MHT CET 2025 9 April PCB Question Paper

General Instructions

Read the following instructions very carefully and strictly follow them:

1. This question booklet contains 150 Multiple Choice Questions (MCQs).
2. Section-A: Physics & Chemistry - 50 Questions each and Section-B: Biology - 50 Questions.
3. Choice and sequence for attempting questions will be as per the convenience of the candidate.
4. Read each question carefully.
5. Determine the one correct answer out of the four available options given for each question.
6. Physics and Chemistry have 1 mark for each question, and Bio have 2 marks for every question. There shall be no negative marking.
7. No mark shall be granted for marking two or more answers of the same question, scratching, or overwriting.
8. Duration of the paper is 3 Hours.

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1. A wire of length L and resistance R is falling vertically through Earth's horizontal magnetic field B. What is the current induced in the wire when it has fallen a height L? (Take acceleration due to gravity as g)

(a) $\frac{BL\sqrt{2gL}}{R}$
(b) $\frac{B\sqrt{2gL}}{R}$
(c) $\frac{BL^2\sqrt{2g}}{R}$
(d) $\frac{BLg}{R}$

---

2. The mass of an object is measured as (28 ± 0.01) g and its volume as (5 ± 0.1) cm^3. What is the percentage error in density?

(A) 1.20%
(B) 2.04%
(C) 0.35%
(D) 0.71%

---

3. At a height h above the Earth's surface, the acceleration due to gravity becomes $\frac{g}{\sqrt{3}}$. What is the value of h in terms of the Earth's radius R?

(a) R
(b) $\sqrt{2}R$
(c) $2R$
(d) $\frac{R}{2}$

---

4. A block slides down a smooth inclined plane, and its acceleration is found to be $\frac{g}{8}$. If g is the acceleration due to gravity, what is the angle of inclination θ of the plane?

(a) $\tan^{-1}\left(\frac{1}{8}\right)$
(b) $\tan^{-1}\left(\frac{1}{2}\right)$
(c) $\tan^{-1}\left(\frac{1}{4}\right)$
(d) $\tan^{-1}\left(\frac{1}{16}\right)$

5. An AC voltage $V = 50\sqrt{2}\sin(100t)$ is applied across a capacitor of capacitance $C = 1\mu F$. What is the rms value of the current through the capacitor?

(a) 0.0025 A

(b) 0.01 A

(c) 0.005 A

(d) 0.007 A

---

6. Two black bodies emit the same amount of radiation per second. The radius of the first is $R_1 = 2$ m and its temperature is $T_1 = 400$ K. If the second body has a radius $R_2 = 4$ m, what is its temperature T_2 in Kelvin?

(a) 200 K

(b) 300 K

(c) 250 K

(d) 400 K

---

7. What is the ratio of the wavelength of the Lyman series limit to that of the Paschen series limit in the hydrogen spectrum?

(a) $\frac{9}{9}$

(b) $\frac{1}{4}$

(c) $\frac{9}{3}$

(d) $\frac{2}{2}$

---

8. A photon and an electron have the same energy E. If λ_p is the wavelength of the photon and λ_e is the de Broglie wavelength of the electron, then the ratio $\frac{\lambda_p}{\lambda_e}$ is:

(a) $\frac{E}{mc^2}$

(b) $\frac{\sqrt{2mE}}{c^2}$

(c) $\frac{\sqrt{2mE}}{c}$

(d) $\frac{\sqrt{2mE}}{R}$

---

9. What is the ratio of the wavelength of the Lyman series limit to that of the Paschen series limit in the hydrogen spectrum?

(a) $\frac{9}{9}$

(b) $\frac{1}{4}$

(c) $\frac{9}{3}$

(d) $\frac{2}{2}$

---

10. A photon and an electron have the same energy E. If λ_p is the wavelength of the photon and λ_e is the de Broglie wavelength of the electron, then the ratio $\frac{\lambda_p}{\lambda_e}$ is:

(a) $\frac{E}{mc^2}$

(b) $\frac{\sqrt{2mE}}{c^2}$

(c) $\frac{\sqrt{2mE}}{c}$

(d) $\frac{\sqrt{2mE}}{R}$

---

11. A mass of 0.5 kg is attached to a spring of force constant 200 N/m. What is the time period of oscillation?

(a) 0.25 s

(b) 0.50 s

(c) 1.00 s

(d) 2.00 s

---

12. A solid cylinder and a hollow cylinder, each of mass M and radius R, are rotating with the same angular velocity ω. What is the ratio of their rotational kinetic energies $\left(\frac{K_{\text{hollow}}}{K_{\text{solid}}}\right)$?

