MHT CET 2025 11 April Shift 1 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. Combination of foreign DNA and vector DNA are together called as

(A) Recombinant DNA

(B) Plasmid DNA

(C) DNA ligase

(D) Transformation DNA

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2. What will be the corresponding mRNA sequence based on the given DNA template strand?

(A) 5'-AUGCGA-3'

(B) 3'-TACGCT-5'

(C) 5'-ATGCGT-3'

(D) 3'-ATGCGT-5'

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3. Which of the following pair of cells are haploid?

A. Nucellus and antipodals

B. Polar nuclei and Nucellus

C. Egg cell and antipodals

D. Etc

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4. Which hormone converts into amino acid?

A. Glycine

B. Thyroxine

C. Valine

D. Leucine

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6. What is Transcription?

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7. A solution is formed by mixing chloroform (CHCl3) and acetone (CH3COCH3). Which of the following is true regarding the nature of this solution?

A. It shows positive deviation from Raoult's law due to weak intermolecular forces

B. It shows negative deviation due to strong dipole-dipole interactions

C. It obeys Raoult's law over the entire range of composition

D. It forms an ideal solution with no enthalpy change

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8. IUPAC name of the chemical compound $Ni(PPh_3)_2Cl_2$ $2+$?

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9. Which of the following drug classes is primarily used to manage elevated LDL cholesterol levels in patients with cardiovascular risk?

(a) Beta-blockers

(b) Statins

(c) Antacids

(d) Antihistamines

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10. Which of the following enzymes is directly inhibited by statins to reduce cholesterol biosynthesis in the liver?

(a) Lipase

(b) HMG-CoA reductase

(c) Amylase

(d) Pepsin

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11. Which condition is most commonly treated using cholesterol-lowering agents such as statins?

(a) Diabetes mellitus

(b) Atherosclerosis

(c) Anemia

(d) Asthma

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12. Which of the following lifestyle changes complements the action of statins in managing high cholesterol?

(a) High-fat diet

(b) Sedentary lifestyle

(c) Regular exercise and a fiber-rich diet

(d) Smoking

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13. A car starts from rest and accelerates uniformly at 3 m/s^2. What will be its velocity after 5 seconds?

(a) 10 m/s

(b) 15 m/s

(c) 20 m/s

(d) 30 m/s

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14. A block of mass 2 kg is acted upon by a net force of 10 N. What is its acceleration?

(a) 2 m/s^2

(b) 5 m/s^2

(c) 10 m/s^2

(d) 20 m/s^2

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15. A body of mass 4 kg is lifted to a height of 5 meters. What is the potential energy gained by the body? (Take $g = 9.8$ m/s^2)

(a) 20 J

(b) 49 J

(c) 98 J

(d) 196 J

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16. A 10 kg box is pulled with a horizontal force of 50 N on a surface offering a frictional force of 20 N. What is the net acceleration of the box? (Take $g = 10$ m/s^2)

(a) 2 m/s^2

(b) 3 m/s^2

(c) 5 m/s^2

(d) 7 m/s^2

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17. What is the gravitational force between two 5 kg masses placed 2 meters apart? (Take $G = 6.67 \times 10^{-11}$ Nm^2/kg^2)

(a) 4.17×10^{-10} N

(b) 8.34×10^{-10} N

(c) 1.67×10^{-10} N

(d) 2.50×10^{-11} N

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18. A particle is moving in a circle of radius 2 m with a constant speed of 4 m/s. What is the centripetal acceleration?

(a) 2 m/s^2

(b) 4 m/s^2

(c) 8 m/s^2

(d) 16 m/s^2

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19. Which of the following elements has the highest electronegativity?

(a) Oxygen

(b) Nitrogen

(c) Fluorine

(d) Chlorine

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20. Which of the following compounds contains a coordinate (dative) covalent bond?

(a) HCl

(b) NH_3

(c) H_2O

(d) NH_4^+

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21. What is the pH of a solution with a hydrogen ion concentration of 1×10^{-4} mol/L?

(a) 3

(b) 4

(c) 5

(d) 6

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22. In the reaction:

$$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$$

Which substance is oxidized?

(a) Zn

(b) $CuSO_4$

(c) $ZnSO_4$

(d) Cu

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23. Which of the following quantum numbers determines the shape of an orbital?

(a) Principal quantum number (n)

(b) Azimuthal quantum number (l)

(c) Magnetic quantum number (m)

(d) Spin quantum number (s)

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24. What is the enthalpy change (ΔH) for an exothermic reaction?

(a) Positive

(b) Negative

(c) Zero

(d) Infinite

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25. Which of the following is an example of an alkene?

(a) Ethane

(b) Ethene

(c) Ethyne

(d) Benzene

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26. What is the molarity of a solution that contains 0.5 mol of NaCl in 250 mL of solution?

(a) 1 M

(b) 2 M

(c) 0.5 M

(d) 0.25 M

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