2017 · NEET 2019 · NEET 2019 Odisha · NEET 2020 · NEET 2021 · NEET 2023 Phase 2]  
Which of the following statements is not correct?

- |   |   |
|---|---|
| (1) Insulin maintains sugar level in the blood of a human body            | (2) Ovalbumin is a simple food reserve in egg-white |
| (3) Blood proteins thrombin and fibrinogen are involved in blood clotting | (4) Denaturation makes the proteins more active     |

74. The correct statement regarding a carbonyl compound having a hydrogen atom on its alpha-carbon is:

(1) A carbonyl compound with a hydrogen atom on its alpha-carbon never equilibrates with its corresponding enol.

(3) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as carbonylation.

(2) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibration.

(4) A carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as keto-enol tautomerism.

75. The correct statement regarding the comparison of staggered and eclipsed conformations of ethane is:

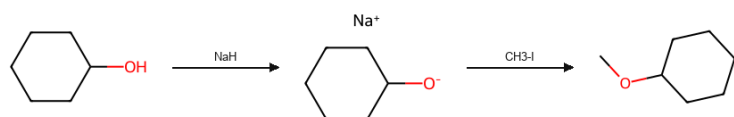
(1) The staggered conformation of ethane is less stable than the eclipsed conformation, because the staggered conformation has torsional strain.

(3) The eclipsed conformation of ethane is more stable than the staggered conformation even though the eclipsed conformation has torsional strain.

(2) The eclipsed conformation of ethane is more stable than the staggered conformation, because the eclipsed conformation has no torsional strain.

(4) The staggered conformation of ethane is more stable than the eclipsed conformation, because the staggered conformation has no torsional strain.

76. The reaction shown in the scheme can be classified as:



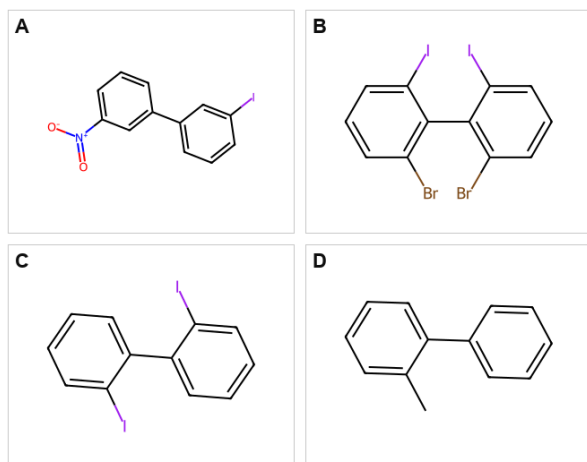
(1) Williamson ether synthesis reaction

(3) Dehydration reaction

(2) Alcohol formation reaction

(4) Williamson alcohol synthesis reaction

77. Which of the following biphenyls is optically active?



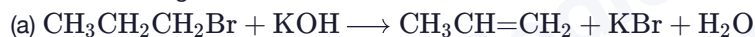
(1) (A)

(3) (C)

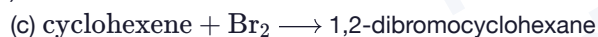
(2) (B)

(4) (D)

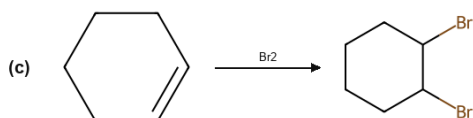
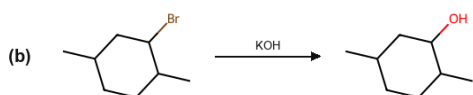
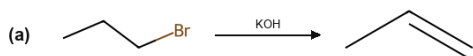
78. For the following reactions:



(b) a bromo-dimethylcyclohexane + KOH gives the corresponding hydroxy-dimethylcyclohexane (Br replaced by OH)



Which of the following statements is correct?



(1) (a) and (b) are elimination reactions and (c) is an addition reaction.

(3) (a) is elimination, (b) and (c) are substitution reactions.

(2) (a) is elimination, (b) is substitution and (c) is an addition reaction.