(a) 1

(b) 2

(c) 3

(d) 3/2

---

13. A uniform circular disc of mass 2 kg and radius 0.5 m is mounted on a frictionless axle. A force of 4 N is applied tangentially at the rim for 2 seconds. Find the angular velocity acquired by the disc at the end of 2 seconds.

(a) 8 rad/s

(b) 10 rad/s

(c) 12 rad/s

(d) 16 rad/s

---

14. A circular loop of radius 0.2 m carries a current of 4 A. What is the magnetic field at a point on the axis of the loop at a distance 0.2 m from the center?

(a) $\frac{4\times10^{-6}}{4\times10^{-7}}$ T

(b) $\sqrt{2}$ T

(c) 4×10^{-7} T

(d) $(0.2)^2$ T

---

15. An electron enters a magnetic field of magnitude 0.05 T at a speed of 3×10^6 m/s making an angle of 30° with the field direction. What is the magnitude of magnetic force on it? (Charge of electron = 1.6×10^{-19} C)

(a) 2.4×10^{-14} N

(b) 1.2×10^{-14} N

(c) 3.0×10^{-14} N

(d) 4.8×10^{-14} N

---

16. A spherical air bubble is formed inside a liquid (like water). The radius of the bubble is 0.5 mm, and the surface tension of the liquid is 0.072 N/m. What is the pressure inside the bubble relative to the outside pressure?

(a) 1.44×10^3 Pa more

(b) 1.44×10^2 Pa more

(c) 2.88×10^3 Pa more

(d) 2.88×10^2 Pa more

---

17. A particle on a string undergoes a transverse wave motion given by:

$$y = 5 \sin\left(4\pi t - \frac{\pi x}{2}\right)$$

(All quantities in SI units.) How much time does a particle at $x = 0$ take to go from mean position to extreme (maximum displacement) for the first time?

(a) $\frac{1}{4}$ S

(b) $\frac{1}{8}$ S

(c) $\frac{1}{2}$ S

(d) $\frac{1}{16}$ S

---

18. Assertion (A): When two waves of equal amplitude and a phase difference of $\frac{\pi}{2}$ interfere, the resulting intensity is equal to the intensity of one wave.
Reason (R): In interference, the resultant intensity is always the sum of individual intensities if the phase difference is non-zero.

(a) Both A and R are true, and R is the correct explanation of A.

(b) Both A and R are true, but R is not the correct explanation of A.

(c) A is true, but R is false.

(d) A is false, but R is true.

---

19. Two resistors, 4 and 6, are connected in parallel, and this combination is connected in series with a 2 resistor to a 12V battery. What is the total power dissipated?

(a) 32.7 W

(b) 28.8 W

(c) 24.0 W

(d) 36.0 W

---

20. A small object is tied to a string and whirled in a vertical circle of radius L. What should be the minimum speed at the topmost point of the circle so that the string just remains taut?

(a) $\sqrt{2gL}$

(b) $\sqrt{gL}$

(c) $\sqrt{3gL}$

(d) Zero

---

21. The reverse saturation current (I0) of a silicon diode at 27°C is 10^{-6} A. What will be the approximate value of I0 at 67°C? (Assume I_0 doubles for every 10°C rise in temperature)

(a) 1.6×10^{-6} A

(b) 4.0×10^{-6} A

(c) 8.0×10^{-6} A

(d) 1.6×10^{-5} A

---

22. A conducting rod of length L and mass m falls vertically under gravity through a region of uniform magnetic field B, directed into the plane of the page. The rod is placed on two smooth, vertical conducting rails connected at the bottom by a resistor R. Assuming no friction or air resistance, and the rod quickly reaches a constant terminal velocity, find the expression for v in terms of B, L, m, R.

