

## SAMPLE QUESTIONS - XEAT

### English

1. Choose the **correct form of verb** to fill in the blank: The detective \_\_\_\_\_ that he had overlooked a crucial clue that could solve the case.
  - a. realized
  - b. realize
  - c. will realize
  - d. realizing
2. Identify the **phrasal verb** in the sentence: I ran into an old friend at the supermarket.
  - a. ran into
  - b. at supermarket
  - c. into an old friend
  - d. I ran
3. Choose from the following options, the correct antonym of the word “exuberance”?
  - a. delight
  - b. ecstasy
  - c. despondency
  - d. rapture
4. Which element is **not** a part of a professionally prepared Agenda for a formal meeting?
  - a. Personal opinions regarding each agenda item.
  - b. A list of items and topics to be discussed in the meeting.
  - c. Logical order or sequence of the topics to be discussed.
  - d. Brevity and clarity regarding the items and topics.

Read the following passage and answer the **questions numbers 5 and 6**:

Environmental degradation has become one of the most pressing challenges of the modern world. Rapid industrial growth, population expansion, and unsustainable use of natural resources have severely affected the Earth’s ecosystems. Large-scale deforestation and the excessive burning of fossil fuels have accelerated pollution. These activities have significantly increased greenhouse gas emissions, which contribute to global warming, climate change and environmental damage.

Climate change has far-reaching consequences. Rising global temperatures are causing melting glaciers, rising sea levels, and unpredictable weather patterns. These changes threaten biodiversity, agriculture, and the livelihoods of millions of people. Developing countries are often the most vulnerable because they have fewer resources to adapt to environmental changes.

Addressing these problems requires a global commitment to sustainable development. Governments must enforce environmental regulations, industries should adopt cleaner technologies, and individuals must practice responsible consumption. Only through coordinated efforts can humanity reduce environmental harm and ensure a stable and healthy planet for future generations.

5. What is identified as one of the most pressing challenges of the modern world in the passage given above?
- Economic recession
  - Environmental degradation
  - Technological advancement
  - Population decline
6. According to the passage, which of the following is **not** an outcome of the damage caused due to the emission of greenhouse gas?
- Climate change
  - Global warming
  - Environmental damage
  - Soil erosion
7. What solution does the passage suggest for addressing environmental issues?
- Limiting industrial waste
  - Global commitment to sustainable development
  - Responsible consumption
  - Ignoring environmental regulations
8. Which of the following is **not** a component of effective communication?
- Loud noise
  - Message
  - Reception
  - Transmission
9. What is the full form of HTTP, the foundational set of rules used by web browsers and servers to communicate, allowing for the transfer of data?
- Hypertext Transfer Protocol
  - Hypertext Markup Language
  - Hypertext Transmute Program
  - Hypertext Transition Performance

## Physics

Instructions: Choose the best option for each of the following questions.

1. The wavelength of a laser is measured to be 632.8 nm. What is this value in meters, expressed in standard scientific notation?
- $6.328 \times 10^{-5}$  m
  - $6.328 \times 10^{-7}$  m
  - $6.328 \times 10^{-9}$  m
  - $6.328 \times 10^5$  m
2. A ball is thrown vertically upwards with an initial velocity of 20 m/s. The displacement of the ball after 3 seconds is (take  $g = 10 \text{ m/s}^2$ ):

