BITSAT 2026 April 16 (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.

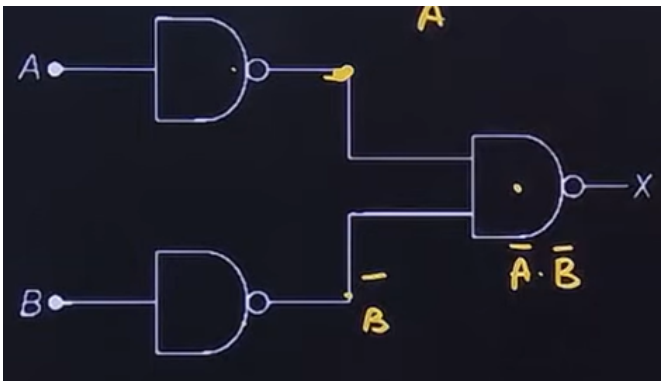
(vi) **Correct Answer:** +3 marks.

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

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

PHYSICS

1. The combination of the gates shown in the following figure yields



(a) NAND gate

(b) OR gate

(c) NOT gate

(d) XOR gate

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2. A series LCR circuit consists of $R = 80\,\Omega$, $X_L = 100\,\Omega$, and $X_C = 40\,\Omega$. The input voltage is $2500\cos(100\pi t)$ V. The amplitude of current in the circuit is

(a) 25 A

(b) 50 A

(c) 75 A

(d) 100 A

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3. The critical angle of a medium for a specific wavelength, if the medium has relative permittivity 3 and relative permeability $\frac{4}{3}$ for this wavelength, will be:

(a) 15°

(b) 30°

(c) 45°

(d) 60°

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4. Two lighter nuclei combine to form a comparatively heavier nucleus by the relation

$$\frac{2}{1}\mathbf{X} + \frac{2}{1}\mathbf{X} = \frac{4}{2}\mathbf{Y}$$

The binding energies per nucleon of $\frac{2}{1}X$ and $\frac{4}{2}Y$ are 1.1 MeV and 7.6 MeV respectively. The energy released in this process is

(a) 26 MeV

(b) 56 MeV

(c) 78 MeV

(d) 108 MeV

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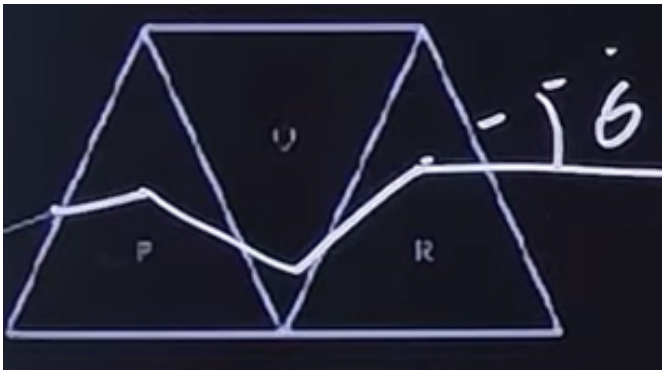
5. A given ray of light suffers minimum deviation in an equilateral prism P. Additional prisms Q and R of identical shape and of same material as that of P are now combined as shown in the figure. The ray will now suffer



(a) greater deviation

(b) no deviation

(c) same deviation as before

(d) total internal reflection

CHEMISTRY

6. Which of the following gases has the highest rate of diffusion?

(A) O_2

(B) CO_2

(C) H_2

(D) N_2

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7. What is the IUPAC name of the compound: $CH_3 – CH_2 – CH(CH_3) – CH_2 – CH_3$

(A) 3-Methylpentane

(B) 2-Methylpentane

(C) 3-Methylbutane

(D) 2-Methylbutane

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8. A first-order reaction is 25% complete in 30 minutes. How much time will it take for the reaction to be 75% complete?

(A) 90 min

(B) 60 min

(C) 120 min

(D) 150 min

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9. Which of the following substances does not undergo hydrolysis in aqueous solution?

(A) Sodium acetate

(B) Ammonium chloride

(C) Sodium carbonate

(D) Sodium chloride

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10. How many moles of oxygen are required to completely combust 1 mole of propane (C_3H_8)?

(A) 4 moles

(B) 5 moles

(C) 6 moles

(D) 3 moles

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11. The area of the region bounded by the curves $x = y^2 - 2$ and $x = y$ is

(A) $\frac{9}{4}$

(B) 9

(C) $\frac{9}{2}$

(D) $\frac{9}{7}$

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12. The value of $\int e^{\tan\theta}(\sec\theta - \sin\theta)\,d\theta$ is

(A) $e^{\tan\theta}\sec\theta + c$

(B) $e^{\tan\theta}\sin\theta + c$

(C) $e^{\tan\theta}(\sec\theta + \sin\theta) + c$

(D) $e^{\tan\theta}\cos\theta + c$

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13. If $\vec{a} = 2\hat{i} + \hat{j} + 2\hat{k}$, then the value of $|\hat{i} \times (\vec{a} \times \hat{i})|^2 + |\hat{j} \times (\vec{a} \times \hat{j})|^2 + |\hat{k} \times (\vec{a} \times \hat{k})|^2$ is equal to

(A) 17

(B) 18

(C) 19

(D) 20

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14. The magnitude of projection of line joining (3, 4, 5) and (4, 6, 3) on the line joining (1, 2, 4) and (1, 0, 5) is

(A) $\frac{4}{3}$

(B) $\frac{2}{3}$

(C) $\frac{8}{3}$

(D) $\frac{1}{3}$

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15. Let the foot of perpendicular from a point $P(1, 2, -1)$ to the straight line $L : \frac{x}{1} = \frac{y}{0} = \frac{z}{-1}$ be N. Let a line be drawn from P parallel to the plane $x + y + 2z = 0$ which meets L at point Q. If α is the acute angle between the lines PN and PQ, then $\cos\alpha$ is equal to

(A) $\frac{1}{\sqrt{5}}$
(B) $\frac{\sqrt{3}}{2}$
(C) $\frac{1}{\sqrt{3}}$
(D) $\frac{1}{2\sqrt{3}}$
