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MHT CET 2025 Apr 13 Shift 1 Question Paper

Time Allowed :3 Hour	Maximum Marks :200	Total Questions :200

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The test is of 3 hours duration.
2. The question paper consists of 200 questions. The maximum marks are 200.
3. There are three parts in the question paper consisting of Physics, Chemistry and Biology (Botany and Zoology) having 50 questions in each part of equal weightage.

1. Which acid is responsible for enlargement of ovary into fruit?

(1) Auxin

(2) Cytokinin

(3) Gibberellin

(4) Abscisic acid

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2. What is the period of mammals called?

(Geological time scale)

(1) Mesozoic Era

(2) Cenozoic Era

(3) Paleozoic Era

(4) Precambrian Era

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3. The rete testis arises from which of the following?

(1) Epididymis

(2) Seminiferous tubules

(3) Vas deferens

(4) Urethra

4. Which of the following is required for the growth of both plants and seeds?

(1) Copper

(2) Zinc

(3) Chlorine

(4) Iron

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5. What is the role of fructose in human reproduction?

(1) Provides energy to sperm cells

(2) Protects sperm DNA from damage

(3) Regulates hormone levels in the female reproductive system

(4) Stimulates egg release from the ovary

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6. Which of the following hormone is antitranspirant?

(1) Auxin

(2) Abscisic acid

(3) Cytokinin

(4) Ethylene

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7. According to Chargaff's Rule, in a DNA molecule, the amount of adenine (A) is always equal to the amount of

(1) Cytosine (C)

(2) Guanine (G)

(3) Thymine (T)

(4) Uracil (U)

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8. What is the artificial method of vegetative propagation?

(1) Seed formation

(2) Grafting

(3) Pollination

(4) Fertilization

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9. In developed ovary, how many primordial cells are present?

(1) 1-2 million

(2) 500,000

(3) 10,000

(4) 50,000

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10. Function of vegetative and generative cell.

(1) Vegetative cell forms pollen tube; generative cell forms two male gametes

(2) Both cells form pollen tubes

(3) Both cells form male gametes

(4) Generative cell forms pollen tube; vegetative cell forms male gametes

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11. Adventive embryony is seen in which plants?

(1) Pea and Mustard

(2) Citrus and Mango

(3) Rice and Wheat

(4) Sunflower and Marigold

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12. Which of the following is excretory material in birds?

(1) Ammonia

(2) Urea

(3) Uric acid

(4) Creatinine

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13. In the Miller-Urey experiment, what was the ratio of gases used to simulate primitive Earth's atmosphere?

(1) 2:1:1 (H_2: NH_3: CH_4)

(2) 1:1:1 (CH_4: NH_3: H_2)

(3) 1:1:2 (CH_4: NH_3: H_2)

(4) 1:2:1 (NH_3: H_2: CH_4)

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14. In oogenesis after meiosis I, which of the following is formed?

(1) Ovum and polar body

(2) Secondary oocyte and first polar body

(3) Two polar bodies

(4) Primary oocyte

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15. A projectile is fired with an initial velocity of 20 m/s at an angle of 30° with the horizontal. Calculate the maximum height reached by the projectile.

(1) 10 m

(2) 15 m

(3) 20 m

(4) 25 m

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16. A force of 10 N is applied to move a body of mass 5 kg over a distance of 3 meters. Find the work done by the force.

(1) 20 J

(2) 30 J

(3) 40 J

(4) 50 J

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17. A 5 kg block is placed on a horizontal surface. A force of 10 N is applied to the block. The coefficient of friction between the block and the surface is 0.2. Find the acceleration of the block.

(1) $0.6\,\text{m/s}^2$

(2) $1.0\,\text{m/s}^2$

(3) $2.0\,\text{m/s}^2$

(4) $1.5\,\text{m/s}^2$

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18. A body of mass 10 kg is moving with a speed of 4 m/s. It is brought to rest by a force in 5 seconds. Calculate the work done by the force.

(1) 40 J

(2) 80 J

(3) 60 J

(4) 100 J

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19. The gravitational potential energy of a 2 kg object at a height of 5 m above the surface of the Earth is?

(1) 100 J

(2) 150 J

(3) 50 J

(4) 25 J

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20. A current of 2 A flows through a conductor with a resistance of 5 Ω. Calculate the potential difference across the conductor.

(1) 10 V

(2) 5 V

(3) 2 V

(4) 20 V

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21. A light ray is passing from air (refractive index $\mu_1 = 1.0$) into water (refractive index $\mu_2 = 1.33$). If the angle of incidence in air is 30°, what is the angle of refraction in water?

(1) 22.5°

(2) 19.5°

(3) 25.0°

(4) 20.0°

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22. A gas is compressed from an initial volume of 10 L to 5 L. The pressure during the compression is constant at 2 atm. Calculate the work done on the gas.

(1) 10 L·atm

(2) 20 L·atm

(3) 5 L·atm

(4) 15 L·atm

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23. The rate constant of a first-order reaction is $2 \times 10^{-3}\,\mathrm{s}^{-1}$. What is the half-life of the reaction?

(1) 0.347 s

(2) 1.4 s

(3) 0.693 s

(4) 2.0 s

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24. What is the pH of a 0.001 M NaOH solution?

(1) 11

(2) 12

(3) 13

(4) 14

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25. What is the standard electrode potential for the reduction half-reaction $Cu^{2+} + 2e^- \rightarrow Cu$?

(1) +0.34 V

(2) -0.34 V

(3) +0.72 V

(4) -0.72 V

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26. The enthalpy of vaporization of water is 40.79 kJ/mol. How much heat is required to vaporize 2 moles of water at its boiling point?

(1) 40.79 kJ

(2) 81.58 kJ

(3) 20.39 kJ

(4) 10.39 kJ

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27. Which of the following compounds exhibits ionic bonding?

(1) H_2O

(2) NaCl

(3) CO_2

(4) CH_4
