

JEE-ADVANCE: TEST-02

TEST SERIES

PAPER-I

Time : 3 hrs.

M.M.: 180

TEST CODE - A

TOPIC COVERED :

PHYSICS: Complete XI and XII Syllabus

CHEMISTRY: Complete XI and XII Syllabus

MATHEMATICS: Complete XI and XII Syllabus

ATTENTION: *Kindly ask for the Roll No. from the invigilator to fill in OMR SHEET. Mark the Roll No. & Test code on the answer sheet properly. (No other sheet will be issued)*

GENERAL INSTRUCTIONS :

1. The Test Paper consists of **60** questions
2. There are **Three Subjects (Physics, Chemistry & Mathematics)** in the question paper.
3. **This paper is divided into 3 parts: Physics Section (I), (II) and (III); Chemistry Section (I), (II) and (III) & Mathematics Section (I), (II) and (III).**
 - **Single Choice: Physics Section (I) (1 to 10) Chemistry Section I (16 to 25) and Mathematics Section I (31 to 40), 2 marks for each correct answer and no negative marking for incorrect answer.**
 - **Multiple correct answer type questions : Physics Section (II) (11 to 15) Chemistry Section II (26 to 30) and Mathematics Section II (41 to 45), 4 marks for each correct answer and -1 mark for incorrect answer.**
 - **Integer Type: Physics Section-III (1 to 5); Chemistry Section-III (6 to 10) and Mathematics Section- III (11 to 15), for each question you will be awarded 4 marks if you darken the bubble corresponding to the correct answer and zero mark if no bubbles are darkened. In all other cases, minus one (-1) mark will be awarded.**

Name of the Student : _____

Section : _____

Centre : _____

Invigilator's Signature : _____

PHYSICS

SECTION- I: STRAIGHT OBJECTIVE TYPE

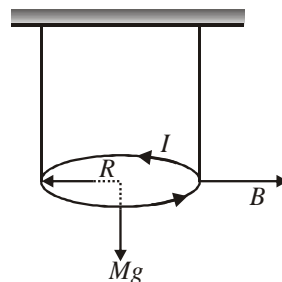
This section contains 10 multiple choice questions numbered 1 to 10. Each question has 4 choice (A), (B), (C) and (D), out of which ONLY-ONE is correct

1. A capacitor of capacity C is charged to potential V and another capacitor of capacity $2C$ is charged to a potential $4V$. The charging batteries are disconnected and the two capacitors are connected with reverse polarity. (i.e. positive plate of first capacitor is connected to the negative plate of 2nd capacitor and vice versa). The heat produced during distribution of charge between the capacitors will be

(a) $\frac{125}{3} CV^2$ (b) $\frac{50}{3} CV^2$ (c) $2CV^2$ (d) $\frac{25}{3} CV^2$

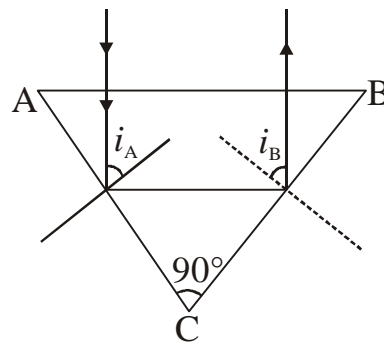
2. A conducting ring of radius ' R ', mass ' M ' and carrying current I in anticlockwise direction as seen from top hangs, with its plane parallel to horizontal plane, by two non-conducting strings as shown in the figure. The uniform horizontal magnetic field B exists in the region. If both strings are tight and the ring is in equilibrium, find the minimum tension in the any string

(a) $\frac{(2IRB + Mg)}{2}$ (b) $\frac{Mg}{2}$ (c) $\frac{(I\pi RB + Mg)}{2}$ (d) $\frac{(Mg - \pi IRB)}{2}$



3. A right prism is to be made by selecting a proper material and angle A and B ($\leq A$) as shown in the figure. It is desired that a ray of light incident on the face AB emerges parallel to the incident direction after two internal reflections. What should be the minimum refractive index n for this to be possible?