(4) (a) is substitution, (b) and (c) are addition reactions.

79. The pair of electrons in the given carbanion,  $\text{CH}_3-\text{C}\equiv\text{C}^-$ , is present in which of the following orbitals?

(1)  $2p$

(3)  $sp^2$

(2)  $sp^3$

(4)  $sp$

80. In the reaction  $\text{HC}\equiv\text{CH} \xrightarrow[\text{NH}_3]{\text{NaNH}_2} \text{CH}_3\text{CH}_2\text{Br} \xrightarrow[\text{NH}_3]{\text{NaNH}_2} \text{CH}_3\text{CH}_2\text{Br} \text{ Y}$ , X and Y are:

(1) X = 1-Butyne ; Y = 3-Hexyne

(3) X = 2-Butyne ; Y = 2-Hexyne

(2) X = 2-Butyne ; Y = 3-Hexyne

(4) X = 1-Butyne ; Y = 2-Hexyne

## Biology · 89 Qs

81. Seed formation without fertilization in flowering plants involves the process of:

(1) Sporulation

(3) Somatic hybridization

(2) Budding

(4) Apomixis

82. Cotyledon of maize grain is called:

(1) Plumule

(3) Coleoptile

(2) Coleorhiza

(4) Scutellum

83. The coconut water from tender coconut represents:

- |                            |                            |
|----------------------------|----------------------------|
| (1) Endocarp               | (2) Fleshy mesocarp        |
| (3) Free nuclear proembryo | (4) Free nuclear endosperm |
- 

84. Proximal end of the filament of stamen is attached to the:

- |              |                       |
|--------------|-----------------------|
| (1) Anther   | (2) Connective        |
| (3) Placenta | (4) Thalamus or petal |
- 

85. Nomenclature is governed by certain universal rules. Which one of the following is contrary to the rules of nomenclature?

- |   |   |
|---|---|
| (1) Biological names can be written in any language   | (2) The first word in a biological name represents the genus name, and the second is a specific epithet |
| (3) The names are written in Latin and are italicised | (4) When written by hand, the names are to be underlined  |
- 

86. Which one of the following statements is wrong?

- |  |  |
|--|--|
| (1) Cyanobacteria are also called blue - green algae | (2) Golden algae are also called desmids     |
| (3) Eubacteria are also called false bacteria        | (4) Phycomycetes are also called algal fungi |
- 

87. The primitive prokaryotes responsible for the production of biogas from the dung of ruminant animals, include the:

- |                 |                       |
|-----------------|-----------------------|
| (1) Halophiles  | (2) Thermoacidophiles |
| (3) Methanogens | (4) Eubacteria        |
- 

88. Which of the following statements about methanogens is not correct?

- |   |   |
|---|---|
| (1) They can be used to produce biogas.                       | (2) They are found in the rumen of cattle and their excreta |
| (3) They grow aerobically and breakdown cellulose- rich food. | (4) They produce methane gas.                               |
- 

89. Chrysophytes, Euglenoids, Dinoflagellates and Slime moulds are included in the kingdom:

- |            |              |
|------------|--------------|
| (1) Monera | (2) Protista |
| (3) Fungi  | (4) Animalia |
- 

90. One of the major components of cell wall of most fungi is:

- |               |                   |
|---------------|-------------------|
| (1) Chitin    | (2) Peptidoglycan |
| (3) Cellulose | (4) Hemicellulose |
- 

91. Which of the following would appear as the pioneer organisms on bare rocks?

- |             |                 |
|-------------|-----------------|
| (1) Lichens | (2) Liverworts  |
| (3) Mosses  | (4) Green algae |
- 

92. Which of the following statements is wrong for viroids?

- |                              |   |
|------------------------------|---|
| (1) They lack a protein coat | (2) They are smaller than viruses         |
| (3) They cause infections    | (4) Their RNA is of high molecular weight |
-

93. Identify the correct statement on 'inhibin':

- |  |   |
|--|---|
| (1) Inhibits the secretion of LH, FSH and Prolactin                          | (2) Is produced by granulosa cells in ovary and inhibits the secretion of FSH |
| (3) Is produced by granulosa cells in ovary and inhibits the secretion of LH | (4) Is produced by nurse cells in testes and inhibits the secretion of LH     |

