# MHT CET 2025 Apr 13 Shift 1 Question Paper

Time Allowed :3 HourMaximum Marks :200Total 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.
- 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

#### 2. What is the period of mammals called?

(Geological time scale)

- (1) Mesozoic Era
- (2) Cenozoic Era
- (3) Paleozoic Era
- (4) Precambrian Era

#### 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

#### 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

## 6. Which of the following hormone is antitranspirant?

- (1) Auxin
- (2) Abscisic acid
- (3) Cytokinin
- (4) Ethylene

# 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)

#### 8. What is the artificial method of vegetative propagation?

- (1) Seed formation
- (2) Grafting
- (3) Pollination
- (4) Fertilization

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

- (1) 1-2 million
- (2) 500,000
- (3) 10,000
- (4) 50,000

### 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

## 11. Adventive embryony is seen in which plants?

- (1) Pea and Mustard
- (2) Citrus and Mango
- (3) Rice and Wheat
- (4) Sunflower and Marigold

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

- (1) Ammonia
- (2) Urea
- (3) Uric acid
- (4) Creatinine

# 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<sub>4</sub>: NH<sub>3</sub>: H<sub>2</sub>)
- (3) 1:1:2 (CH<sub>4</sub>: NH<sub>3</sub>: H<sub>2</sub>)
- (4) 1:2:1 (NH<sub>3</sub>: H<sub>2</sub>: CH<sub>4</sub>)

#### 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

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

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

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.

- $(1) 0.6 \,\mathrm{m/s^2}$
- (2)  $1.0 \,\mathrm{m/s^2}$
- (3)  $2.0 \text{ m/s}^2$
- (4)  $1.5 \,\mathrm{m/s^2}$

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

**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

**20.** A current of 2 A flows through a conductor with a resistance of 5  $\Omega$ . Calculate the potential difference across the conductor.

(1) 10 V

- (2) 5 V
- (3) 2 V
- (4) 20 V

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°

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

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

(1) 0.347 s (2) 1.4 s

- (3) 0.693 s
- (4) 2.0 s

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

- (1) 11
- (2) 12
- (3) 13
- (4) 14

#### 25. What is the standard electrode potential for the reduction half-reaction

 $Cu^{2+} + 2e^{-} → Cu?$ (1) +0.34 V (2) -0.34 V

- (2) -0.54 V (3) +0.72 V
- (0) 10002 1
- (4) -0.72 V

# 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

27. Which of the following compounds exhibits ionic bonding?

- $(1) H_2 O$
- (2) NaCl
- (3) CO<sub>2</sub>
- (4) CH<sub>4</sub>