- (A) 5 m
  - (B) 10 m
  - (C) 15 m
  - (D) 20 m
3. A 5 kg block is pulled across a horizontal surface by a horizontal rope with a tension of 15 N. If the surface exerts a constant frictional force of 5 N on the block, what is the acceleration of the block?
- (A) 1 m/s<sup>2</sup>
  - (B) 2 m/s<sup>2</sup>
  - (C) 3 m/s<sup>2</sup>
  - (D) 4 m/s<sup>2</sup>
4. A man of mass 60 kg climbs up a staircase to a height of 5 m in 10 seconds. The power output of the man is approximately (take  $g = 10 \text{ m/s}^2$ ):
- (A) 30 W
  - (B) 300 W
  - (C) 3000 W
  - (D) 30,000 W
5. Moment of inertia of a body depends upon:
- (A) Torque applied
  - (B) Angular velocity of the body
  - (C) Distribution of mass from the axis of rotation
  - (D) Angular acceleration of the body
6. The escape velocity from the surface of Earth is approximately 11.2 km/s. If a planet has twice the mass and twice the radius of Earth, what would be the escape velocity from its surface?
- (A) 5.6 km/s
  - (B) 11.2 km/s
  - (C) 15.8 km/s
  - (D) 22.4 km/s
7. A wire of length 2 m and cross-sectional area  $10^{-6} \text{ m}^2$  is stretched by a force of 100 N. If the Young's modulus of the material is  $10^{11} \text{ N/m}^2$ , the elongation produced in the wire is:
- (A) 1 mm
  - (B) 2 mm
  - (C) 3 mm
  - (D) 4 mm
8. Which of the following thermodynamic processes correctly represents that the area under the curve on a P-V diagram is equal to the work done by the gas?
- (A) Isochoric process
  - (B) Isobaric process
  - (C) Isothermal process
  - (D) All of the above

9. The ratio of the average kinetic energy of a molecule of oxygen to that of a molecule of nitrogen at a given temperature is:
- (A) 1 : 1
  - (B) 7 : 8
  - (C) 8 : 7
  - (D) Depends on their masses
10. A simple pendulum makes 30 oscillations in 60 seconds. What is the time period of the pendulum?
- (A) 0.5 s
  - (B) 2 s
  - (C) 30 s
  - (D) 1800 s

## Mathematics

**Answer all the questions.**

1. When we evaluate  $\lim_{x \rightarrow 2} \frac{\sin(x^2-4)}{x-2}$ , we get the value
- A) -1
  - B) 1
  - C) 4
  - D)  $\infty$
2. If  $\alpha$  and  $\beta$  are the roots of the quadratic equation  $x^2 - 5x + 4 = 0$ , then the value of  $\alpha^2 + \beta^2$  is:
- A) 14
  - B) 16
  - C) 12
  - D) 17
3. In how many ways can the letters of the word "MATHEMATICS" be arranged?
- A) 3665600
  - B) 4898600
  - C) 1890800
  - D) 2500000
4. If  $\vec{a} = 3\hat{i} + 2\hat{j} + \lambda\hat{k}$  and  $\vec{b} = 2\hat{i} - 3\hat{j} + 4\hat{k}$  are perpendicular, find  $\lambda$ .
- A) 0

- B) 1.5
- C) 2
- D) 3

5. In an A.P., the  $n$ -th term is  $5n - 2$ . Find the sum of first 8 terms.

- A) 170
- B) 155
- C) 175
- D) 164

6. If  $f(x) = |x - 2|$ , then at  $x = 2$ , the function is:

- A) Continuous and differentiable
- B) Continuous but not differentiable
- C) Differentiable but not continuous
- D) Neither continuous nor differentiable

7. Distance between lines  $3x - 4y + 7 = 0$  and  $3x - 4y + 2 = 0$  is:

- A)  $\frac{5}{\sqrt{13}}$
- B)  $\frac{1}{\sqrt{13}}$
- C) 5
- D) 1

8. The principal value of  $\cot^{-1}(-\sqrt{3})$  is:

- A)  $\frac{5\pi}{4}$
- B)  $\frac{\pi}{3}$
- C)  $\frac{5\pi}{7}$
- D)  $-\frac{\pi}{3}$

9. If  $z = \frac{1+i\sqrt{3}}{1-i\sqrt{3}}$ , then the principal argument of  $z$  is:

- A) 0
- B)  $\frac{2\pi}{3}$
- C)  $\frac{\pi}{4}$

D)  $\frac{3\pi}{4}$

10 . If the events  $A$  and  $B$  are independent and  $P(A) = \frac{3}{4}$ ,  $P(B) = \frac{1}{2}$ . Then  $P(A \cup B)$  is:

A)  $\frac{1}{3}$

B)  $\frac{7}{8}$

C)  $\frac{3}{16}$

D)  $\frac{1}{2}$