(a) $\sqrt{3}$ (b) $\sqrt{5}$
 (c) $\sqrt{2}$ (d) $\sqrt{6}$



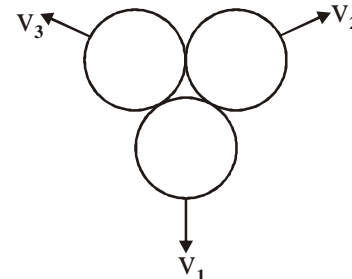
4. A 100 eV electron collides with a stationary helium ion He^+ in its ground state and excites into higher energy level. After collision He^+ ions emits two photons in succession with a wavelength 1085\AA and 304\AA . Quantum number of excited state is

(a) $n = 5$ (b) $n = 4$ (c) $n = 3$ (d) $n = 2$

5. A block of mass 1 kg is attached to one end of a spring of force constant $k = 20 \text{ N/m}$. The other end of the spring is attached to a fixed rigid support. This spring block system is made to oscillate on a rough horizontal surface ($\mu = 0.04$). The initial displacement of the block from the equilibrium position is $a = 30 \text{ cm}$. The number of times the block passes from the mean position before coming to rest would be ($g = 10 \text{ m/s}^2$)

(a) 11 (b) 7 (c) 6 (d) 15

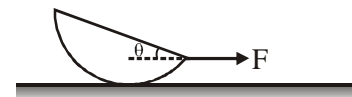
6. A rocket is projected vertically upwards. It explodes at the topmost point of its trajectory into three identical fragments. One of the fragments comes straight down in time t_1 while the other two lands at a time t_2 after explosion. Height at which the explosion occurred in terms of t_1 and t_2



(a) $h = \frac{gt_2t_1}{2} \left(\frac{t_2 + 2t_1}{2t_1 + t_2} \right)$ (b) $h = \frac{gt_2t_1}{2} \left(\frac{2t_2 + t_1}{t_1 + t_2} \right)$

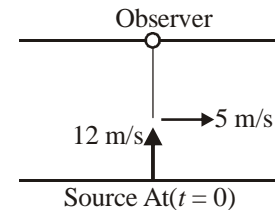
(c) $h = \frac{gt_1t_2}{2} \left(\frac{t_1 + 2t_2}{2t_1 + t_2} \right)$ (d) $h = \frac{gt_1t_2}{4} \left(\frac{2t_1 + t_2}{2t_2 + t_1} \right)$

7. A semicircular disc of radius r and mass M is pulled by means of a string so that it moves with a uniform velocity. If the coefficient of friction between sphere and ground is $4/3\pi$, the angle θ is



(a) 60° (b) 30° (c) 45° (d) 37°

8. There is a sound source in a motor boat which is moving across the river (*i.e.*, at 90° angle to the flow of river) with velocity of 12 m/s (w.r.t. river). Velocity of the stream in the river is 5 m/s. Its width is 169 m. An observer is on one bank of the river. At $t = 0$, the motor boat starts from the other bank. The observer will hear the actual frequency released by the source after time.



(a) 0 s (b) 33.8 s (c) 13 s (d) 12 s

9. The plane wall of an oven is of thickness $L = 0.05 \text{ m}$ and is exposed to the surrounding at 300 K. The outer surface of the oven exposed to the surrounding is at temperature 320 K in steady state. The energy radiated (in W/m^2) by outer surface is proportional to the temperature difference between the surface and the surrounding, with proportionality constant $20 \text{ W/m}^2\text{K}$. What is the temperature of inner surface of the oven in steady state if the wall has a thermal conductivity of $K = 0.5 \text{ W/m K}$?