(a) $\frac{mgR}{B^2L^2}$

(b) $\frac{mg}{B^2L^2}$

(c) $\frac{mgR}{B^2L}$

(d) $\frac{mR}{gB^2L}$

---

23. A gas undergoes a process $PV^2 =$ constant. Initially, pressure = 2 atm, volume = 1 L. It expands to 2 L. Find the work done by the gas in joules. (a) 50.5 J

(b) 10.1 J

(c) 202 J

(d) 303 J

---

24. Three point charges +Q, +Q, and -Q are placed at the corners of an equilateral triangle of side a. What is the total electrostatic potential energy of the system?

(a) $\frac{kQ^2}{a}$

(b) 0

(c) $\frac{a}{3kQ^2}$

(d) $\frac{a}{3Q^2}$

---

25. A passenger is sitting in a fast moving train. The engine of the train blows a whistle of frequency N. If the apparent frequency of sound heard by the passengers is N', then:

(a) $N' = N$

(b) $N' < N$

(c) $N' > N$

(d) $N'N = 1$

---

26. An object is dropped from a helicopter flying horizontally at 360 km/h. It falls from a height of 2 km and reaches the ground in 20 seconds. What is the displacement of the package relative to the helicopter's position when it was dropped?

(a) 2 km

(b) $2\sqrt{2}$ km

(c) 4 km

(d) 8 km

---

27. In adiabatic compression, which of the following is true?

(a) Temperature increases

(b) Temperature decreases

(c) Pressure remains constant

(d) Amount of heat exchanged with surround

---

28. In a vertical circle of radius r, at what point in its path does a particle have tension equal to zero if it is just able to complete the vertical circle?

(a) Lowest point

(b) Highest point

(c) Horizontal point

(d) Any point

---

29. In Young's double slit experiment, we get 15 fringes per cm on the screen, using light of wavelength 5600 Å. For the same setting, how many fringes per cm will be obtained with light of wavelength 7000 Å?

(a) 10

(b) 12

(c) 15

(d) 18

---

30. A uniform circular disc of mass 2 kg and radius 0.5 m is mounted on a frictionless axle. A force of 4 N is applied tangentially at the rim for 2 seconds. Find the angular velocity acquired by the disc at the end of 2 seconds.

(a) 8 rad/s

(b) 10 rad/s

(c) 12 rad/s

(d) 16 rad/s

---

30. An electron enters a magnetic field of magnitude 0.05 T at a speed of 3×10^6 m/s, making an angle of 30° with the field direction. What is the magnitude of magnetic force on it?

(a) 2.4×10^{-14} N

(b) 1.2×10^{-14} N

(c) 3×10^{-14} N

(d) 4.8×10^{-14} N

---

31. Two resistors, 4 ohm and 6 ohm, are connected in parallel, and this combination is connected in series with a 2 ohm resistor to a 12V battery. What is the total power dissipated?

(a) 32.7 W

(b) 28.8 W

(c) 24.0 W

(d) 36.0 W

---

32. How much time does a particle at $x = C$ take to go from the mean position to the extreme (maximum displacement) for the first time?

(a) $T/2$

(b) $T/4$

(c) $T/3$

(d) T

---

33. A transverse wave along a string is given by $y = 2\sin\left(2\pi(3t - x) + \frac{\pi}{4}\right)$, where x and y are in cm and t in second. Find the acceleration of a particle located at $x = 4$ cm at $t = 1$ s.

(a) $36\,\text{cm}^2/\text{s}^2$

(b) $36\,\text{cm}/\text{s}^2$

(c) $-36\,\text{cm}^2/\text{s}^2$

(d) $-36\,\text{cm}/\text{s}^2$

---

34. Three-point charges Q, q, and $-q$ are kept at the vertices of an equilateral triangle of side L. What is the total electrostatic potential energy of the system?

(a) $\frac{kQ^2}{a}$

(b) 0

(c) $-\frac{kQ^2}{3a}$

(d) $\frac{a}{3kQ^2}$

---

35. Two resistors, 4Ω and 6Ω, are connected in parallel, and this combination is connected in series with a 2Ω resistor to a 12V battery. What is the total power dissipated?

(a) 32.7 W

(b) 28.8 W

(c) 24.0 W

(d) 36.0 W

---

36. A block slides down a smooth inclined plane and its acceleration is found to be half the acceleration due to gravity. What is the angle of inclination θ of the plane?