94. Fertilization in humans is practically feasible only if:

- |  |  |
|--|--|
| (1) The sperms are transported into vagina just after the release of ovum in fallopian tube          | (2) The ovum and sperms are transported simultaneously to ampullary - isthmic junction of the fallopian tube |
| (3) The ovum and sperms are transported simultaneously to ampullary - isthmic junction of the cervix | (4) The sperms are transported into cervix within 48 hrs. of release of ovum in uterus                       |

95. Select the incorrect statement:

- |   |  |
|---|--|
| (1) FSH stimulates the sertoli cells which help in spermiogenesis | (2) LH triggers ovulation in ovary                           |
| (3) LH and FSH decrease gradually during the follicular phase     | (4) LH triggers secretion of androgens from the Leydig cells |

96. [NEET 2016 Phase 1 · NEET 2017 · NEET 2019 · NEET 2019 Odisha · NEET 2020 · NEET 2021 · NEET 2023 Phase 2] Which of the following statements is true?

- |   |  |
|---|--|
| (1) Most algal genera are diplontic                   | (2) Most bryophytes do not have haplo-diplontic life cycle |
| (3) All pteridophytes exhibit haplo-diplontic pattern | (4) Seed bearing plants follow haplontic pattern           |

97. [NEET 2016 Phase 1 · NEET 2018 · NEET 2019 Odisha · NEET 2020] Select the correct statement:

- |  |   |
|--|---|
| (1) Gymnosperms are both homosporous and heterosporous | (2) Salvinia, ginkgo and pinus all are gymnosperms                        |
| (3) Sequoia is one of the tallest trees                | (4) The leaves of gymnosperms are not well adapted to extremes of climate |

98. In bryophytes and pteridophytes, transport of male gametes requires:

- |           |             |
|-----------|-------------|
| (1) Wind  | (2) Insects |
| (3) Birds | (4) Water   |

99. Which of the following approaches does not give the defined action of contraceptive?

- (a) Barrier methods – Prevent fertilization
- (b) Intra uterine devices – Increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms
- (c) Hormonal contraceptives – Prevent / retard entry of sperms, prevent ovulation and fertilization
- (d) Vasectomy – Prevents spermatogenesis

Choose the correct answer:

- |   |   |
|---|---|
| (1) Barrier methods – Prevent fertilization   | (2) Intra uterine devices – Increase phagocytosis of sperms, suppress sperm motility and fertilizing capacity of sperms |
| (3) Hormonal contraceptives – Prevent / retard entry of sperms, prevent ovulation and fertilization | (4) Vasectomy – Prevents spermatogenesis  |

100. In context of Amniocentesis, which of the following statement is incorrect?

- (1) It is usually done when a woman is between 14 – 16 weeks pregnant  
(2) It is used for prenatal sex determination  
(3) It can be used for detection of Down syndrome  
(4) It can be used for detection of Cleft palate
- 

101. Which one of the following characteristics is not shared by birds and mammals?

- (1) Ossified endoskeleton  
(2) Breathing using lungs  
(3) Viviparity  
(4) Warm blooded nature
- 

102. Which of the following features is not present in *Periplaneta americana*?

- (1) Schizocoelom as body cavity  
(2) Indeterminate and radial cleavage during embryonic development  
(3) Exoskeleton composed of N-acetylglucosamine  
(4) Metamerically segmented body
- 

103. Which of the following characteristic features always holds true for the corresponding group of animals?

Each option pairs a characteristic feature with an animal group.

- (a) Cartilaginous endoskeleton - Chondrichthyes  
(b) Viviparous - Mammalia  
(c) Possess a mouth with an upper and a lower jaw - Chordata  
(d) 3-chambered heart with one incompletely divided ventricle - Reptilia

Choose the pairing that is always correct.

