BITSAT 2026 April 15 (Shift-2)

Question Paper (Memory-Based) PDF

Conducted by BITS Pilani

General Instructions

(i) **Duration:** The total duration of the examination is 3 hours (180 minutes).

(ii) **Total Marks:** The complete paper carries a maximum of 390 marks.

(iii) **Structure:** The paper has 4 Sections:

- **Part 1:** 30 Multiple Choice Questions (Physics).
- **Part 2:** 30 Multiple Choice Questions (Chemistry).
- **Part 3:** 10 Multiple Choice Questions (English Proficiency), 20 Multiple Choice Questions (Logical Reasoning)
- **Part 4:** 40 Multiple Choice Questions (Mathematics/Biology)

(iv) **Compulsory Questions:** All 130 questions are compulsory,and +12 Questions(Optional Extra Questions)

(v) Each question has four options. Only **one** option is correct.

(vi) **Correct Answer:** +3 marks.

(vii) **Incorrect Answer:** −1 (Negative marking).

(viii) **Unanswered/Marked for Review:** 0 marks.

PHYSICS

1. An ideal spring with spring-constant k is hung from the ceiling and a mass M is attached to its lower end. The mass is released with the spring initially unstretched. Then the maximum extension in the spring is

(A) $4Mg/k$

(B) $2Mg/k$

(C) Mg/k

(D) $Mg/2k$

---

2. In a mixture of gases, the average number of degrees of freedom per molecule is 6. The rms speed of the molecule of the gas is c, then the velocity of sound in the gas is

(A) $\frac{c}{\sqrt{3}}$

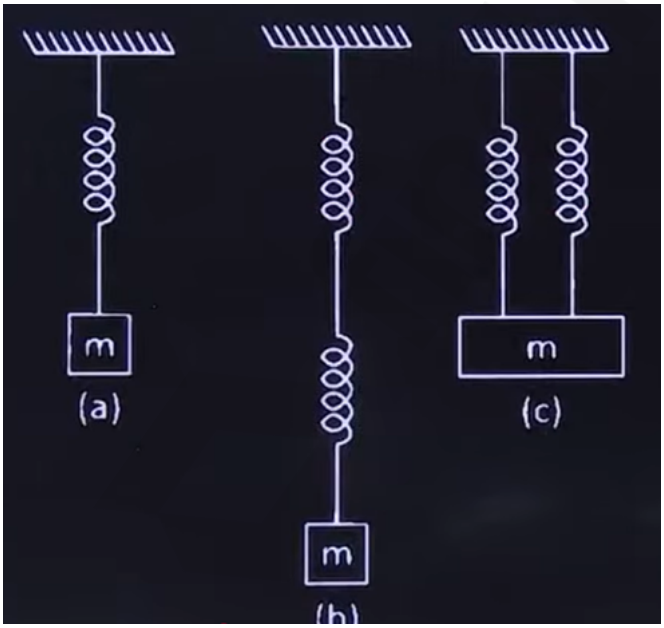
(B) $\frac{c}{\sqrt{2}}$

(C) $\frac{2c}{3}$

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

---

3. Five identical springs are used in the three configurations as shown in figure. The time periods of vertical oscillations in configurations (a), (b) and (c) are in the ratio.



(A) $1 : \sqrt{2} : \frac{1}{\sqrt{2}}$

(B) $2 : \sqrt{2} : \frac{1}{\sqrt{2}}$

(C) $\frac{1}{\sqrt{2}} : 2 : 1$

(D) $2 : \frac{1}{\sqrt{2}} : 1$

---

4. A man of mass m starts falling towards a planet of mass M and radius R. As he reaches near to the surface, he realizes that he will pass through a small hole in the planet. As he enters the hole, he sees that the planet is really made of two pieces: a spherical shell of negligible thickness of mass $3M/4$ and a point mass $M/4$ at the centre. Change in the force of gravity experienced by the man is

(A) $\frac{3}{4}\frac{GMm}{R^2}$

(B) 0

(C) $\frac{1}{3}\frac{GMm}{R^2}$

(D) $\frac{4}{3}\frac{GMm}{R^2}$

---

5. A steel rod of diameter 1.0 cm is clamped firmly at each end when its temperature is 25°C so that it cannot contract on cooling. The tension in the rod at 0°C is ($\alpha = 1 \times 10^{-5}/°C$, $Y = 2 \times 10^{11}$ N/m²)

(A) 3925 N

(B) 7000 N

(C) 7400 N

(D) 4700 N

CHEMISTRY

6. Half-life of zero order reaction $A \rightarrow$ product is 1 hour, when initial concentration of reactant is 2.0 mol L^{-1}. The time required to decrease concentration of A from 0.50 to 0.25 mol L^{-1} is:

(a) 0.5 hour

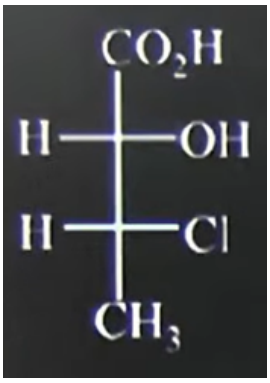
(b) 4 hour

(c) 15 min

(d) 60 min

---

7. The absolute configuration of:



(a) (2S,3S)

(b) (2R,3R)

(c) (2R,3S)

(d) (2S,3R)

---

8. The one giving maximum number of isomeric alkenes on dehydrohalogenation reaction is (excluding rearrangement):

(a) 1-Bromo-2-methylbutane

(b) 2-Bromopropane

(c) 2-Bromopentane

(d) 2-Bromo-3,3-dimethylpentane

---

9. Pick the correct statement about electron and photon:

(a) both electron and photons are fermions

(b) electron is a fermion and photons are bosons

(c) electron is boson and photons are fermions

(d) both electron and photons are bosons

---

10. Which hydride among the following is less stable?

(a) BeH_2

(b) NH_3

(c) HF

(d) LiH

MATHEMATICS

11. Let $f(x) = \sin x$, $g(x) = \cos x$, $h(x) = x^2$ then

$$\lim_{x \to 1} \frac{f(g(h(x))) - f(g(h(1)))}{x - 1} =$$

(A) 0

(B) $-2 \sin 1 \cos(\cos 1)$

(C) ∞

(D) $-2 \sin 1 \cos 1$

---

12. The variance of 20 observations is 5. If each observation is multiplied by 2, then the new variance of the resulting observation is

(A) $2^3 \times 5$

(B) $2^2 \times 5$

(C) 2×5

(D) $2^4 \times 5$

---

13. If $A = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$, $P = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$ and $X = APA^T$, then $A^T X^{50} A =$

(A) $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$

(B) $\begin{pmatrix} 2 & 1 \\ 0 & -1 \end{pmatrix}$

(C) $\begin{pmatrix} 25 & 1 \\ 1 & -25 \end{pmatrix}$

(D) $\begin{pmatrix} 1 & 50 \\ 0 & 1 \end{pmatrix}$

---

14. The locus of the mid-point of a chord of the circle $x^2 + y^2 = 4$, which subtends a right angle at the origin is

(A) $x + y = 2$

(B) $x^2 + y^2 = 1$

(C) $x^2 + y^2 = 2$

(D) $x + y = 1$

---

15. If the system of linear equations $2x + y - z = 7$, $x - 3y + 2z = 1$, $x + 4y + \delta z = k$ (where $\delta, k \in \mathbb{R}$) has infinitely many solutions, then $\delta + k$ is equal to:

(A) -3

(B) 3

(C) 6

(D) 9