(a) 45°

(b) 60°

(c) 30°

(d) 90°

---

37. A uniform circular disc of mass 2 kg and radius 0.5 m is mounted on a frictionless axle. A force of 4 N is applied tangentially at the rim for 2 seconds. Find the angular velocity acquired by the disc at the end of 2 seconds.

(a) 8 rad/s

(b) 10 rad/s

(c) 12 rad/s

(d) 16 rad/s

---

38. A mass of 0.5 kg is attached to a spring of force constant 200 N/m. What is the time period of oscillation?

(a) 0.314 s

(b) 0.451 s

(c) 0.567 s

(d) 0.789 s

---

39. In Young's double slit experiment, we get 15 fringes per cm on the screen, using light of wavelength 5600 Å. For the same setting, how many fringes per cm will be obtained with light of wavelength 7000 Å?

(a) 10

(b) 12

(c) 15

(d) 18

---

40. The clarity of the image formed on the retina of the eye depends on the

(a) visual angle

(b) environmental condition

(c) distance of eye-lens from retina

(d) material of the object whose image is observed

---

1 CHEMISTRY

1. Which of the following reagents is used in Rosenmund reduction?

(a) H_2/Pd - $BaSO_4$ (poisoned)

(b) Zn/HCl

(c) $LiAlH_4$

(d) $NaBH_4$

---

2. Which reagent will best convert alcohol to aldehyde selectively?

(a) $KMnO_4$

(b) PCC

(c) $K_2Cr_2O_7$

(d) HNO_3

---

3. How many isomers are possible for $C_4H_8Cl_2$ (including chain and positional)?

(a) 6

(b) 7

(c) 8

(d) 9

---

4. Which of the following shows resonance but not hyperconjugation?

(a) Propene

(b) Aniline

(c) Toluene

(d) Ethylbenzene

---

5. Which compound gives white precipitate with $AgNO_3$ in ethanol?

(a) CH_3CH_2Br

(b) $C_6H_5CH_2Cl$

(c) $(CH_3)_3CCl$

(d) CH_3Cl

---

6. Which of the following is most reactive towards nucleophilic substitution?

(a) Vinyl chloride

(b) Allyl chloride

(c) Benzyl chloride

(d) Tert-butyl chloride

---

7. Which of the following shows resonance but not hyperconjugation?

(a) Propene

(b) Aniline

(c) Toluene

(d) Ethylbenzene

---

8. ”A given compound always contains the same proportion of elements” is a statement of

(a) Law of combining volumes of gases

(b) Law of conservation of mass

(c) Law of multiple of mass

(d) Law of definite proportions

---

9. What is the molar mass of the third member of the homologous series if the molar mass of the first member is 46 g?

(a) 60 g

(b) 74 g

(c) 138 g

(d) 80 g

---

10. Which of the following pairs of compounds cannot demonstrate the law of multiple proportions?

(a) NO, NO_2

(b) CO, CO_2

(c) H_2O, H_2O_2

(d) Na_3S, NaF

---

11. Which law is illustrated by compounds H_2O and H_2O_2 formed from two different elements, H and O?

(a) Law of Constant proportion

(b) Law of Conservation of mass

(c) Law of Multiple proportion

(d) Avogadro's law

---

12. Which of the following has the maximum percentage of gas in the air?

(a) Carbon dioxide

(b) Oxygen

(c) Hydrogen

(d) Nitrogen

---

13. Which of the following is the strongest acid?

(a) Trichloroacetic acid

(b) Acetic acid

(c) Dichloroacetic acid

(d) Chloroacetic acid

---

14. Which of the following compounds gives a secondary alcohol upon reaction with methylmagnesium bromide?

(a) Butyl formate

(b) 3-pentanone

(c) Pentanal

(d) Methyl butanoate

---

15. A sample of gas occupies 10 L at 300 K and 2 atm. What will be its volume at 400 K and 1 atm?

(a) 15 L

(b) 20 L

(c) 25 L

(d) 30 L

---

16. The solubility of $BaSO_4$ is 1.1 x 10^{-5} mol/L. What is its Ksp?

(a) 1.21 x 10^{-9}

(b) 1.21 x 10^{-10}

(c) 2.42 x 10^{-10}

(d) 2.1 x 10^{-11}

---

17. A solution is made by mixing 100 mL of 0.1 M HCl and 100 mL of 0.2 M NaOH. pH of resulting solution is:

(a) 12.0

(b) 11.0

(c) 7.0

(d) 10.0

---

18. For a reaction A $\rightarrow$ B, the rate doubles when temperature increases from 298 K to 308 K. What is the activation energy (Ea)?