- (1) Cartilaginous endoskeleton - Chondrichthyes  
(2) Viviparous - Mammalia  
(3) Possess a mouth with an upper and a lower jaw - Chordata  
(4) 3-chambered heart with one incompletely divided ventricle - Reptilia
- 

104. Which of the following features is not present in the Phylum Arthropoda?

- (1) Chitinous exoskeleton  
(2) Metameric segmentation  
(3) Parapodia  
(4) Jointed appendages
- 

105. In a testcross involving F1 dihybrid flies, more parental – type offspring were produced than the recombinant – type offspring. This indicates:

- (1) The two genes are located on two different chromosomes  
(2) Chromosomes failed to separate during meiosis  
(3) The two genes are linked and present on the same chromosome  
(4) Both of the characters are controlled by more than one gene
- 

106. Pick out the correct statements:

- (i) Hemophilia is a sex – linked recessive disease  
(ii) Down's syndrome is due to aneuploidy  
(iii) Phenylketonuria is an autosomal recessive gene disorder  
(iv) Sickle cell anaemia is an autosomal recessive gene disorder
- (1) (i) and (iv) are correct  
(2) (ii) and (iv) are correct  
(3) (i), (iii) and (iv) are correct  
(4) (i), (ii) and (iii) are correct
-

107. Which of the following most appropriately describes hemophilia?

- (1) Recessive gene disorder  
(2) X – linked recessive gene disorder  
(3) Chromosomal disorder  
(4) Dominant gene disorder
- 

108. Match the following:

Column – I

- (a) Dominance  
(b) Codominance  
(c) Pleiotropy  
(d) Polygenic inheritance

Column – II

- (i) Many genes govern a single character  
(ii) In a heterozygous organism only one allele expresses itself  
(iii) In a heterozygous organism both alleles express themselves fully  
(iv) A single gene influences many characters

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

109. A tall true breeding garden pea plant is crossed with a dwarf true breeding garden pea plant. When the F<sub>1</sub> plants were selfed the resulting genotypes were in the ratio

- (1) 1 : 2 : 1 :: Tall homozygous : Tall heterozygous : Dwarf  
(2) 1 : 2 : 1 :: Tall heterozygous : Tall homozygous : Dwarf  
(3) 3 : 1 :: Tall : Dwarf  
(4) 3 : 1 :: Dwarf : Tall
- 

110. A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell is containing more number of chromosomes as compared to other dividing cells. This would result in:

- (1) Aneuploidy  
(2) Polyploidy  
(3) Somaclonal variation  
(4) Polyteny
- 

111. [NEET 2016 Phase 1 · NEET 2019 Odisha · ReNEET 2026] Which of the following statements about the lac-operon is correct?

- (1) Gene *i* is constitutively expressed  
(2) Lactose activates the repressor to bind to the operator  
(3) Genes *i*, *z*, *y* and *a* share a single common promoter  
(4) Galactose can act as an inducer of the lac operon
- 

112. The correct statement regarding RNA and DNA, respectively is:

- (1) The sugar component in RNA is arabinose and the sugar component in DNA is 2'-deoxyribose.  
(2) The sugar component in RNA is ribose and the sugar component in DNA is 2'-deoxyribose.  
(3) The sugar component in RNA is arabinose and the sugar component in DNA is ribose.  
(4) The sugar component in RNA is 2'-deoxyribose and the sugar component in DNA is arabinose.
- 

113. Which one of the following is the starter codon?

- (1) AUG  
(2) UGA  
(3) UAA  
(4) UAG
-

114. Which one of the following statements about Histones is wrong?

- (1) Histones are rich in amino acids - Lysine and Arginine      (2) Histones carry positive charge in the side chain.  
(3) Histones are organized to form a unit of 8 molecules.      (4) The pH of histones is slightly acidic
- 

115. Which of the following is not required for any of the techniques of DNA fingerprinting available at present?

- (1) Polymerase chain reaction      (2) Zinc finger analysis  
(3) Restriction enzymes      (4) DNA - DNA hybridization
- 

