



BITSAT 2026 April 15 (Shift-1)

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. A parallel plate capacitor has a 1 F capacitance. One of its two plates is given +2C charge and the other plate +4C charge. The potential difference developed across the capacitor is

- (A) $2V$
 - (B) $4V$
 - (C) $6V$
 - (D) $1V$
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2. A charged particle moving in magnetic field B has components of velocity along B as well as perpendicular to B . The path of the charged particle will be

- (A) straight line
 - (B) circular
 - (C) helical
 - (D) parabolic
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3. A ball is given velocity v so that it reaches 1000 m above the earth's surface. Find the velocity v' so that the ball reaches 2000 m above the earth's surface. (Radius of earth is 6000 m)

- (A) $v' = v\sqrt{2}$
 - (B) $v' = v\sqrt{3}$
 - (C) $v' = 2v$
 - (D) $v' = v\sqrt{\frac{4}{3}}$
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4. Two balls are thrown, one upwards and the other downwards, with the same velocity from the same height. When they reach the ground with speeds v_A and v_B respectively, the relation between v_A and v_B is

- (A) $v_A > v_B$
 - (B) $v_A = v_B$
 - (C) $v_A < v_B$
 - (D) Cannot be determined
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5. A source of sound of frequency 500 Hz is moving towards a stationary observer with a velocity of 30 m/s. The speed of sound is 330 m/s. The apparent frequency heard by the

observer is (approximately)

- (A) 450 Hz
 - (B) 500 Hz
 - (C) 545 Hz
 - (D) 550 Hz
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6. According to Lenz's law, the direction of induced current is such that it opposes the change in magnetic flux. The basic formula used for magnitude of induced emf is

- (A) $\varepsilon = Blv$
 - (B) $\varepsilon = -\frac{d\phi}{dt}$
 - (C) $\varepsilon = \frac{\mu_0 I}{2\pi r}$
 - (D) $\varepsilon = IR$
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CHEMISTRY

7. Which type of hydrides do most of d and f block elements form?

- (A) Covalent hydrides
 - (B) Ionic hydrides
 - (C) Interstitial / Metallic hydrides
 - (D) Complex hydrides
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8. The number of hydrogen bonds formed by a water molecule at normal conditions is

- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
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9. Phenol does not undergo nucleophilic substitution reaction easily due to

- (A) acidic nature of phenol
 - (B) partial double bond character of C–O bond
 - (C) high reactivity of benzene ring
 - (D) resonance stabilisation making C–O bond stronger
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10. The solubility product (K_{sp}) of a sparingly soluble salt AB is 4×10^{-10} . The solubility of AB in mol/L is

- (A) 2×10^{-5}
 - (B) 4×10^{-5}
 - (C) 1×10^{-5}
 - (D) 8×10^{-5}
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11. The solubility product of another salt A_2B_3 is 1.08×10^{-23} . The solubility of the salt in mol/L is

- (A) 1×10^{-8}
 - (B) 3×10^{-8}
 - (C) 2×10^{-8}
 - (D) 4×10^{-8}
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12. Which of the following is the correct structure of sulphurous acid (H_2SO_3)?

- (A) Pyramidal with two S–O bonds
 - (B) Tetrahedral with three S–O bonds
 - (C) Linear
 - (D) Trigonal planar
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13. Osmotic pressure of a solution is given by the formula $\pi = CRT$. For a solution containing 0.1 mol of solute in 1 L solution at 300 K, osmotic pressure ($R = 0.0821 \text{ L atm K}^{-1} \text{ mol}^{-1}$) is

- (A) 2.463 atm
 - (B) 1.0 atm
 - (C) 0.821 atm
 - (D) 24.63 atm
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MATHEMATICS

14. A bag contains 16 balls (4 red balls and 12 others). The probability of getting at least 3 red balls when 5 balls are drawn at random is

- (A) $\frac{47}{1001}$
 - (B) $\frac{954}{1001}$
 - (C) $\frac{364}{1001}$
 - (D) $\frac{728}{1001}$
-

15. 10 coins are simultaneously tossed. Find the probability of getting at most one head

- (A) $\frac{11}{1024}$
 - (B) $\frac{1023}{1024}$
 - (C) $\frac{1}{1024}$
 - (D) $\frac{10}{1024}$
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16. Integral $\int x^4 e^x dx$. The correct integration result is:

- (A) $e^x(x^4 - 4x^3 + 12x^2 - 24x + 24) + C$
 - (B) $e^x(x^4 + 4x^3 + 12x^2 + 24x + 24) + C$
 - (C) $x^4 e^x + C$
 - (D) $e^x + \frac{1}{x} + C$
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17. The scalar triple product of vectors \vec{a} , \vec{b} and \vec{c} is given by $\vec{a} \cdot (\vec{b} \times \vec{c})$. If $\vec{a} = \hat{i} + 2\hat{j} + 3\hat{k}$,

$\vec{b} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ and $\vec{c} = 3\hat{i} + 4\hat{j} + 5\hat{k}$, then the value of scalar triple product is

- (A) 0
 - (B) 1
 - (C) -1
 - (D) 2
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18. In Linear Programming Problem (LPP), the objective function is to be maximised subject to the constraints $x + y \leq 5$, $x + 2y \leq 8$, $x \geq 0$, $y \geq 0$. The maximum value of the objective function $Z = 3x + 4y$ is

- (A) 12
 - (B) 16
 - (C) 20
 - (D) 24
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19. Solve the homogeneous differential equation $\frac{dy}{dx} = \frac{y}{x} + \tan\left(\frac{y}{x}\right)$. The general solution is

- (A) $\sin\left(\frac{y}{x}\right) = Cx$
 - (B) $\cos\left(\frac{y}{x}\right) = Cx$
 - (C) $y = Cx$
 - (D) $\ln\left(\frac{y}{x}\right) = Cx$
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20. The projection of vector $\vec{a} = 2\hat{i} + 3\hat{j} + 4\hat{k}$ on vector $\vec{b} = \hat{i} + \hat{j} + \hat{k}$ is

- (A) $\frac{9}{\sqrt{3}}$
 - (B) $3\sqrt{3}$
 - (C) 9
 - (D) $\frac{3}{\sqrt{3}}$
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21. Leibnitz formula for nth derivative of product of two functions uv is

- (A) $(uv)^{(n)} = \sum_{k=0}^n \binom{n}{k} u^{(k)} v^{(n-k)}$
(B) $(uv)^{(n)} = u^{(n)} v + uv^{(n)}$
(C) $(uv)^{(n)} = nu^{(n-1)} v'$
(D) $(uv)^{(n)} = \sum_{k=0}^n uv^{(n)}$
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22. Evaluate the definite integral of an odd function over symmetric limits. If $f(x)$ is an odd function, then $\int_{-a}^a f(x) dx$ is

- (A) $2 \int_0^a f(x) dx$
(B) 0
(C) $\int_{-a}^a f(x) dx$ (undefined)
(D) 1
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