(a) 52 kJ/mol

(b) 48 kJ/mol

(c) 62 kJ/mol

(d) 66 kJ/mol

---

19. Which of the following solutions will show highest freezing point depression?

(a) 1 M glucose

(b) 1 M NaCl

(c) 1 M AlCl3

(d) 1 M MgCl2

---

20. Which reagent will best convert alcohol to aldehyde selectively?

(a) KMnO4

(b) PCC

(c) K2Cr2O7

(d) HNO3

---

21. How many molecules of carbon dioxide are formed when 0.6 g carbon is burnt in air?

(a) 3.01×10^{22}

(b) 2.01×10^{23}

(c) 6.02×10^{23}

(d) 5.06×10^{23}

---

22. What is the volume of oxygen required for complete combustion of 0.25 mole of methane at S.T.P.?

(a) 22.4 L

(b) 5.6 L

(c) 11.2 L

(d) 7.46 L

---

23. Calculate the mass in kg of 4.48 dm^3 carbon dioxide at STP.

(a) 2.2×10^{-3} kg

(b) 4.4×10^{-3} kg

(c) 6.6×10^{-3} kg

(d) 8.8×10^{-3} kg

---

24. What is the volume occupied by 1 molecule of water, if its density is 1 g/cm^3?

(a) 9.09×10^{-23} cm^3

(b) 2.98×10^{-23} cm^3

(c) 4.03×10^{-23} cm^3

(d) 5.50×10^{-23} cm^3

---

25. Calculate number of moles present in 9.10×10^{16} kg of water.

(a) 0.9

(b) 1.8

(c) 4.5

(d) 5

---

26. Which of the following is the correct decreasing order of electronegativity?

(a) F ¿ Cl ¿ O ¿ N

(b) F ¿ O ¿ N ¿ Cl

(c) O ¿ Cl ¿ F ¿ N

(d) F ¿ Cl ¿ N ¿ O

---

27. The IUPAC name of glyoxal is:

(a) 1,2-ethanedione

(b) ethane-1,2-dione

(c) ethane-1,2-dial

(d) Ethano-1,2-dial

---

28. Electronegativity of chlorine is less than oxygen because:

(a) Oxygen has larger size than chlorine

(b) Oxygen has smaller size and more effective nuclear charge

(c) Chlorine has higher nuclear charge

(d) Both have same electronegativity

---

29. Which of the following halogens has the highest electronegativity?

(a) Iodine

(b) Bromine

(c) Chlorine

(d) Fluorine

---

30. Among 2nd period elements, correct electronegativity trend is:

(a) B < C < N < O < F

(b) F < O < N < C < B

(c) $N < C < O < F < B$

(d) $F < N < C < B$

---

31. Which of the following reactions is an example of the Finkelstein reaction?

(a) $C_6H_5Br + AgNO_3 \rightarrow C_6H_5NO_3 + AgBr$

(b) $C_6H_5Br + NaI \rightarrow C_6H_5I + NaBr$

(c) $CH_3Cl + KOH \rightarrow CH_3OH + KCl$

(d) $C_6H_5Br + Mg \rightarrow C_6H_5MgBr$

---

32. The oxidation number of oxygen in peroxides is

(a) -1

(b) -2

(c) +1

(d) 0

---

33. Which of the following compound has high melting point?

(a) 1-Bromopropane

(b) 1-Bromopropane

(c) 1-Bromobutane

(d) 1-Bromo-2-methylpropane

---

34. The decomposition of a compound A follows first-order kinetics. The concentration of A at time t = 0 is 1.0 mol L^{-1} . After 60 minutes, it reduces to 0.25 mol L^{-1}. What is the initial rate of the reaction at t = 0? (Take ln 2 = 0.693)