116. A complex of ribosomes attached to single strand of RNA is known as:

- (1) Polysome      (2) Polymer  
(3) Polypeptide      (4) Okazaki fragment
- 

117. Which of the following is required as inducer(s) for the expression of Lac operon?

- (1) Glucose      (2) Galactose  
(3) Lactose      (4) Lactose and galactose
- 

118. The standard petal of papilionaceous corolla is also called: (NEET 2016 (Phase I))

- (1) Carina      (2) Pappus  
(3) Vexillum      (4) Corona
- 

119. Proximal end of the filament of stamen is attached to the: (NEET 2016 (Phase I))

- (1) Anther      (2) Connective  
(3) Placenta      (4) Thalamus or petal
- 

120. Stems modified into flat green organs performing the functions of leaves are known as: (NEET 2016 (Phase I))

- (1) Cladodes      (2) Phyllodes  
(3) Phylloclades      (4) Scales
- 

121. Cotyledon of maize grain is called: (NEET 2016 (Phase I))

- (1) Plumule      (2) Coleorhiza  
(3) Coleoptile      (4) Scutellum
- 

122. Which of the following is not a stem modification? (NEET 2016 (Phase I))

- (1) Pitcher of Nepenthes      (2) Thorns of citrus  
(3) Tendrils of cucumber      (4) Flattened structures of Opuntia
- 

123. Tricarpellary, syncarpous gynoecium is found in flowers of: (NEET 2016 (Phase I))

- (1) Liliaceae      (2) Solanaceae  
(3) Fabaceae      (4) Poaceae
- 

124. Specialized epidermal cells surrounding the guard cells are called:

- (1) Complementary cells      (2) Subsidiary cells  
(3) Bulliform cells      (4) Lenticels
-

125. Which of the following structures is homologous to the wing of a bird?

- |                           |                      |
|---------------------------|----------------------|
| (1) Dorsal fin of a shark | (2) Wing of a moth   |
| (3) Hind limb of rabbit   | (4) Flipper of whale |

126. [NEET 2016 Phase 1 · NEET 2017 · NEET 2019 · NEET 2019 Odisha · NEET 2020 · NEET 2021 · NEET 2023 Phase 2] Which of the following statements is not true ?

- |   |   |
|---|---|
| (1) Analogous structures are a result of convergent evolution | (2) Sweet potato and potato is an example of analogy                  |
| (3) Homology indicates common ancestry                        | (4) Flippers of penguins and dolphins are a pair of homologous organs |

127. Following are the two statements regarding the origin of life:

- (i) The earliest organisms that appeared on the earth were non-green and presumably anaerobes.
- (ii) The first autotrophic organisms were the chemoautotrophs that never released oxygen.

Of the above statements which one of the following options is correct?

- |                                      |                                      |
|--------------------------------------|--------------------------------------|
| (1) (i) is correct but (ii) is false | (2) (ii) is correct but (i) is false |
| (3) Both (i) and (ii) are correct    | (4) Both (i) and (ii) are false      |

128. Analogous structures are a result of:

- |                         |                           |
|-------------------------|---------------------------|
| (1) Divergent evolution | (2) Convergent evolution  |
| (3) Shared ancestry     | (4) Stabilizing selection |

129. Asthma may be attributed to:

- |                                      |  |
|--------------------------------------|--|
| (1) Bacterial infection of the lungs | (2) Allergic reaction of the mast cells in the lungs |
| (3) Inflammation of the trachea      | (4) Accumulation of fluid in the lung                |

130. In higher vertebrates, the immune system can distinguish self-cells and non-self. If this property is lost due to genetic abnormality and it attacks self-cells, then it leads to:

- |                         |                     |
|-------------------------|---------------------|
| (1) Allergic response   | (2) Graft rejection |
| (3) Auto-immune disease | (4) Active immunity |

131. Antivenom injection contains preformed antibodies while polio drops that are administered into the body contain:

- |                         |                          |
|-------------------------|--------------------------|
| (1) Activated pathogens | (2) Harvested antibodies |
| (3) Gamma globulin      | (4) Attenuated pathogens |

132. Which of the following statements is not true for cancer cells in relation to mutations?

- |  |  |
|--|--|
| (1) Mutations in proto-oncogenes accelerate the cell cycle | (2) Mutations destroy telomerase inhibitor     |
| (3) Mutations inactivate the cell control                  | (4) Mutations inhibit production of telomerase |