(a) 400 K (b) 340 K (c) 380 K (d) 360 K

10. The door of an automobile is kept open and perpendicular to the body. The automobile starts with an acceleration of 2 m/sec^2 , and the width of the door is 1 m. Treat the door as a uniform rectangle, and neglect friction. The speed of its outside edge as seen by the driver when the door closes is

- (a) 4.85 m/s (b) 4 m/s (c) 5.85 m/s (d) 5 m/s

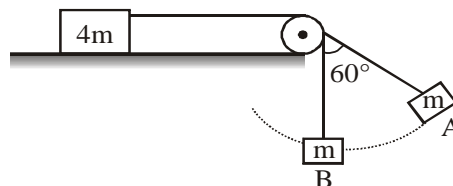
SECTION- II: MULTIPLE CORRECT ANSWERS TYPE

This section contains 5 multiple choice questions numbered 11 to 15. Each question has 4 choice (A), (B), (C) and (D), out of which ONE OR MORE is/are correct

11. N particles moving in a straight line have initial velocities of $1, 2, 3, \dots, N \text{ m/s}$ and accelerations of $1, 2, 3, \dots, N \text{ m/s}^2$ respectively. If the initial spacing between any two consecutive particles is same then, select the correct alternative(s)

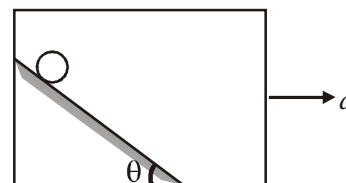
- (a) the distance between any two particles remains constant throughout
 (b) the distance between any two consecutive particles is same for all particles and increases with time
 (c) the distance between any two consecutive particles is different and increases with time
 (d) the distance between any two consecutive particles increases periodically with time

12. In the system shown in the figure the mass m moves in a circular arc of angular amplitude 60° . Mass $4m$ is stationary. Then



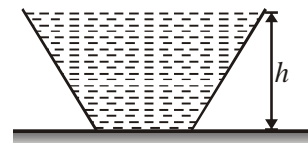
- (a) the minimum value of coefficient of friction between the mass $4m$ and the surface of the table is 0.50
 (b) the work done by gravitational force on the block m is positive when it moves from A to B
 (c) the power delivered by the tension when m moves from A to B is zero.
 (d) the kinetic energy of m in position B equals the work done by gravitational force on the block when it moves from position A to B

13. Figure shows a smooth inclined plane fixed in a car accelerating on a horizontal road. If the sphere is set in pure rolling on the incline.



- (a) It will continue pure rolling if $a = g \tan \theta$
 (b) It will slip down if $a < g \tan \theta$
 (c) Its linear velocity will increase relative to car if $a = g \tan \theta$
 (d) Its linear velocity will increase relative to car if $a < g \tan \theta$

14. M gm of a liquid of density ρ is filled in a light beaker and kept on a horizontal table as shown in the figure. The height of the liquid in the beaker is h . The beaker is wider on top than at its base and the cross-sectional area of the base is A . Neglect the effect of atmospheric pressure. Now, choose the correct statement(s) from the following.



- (a) The pressure of liquid at the bottom surface is ρgh .
 (b) The normal reaction exerted by the table on the beaker is ρghA .
 (c) The pressure of the liquid at the bottom surface is Mg/A .
 (d) The normal reaction exerted by the table on the beaker is Mg
15. If two objects of masses m and $3m$ start moving due to mutual gravitational force of attraction from their initial infinite separation, then at separation r

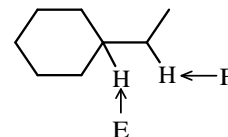
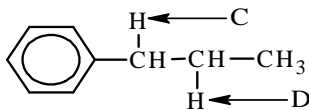
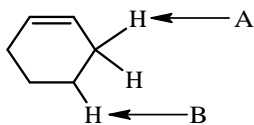
- (a) total kinetic energy of the objects is $\frac{3Gm^2}{r}$
 (b) total energy of the two objects is $\frac{3Gm^2}{r}$
 (c) their relative velocity of approach is $\left(\sqrt{\frac{8Gm}{r}}\right)$ in magnitude
 (d) net angular momentum of both the particle is zero about any point.