(a) 0.0115 mol L^{-1} min^{-1}

(b) 0.0173 mol L^{-1} min^{-1}

(c) 0.277 mol L^{-1} min^{-1}

(d) 0.0364 mol L^{-1} min^{-1}

35. Which of the following compounds can exhibit geometrical isomerism, and why? 1) 2-butene 2) 1-butene 3) Pent-2-ene 4) But-2-yne

(a) Only 2 and 3

(b) Only 1 and 3

(c) Only 1, 2 and 3

(d) All of the above

---

36. Which of the following alkyl chloride will have the lowest boiling point?

(a) CH_3CH_2Br

(b) $C_6H_5CH_2Cl$

(c) $(CH_3)_2CHCl$

(d) CH_3Cl

---

37. What is the oxidation number of sulfur in sulfuric acid (H_2SO_4)?

(a) 4

(b) 6

(c) 8

(d) None of the above

---

38. Which alkane would have only the primary and tertiary carbon?

(a) Pentane

(b) 2-Methylbutane

(c) 2,2-Dimethylpropane

(d) 3,3-Dimethylbutane

---

39. Which of the following is a primary amine?

(a) 1-Butylamine

(b) Isobutylamine

(c) N-Butylamine

(d) All of these

---

40. In 2-chloro-3,4-dimethylhexane, how many chiral C atoms are present?

(a) 3

(b) 6

(c) 4

(d) 1

---

41. What will be pH of aqueous salt solution of AB if pKa of weak acid HA is 4 and pKb of weak acid BOH is 5?

(a) 5

(b) 6.5

(c) 7.5

(d) 11.5

---

43. If the total volume of a simple cubic unit cell is 6.817×10^{-23} cm^3, what is the volume occupied by particles in the unit cell?

(a) 3.57×10^{-23} cm^3

(b) 4.57×10^{-23} cm^3

(c) 5.57×10^{-23} cm^3

(d) 6.57×10^{-23} cm^3

---

44. IUPAC name of the following compound:

(a) 3,4-dimethylpentanol

(b) 2,3-dimethyl-5-pentanol

(c) 2,3-dimethylpentanol

(d) 3,4-dimethyl-1-pentanol

---

45. Which is the inner transition element of the following?

(a) Eu

(b) Zn

(c) Hg

(d) Sc

---

2 Biology

1. Plasmodium that affects humans

(a) P. Vivax

(b) P. Ovale

(c) P. Malaria

(d) All of the above

---

2. How many dehydrogenation reactions in Krebs cycle?

Answer: 4 Dehydrogenation reactions per cycle

Solution:

The Krebs cycle (also called the citric acid cycle or tricarboxylic acid cycle) consists of a series of reactions in the mitochondrial matrix where acetyl-CoA is oxidized to produce ATP, NADH, and FADH2.

There are 4 dehydrogenation reactions during the cycle: 1. Isocitrate to -Ketoglutarate (catalyzed by isocitrate dehydrogenase)

2. -Ketoglutarate to Succinyl-CoA (catalyzed by -ketoglutarate dehydrogenase)

3. Succinate to Fumarate (catalyzed by succinate dehydrogenase)

4. Malate to Oxaloacetate (catalyzed by malate dehydrogenase)

These reactions involve the removal of hydrogen atoms from the substrate, transferring electrons to NAD+ or FAD, forming NADH or FADH2.

Quick Tip

Remember that the dehydrogenation reactions in the Krebs cycle are critical for generating NADH and FADH2, which are used in the electron transport chain to produce ATP.

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3. Which water is absorbed by plants?

Answer: Capillary water

Solution:

Plants absorb water mainly from the soil. The types of water in the soil can be categorized as: 1. Gravitational water: Water that moves downward through the soil due to gravity and drains away quickly.

2. Capillary water: Water held in the tiny pores of the soil, available to plants. It is the most important type of water for plant absorption.

3. Hygroscopic water: Water that adheres tightly to soil particles and is unavailable to plants. Capillary water is the water that plants mainly absorb as it is readily available for uptake by plant roots.

Quick Tip

Capillary water is the most available form of water for plant roots, while gravitational water drains away and hygroscopic water is too tightly bound to the soil particles for absorption.