133. Which type of tissue correctly matches with its location?

- |  |  |
|--|--|
| (1) Tissue: Smooth muscle, Location: Wall of intestine     | (2) Tissue: Areolar tissue, Location: Tendons                |
| (3) Tissue: Transitional epithelium, Location: Tip of nose | (4) Tissue: Cuboidal epithelium, Location: Lining of stomach |

134. Which of the following features is not present in *Periplaneta americana*?

(Out of syllabus but asked in last 3 years)

- |   |  |
|---|--|
| (1) Schizocoelom as body cavity                   | (2) Indeterminate and radial cleavage during embryonic development |
| (3) Exoskeleton composed of N – acetylglucosamine | (4) Metamerically segmented body                                   |

135. Which of the following is not a feature of the plasmids?

- |                             |                        |
|-----------------------------|------------------------|
| (1) Independent replication | (2) Circular structure |
| (3) Transferable            | (4) Single – stranded  |

136. Mitochondria and chloroplast are:

- (i) Semi – autonomous organelles
  - (ii) Formed by division of pre – existing organelles and they contain DNA but lack protein synthesizing machinery
- Which one of the following options is correct?

- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (1) Both (i) and (ii) are correct | (2) (ii) is true but (i) is false |
| (3) (i) is true but (ii) is false | (4) Both (i) and (ii) are false   |

137. Spindle fibres attach on to:

- |                                  |                                   |
|----------------------------------|-----------------------------------|
| (1) Telomere of the chromosome   | (2) Kinetochore of the chromosome |
| (3) Centromere of the chromosome | (4) Kinetosome of the chromosome  |

138. Microtubules are the constituents of:

- |  |   |
|--|---|
| (1) Cilia, Flagella and Peroxisomes          | (2) Spindle fibres, centrioles and cilia  |
| (3) Centrioles, spindle fibres and chromatin | (4) Centrosome, Nucleosome and Centrioles |

139. Which one of the following cell organelles is enclosed by a single membrane?

- |                  |                  |
|------------------|------------------|
| (1) Mitochondria | (2) Chloroplasts |
| (3) Lysosomes    | (4) Nuclei       |

140. [NEET 2016 Phase 1 · NEET 2017 · NEET 2019 · NEET 2019 Odisha · NEET 2020 · NEET 2021 · NEET 2023 Phase 2]  
Which of the following statements is not correct?

- |  |   |
|--|---|
| (1) Lysosomes have numerous hydrolytic enzymes | (2) The hydrolytic enzymes of lysosomes are active under acidic pH                |
| (3) Lysosomes are membrane bound structures    | (4) Lysosomes are formed by the process of packaging in the endoplasmic reticulum |

141. Water soluble pigments found in plant cell vacuoles are:

- |                  |                  |
|------------------|------------------|
| (1) Xanthophylls | (2) Chlorophylls |
| (3) Carotenoids  | (4) Anthocyanins |

142. A river with an inflow of domestic sewage rich in organic waste may result in:

- |   |   |
|---|---|
| (1) Drying of the river very soon due to algal bloom.               | (2) Increased population of aquatic food web organisms. |
| (3) An increased production of fish due to biodegradable nutrients. | (4) Death of fish due to lack of oxygen.                |

143. Which of the following is wrongly matched in the given table (Microbe – Product – Application)?

- |  |   |
|--|---|
| (1) <i>Trichoderma polysporum</i> – Cyclosporin A – Immunosuppressive drug   | (2) <i>Monascus purpureus</i> – Statins – Lowering of blood cholesterol |
| (3) <i>Streptococcus</i> – Streptokinase – Removal of clot from blood vessel | (4) <i>Clostridium butylicum</i> – Lipase – Removal of oil stains       |

144. A typical fat molecule is made up of:

- |  |   |
|--|---|
| (1) Three glycerol molecules and one fatty acid molecule | (2) One glycerol and three fatty acid molecules   |
| (3) One glycerol and one fatty acid molecule             | (4) Three glycerol and three fatty acid molecules |

145. The two polypeptides of human insulin are linked together by:

- |                    |                         |
|--------------------|-------------------------|
| (1) Hydrogen bonds | (2) Phosphodiester bond |
| (3) Covalent bond  | (4) Disulphide bridges  |

146. The taq polymerase enzyme is obtained from:

- |                              |                                      |
|------------------------------|--------------------------------------|
| (1) <i>Thermus aquaticus</i> | (2) <i>Thiobacillus ferrooxidans</i> |
| (3) <i>Bacillus subtilis</i> | (4) <i>Pseudomonas putida</i>        |

147. Which of the following is a restriction endonuclease?

- |             |              |
|-------------|--------------|
| (1) Hind II | (2) Protease |
| (3) DNase I | (4) RNase    |

148. Which part of the tobacco plant is infected by *Meloidogyne incognita*?

- |            |          |
|------------|----------|
| (1) Flower | (2) Leaf |
| (3) Stem   | (4) Root |

149. In meiosis crossing over is initiated at:

- |               |               |
|---------------|---------------|
| (1) Pachytene | (2) Leptotene |
| (3) Zygotene  | (4) Diplotene |

150. Which of the following is not a characteristic feature during mitosis in somatic cells?

- |                         |                                |
|-------------------------|--------------------------------|
| (1) Spindle fibres      | (2) Disappearance of nucleolus |
| (3) Chromosome movement | (4) Synapsis                   |

151. When does the growth rate of a population following the logistic model equal zero? The logistic model is given as  $dN/dt = rN(1 - N/K)$ : (NEET 2016 (Phase 1))

- |                               |   |
|-------------------------------|---|
| (1) When $N/K$ is exactly one | (2) When $N$ nears the carrying capacity of the habitat |
| (3) When $N/K$ equals zero    | (4) When death rate is greater than birth rate          |

152. Gause's principle of competitive exclusion states that: (NEET 2016 (Phase 1))

- |   |   |
|---|---|
| (1) More abundant species will exclude the less abundant species through competition      | (2) Competition for the same resources excludes species having different food preferences |
| (3) No two species can occupy the same niche indefinitely for the same limiting resources | (4) Larger organisms exclude smaller ones through competition                             |

153. In a chloroplast the highest number of protons are found in:

- |                          |                         |
|--------------------------|-------------------------|
| (1) Stroma               | (2) Lumen of thylakoids |
| (3) Inter membrane space | (4) Antennae complex    |

154. A plant in your garden avoids photorespiratory losses, has improved water use efficiency, shows high rates of photosynthesis at high temperatures and has improved efficiency of nitrogen utilization. In which of the following physiological groups would you assign this plant?

- |         |                    |
|---------|--------------------|
| (1) C3  | (2) C4             |
| (3) CAM | (4) Nitrogen fixer |

155. Emerson's enhancement effect and Red drop have been instrumental in the discovery of:

- |  |   |
|--|---|
| (1) Photophosphorylation and non – cyclic electron transport | (2) Two photosystems operating simultaneously |
| (3) Photophosphorylation and cyclic electron transport       | (4) Oxidative phosphorylation                 |

156. The term ecosystem was coined by:

- |                |                  |
|----------------|------------------|
| (1) E.P. Odum  | (2) A.G. Tansley |
| (3) E. Haeckel | (4) E. Warming   |

157. (Out of current syllabus – rationalised out of NCERT; included as it was asked in earlier NEET papers)

Which of the following would appear as the pioneer organisms on bare rocks?