---

4. How many time needed for PCR?

---

5. What is the primary function of Bowman's capsule in nephron?

---

6. The first step in plant growth is

(a) Dispersal of seed

(b) Germination of seed

(c) Formation of fruit

(d) Formation of zygote

---

7. Which part of root absorb mineral, which part of root absorb mineral?

(a) Root hairs

(b) Root tips

(c) Root cap

(d) Root cortex

---

8. Which of the following is false regarding adsorption?

(a) ”Adsorption is the process where particles are attracted to the surface of another material.”

(b) ”The adsorbate binds directly to the adsorbent surface.”

(c) ”Particle size of the adsorbent will not affect the amount of adsorption.”

(d) ”Adsorption can be physical or chemical.”

---

9. Identify linear polymer from following

(a) Nylon

(b) Poly-vinyl chloride (PVC)

(c) High-density polyethylene (HDPE), and polystyrene

(d) None of these

---

10. Which of the following converting a testis originates from peritoneum?

(a) Tunica vaginalis

(b) Tunica albuginea

(c) Epididymis

(d) Spermatic cord

---

11. Disorder caused due to accumulation of amyloid proteins in CNS.

---

12. Germ pores of pollen grains are useful for

(a) Helps in the formation of the pollen tube and the release of the male gametes during fertilisation

(b) Germination of the seed

(c) Growth of the pollen tube

(d) Helps in the formation of female gametes

---

13. In genetic engineering the Foreign DNA is called

(a) Recombinant DNA

(b) Exogenous DNA

(c) Mutated DNA

(d) Transferred DNA

---

14. Stomatal transpiration takes place during day time in the following plants except

(a) Succulent plants

(b) Desert plants

(c) Aquatic plants

(d) All plants during day time

---

15. In a dihybrid cross, 9 : 3 : 3 : 1 ratio denotes

(a) Independent assortment of two genes

(b) Linkage between genes

(c) Epistasis

(d) Incomplete dominance

---

16. Which is not a prime element?

(a) Carbon

(b) Nitrogen

(c) Hydrogen

(d) An element that can be factored into non-unit factors

---

17. Which of the following is a commercial blood cholesterol lowering agent?

(a) Statins

(b) Aspirin

(c) Antibiotics

(d) Antioxidants

---

18. Which is an intensive property?

(a) Temperature

(b) Density

(c) Color

(d) Pressure

---

19. What is an example of chiropterophily?

(a) Pollination by birds

(b) Pollination by insects

(c) Pollination by bats

(d) Pollination by wind

---

20. What is the typical voltage of the resting membrane potential in a neuron?

(a) +70 mV

(b) -70 mV

(c) 0 mV

(d) +30 mV

---

21. Match the columns and select the right option from the given codes:

Column I	Column II
A. Mutation theory	i. Darwin
B. Formation of life was preceded by chemical	ii. Louis pasteur
C. Struggle for existence	iii. Hugo-de Vries
D. Life comes from pre-existing life	iv. Oparin and Haldane

(a) A (iii), B (iv), C (ii), D (ii)

(b) A (iv), B (iii), C (ii), D (ii)

(c) A (ii), B (ii), C (iii), D (ii)

(d) A (i), B (ii), C (ii), D (ii)

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22. Which of the following organisms or organelles contain 70S ribosomes?

(a) Animal cell cytoplasm

(b) Mitochondria

(c) Plant cell cytoplasm

(d) Nucleus

---

23. Which of the following acts as hemoglobin (Hb) in the blood buffer system?

(a) NaHCO

(b) HHb

(c) HbCO

(d) HbCl

---

24. Which of the following events occurs only during meiosis and not in mitosis?

(a) Chromosome condensation

(b) Spindle formation

(c) Separation of sister chromatids

(d) Synapsis and crossing over of homologous chromosomes

---

25. In which of the following phases of karyokinesis do chromosomes align at the equatorial plate, and spindle fibres are completely formed?

(a) Prophase

(b) Metaphase

(c) Anaphase

(d) Telophase

---

26. During which phase of karyokinesis does the disappearance of the nucleolus and nuclear envelope occur?

(a) Prophase

(b) Metaphase

(c) Anaphase

(d) Telophase

---

27. In karyokinesis of meiosis - I, which of the following separates?

(a) Sister chromatids

(b) Homologous chromosomes

(c) Sister chromatids and homologous chromosomes

(d) Spindle poles

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