- |             |                 |
|-------------|-----------------|
| (1) Lichens | (2) Liverworts  |
| (3) Mosses  | (4) Green algae |

158. Which of the following is the most important cause of animals and plants being driven to extinction?

- |                                    |                            |
|------------------------------------|----------------------------|
| (1) Over-exploitation              | (2) Alien species invasion |
| (3) Habitat loss and fragmentation | (4) Co-extinctions         |

159. Which of the following is the most important cause for animals and plants being driven to extinction?

- |                                    |                            |
|------------------------------------|----------------------------|
| (1) Habitat loss and fragmentation | (2) Drought and floods     |
| (3) Economic exploitation          | (4) Alien species invasion |

160. The avena curvature is used for bioassay of:

- |         |              |
|---------|--------------|
| (1) ABA | (2) GA3      |
| (3) IAA | (4) Ethylene |

161. Reduction in pH of blood will:

- |   |   |
|---|---|
| (1) Reduce the rate of heart beat                   | (2) Reduce the blood supply to the brain  |
| (3) Decrease the affinity of hemoglobin with oxygen | (4) Release bicarbonate ions by the liver |

162. Name the chronic respiratory disorder caused mainly by cigarette smoking:

- |                          |                           |
|--------------------------|---------------------------|
| (1) Emphysema            | (2) Asthma                |
| (3) Respiratory acidosis | (4) Respiratory alkalosis |

163. Blood pressure in the pulmonary artery is:

- (1) Same as that in the aorta (2) More than that in the carotid  
(3) More than that in the pulmonary vein (4) Less than that in the venae cavae

164. Lack of relaxation between successive stimuli in sustained muscle contraction is known as:

- (1) Spasm (2) Fatigue  
(3) Tetanus (4) Tonus

165. Which of the following pairs of hormones are not antagonistic (having opposite effects) to each other?

- (1) Parathormone - Calcitonin (2) Insulin - Glucagon  
(3) Aldosterone - Atrial Natriuretic Factor (4) Relaxin - Inhibin

166. Changes in GnRH pulse frequency in females is controlled by circulating levels of:

- (1) Estrogen and progesterone (2) Estrogen and inhibin  
(3) Progesterone only (4) Progesterone and inhibin

167. The label of a herbarium sheet does not carry information on: (Out of syllabus, but asked in NEET earlier) (NEET-2016 Phase-2)

- (1) Date of collection (2) Name of collector  
(3) Local names (4) Height of the plant

168. (Out of syllabus but asked in last 3 years) The balloon – shaped structures called tyloses

- (1) Originate in the lumen of vessels (2) Characterize the sapwood  
(3) Are extensions of xylem parenchyma cells into vessels (4) Are linked to the ascent of sap through xylem vessels

169. In male cockroach, sperms are stored in which part of the reproductive system?

(Out of syllabus but asked in last 3 years)

- (1) Seminal vesicles (2) Mushroom glands  
(3) Testes (4) Vas deferens

## Answer Key

1.C	2.D	3.A	4.B	5.A	6.C	7.B	8.D	9.A	10.C	11.A
12.C	13.D	14.C	15.D	16.B	17.C	18.A	19.A	20.B	21.A	22.B
23.A	24.C	25.B	26.A	27.D	28.D	29.A	30.C	31.D	32.D	33.A
34.B	35.D	36.D	37.D	38.C	39.D	40.D	41.A	42.D	43.C	44.B
45.A	46.A	47.A	48.A	49.D	50.D	51.A	52.D	53.B	54.B	55.B
56.A	57.A	58.D	59.D	60.D	61.D	62.C	63.B	64.C	65.D	66.A
67.D	68.A	69.A	70.C	71.B	72.D	73.D	74.D	75.D	76.A	77.B
78.B	79.D	80.A	81.D	82.D	83.D	84.D	85.A	86.C	87.C	88.C
89.B	90.A	91.A	92.D	93.B	94.B	95.C	96.C	97.C	98.D	99.D
100.D	101.C	102.B	103.A	104.C	105.C	106.D	107.B	108.B	109.A	110.B
111.A	112.B	113.A	114.D	115.B	116.A	117.C	118.C	119.D	120.C	121.D

122.A	123.A	124.B	125.D	126.D	127.C	128.B	129.B	130.C	131.D	132.D
133.A	134.B	135.D	136.C	137.B	138.B	139.C	140.D	141.D	142.D	143.D
144.B	145.D	146.A	147.A	148.D	149.A	150.D	151.A	152.C	153.B	154.B
155.B	156.B	157.A	158.C	159.A	160.C	161.C	162.A	163.C	164.C	165.D
166.A	167.D	168.C	169.A							

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