CHEMISTRY

SECTION- I: STRAIGHT OBJECTIVE TYPE

This section contains 10 multiple choice questions numbered 16 to 25. Each question has 4 choice (A), (B), (C) and (D), out of which ONLY-ONE is correct

16. Among which of the two indicated H atoms would be abstracted at the more rapid rate by Br_2 in presence of light?

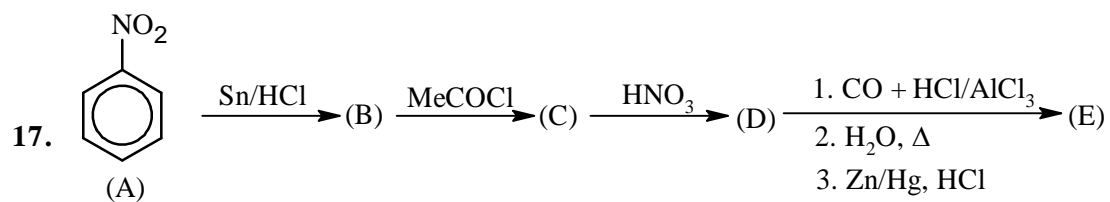


(a) B, D, E

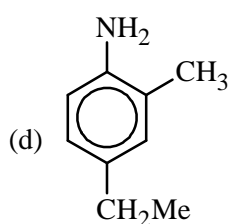
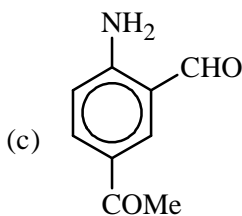
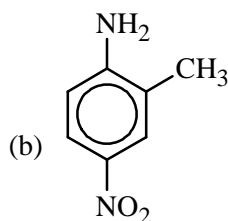
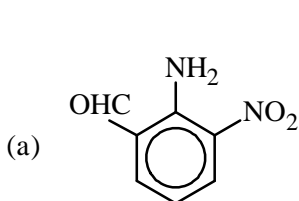
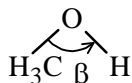
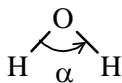
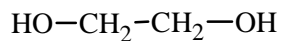
(b) C, A, E

(c) A, C, E

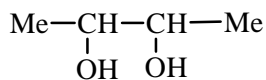
(d) A, D, F



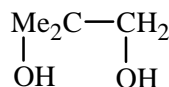
What is E?

18. The bond angle in H_2O and CH_3OH are(a) $\alpha = \beta = 109.5^\circ$ (b) $\alpha = 104.5^\circ, \beta = 108.9^\circ$ (c) $\alpha = 108.9^\circ, \beta = 104.5^\circ$ (d) $\alpha = 104.5^\circ, \beta = 101.8^\circ$ 19. HIO_4 (periodic acid) is used to oxidise 1, 2-diols. The correct order of rates of oxidation with periodic acid of the following compound is

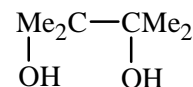
(I)



(II)



(III)



(IV)

(a) (IV) > (III) > (II) > (I)

(b) (II) > (I) > (III) > (IV)

- (c) (I) > (II) > (III) > (IV) (d) All have equal rate

20. Buna rubber is a polymer of

- (a) 1,3-butadiene (b) vinyl acetate (c) styrene (d) none of these

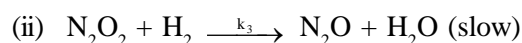
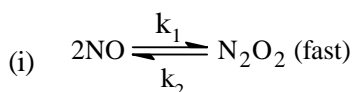
21. Which of the following is correct?

- (a) S_3O_9 - contains no S – S linkage (b) $S_2O_6^{2-}$ - contains – O – O – linkage
(c) $(HPO_3)_3$ - contains P – P linkage (d) $S_2O_8^{2-}$ - contains S – S linkage

22. The atomicity of phosphorus is X and the P–P–P bond angle is Y what are X and Y?

- (a) X = 4, Y = 90° (b) X = 4, Y = 60° (c) X = 3, Y = 120° (d) X = 2, Y = 180°

23. For the reaction $2H_2 + 2NO \rightarrow N_2 + 2H_2O$ the following mechanism has been proposed



(iii) $N_2O + H_2 \rightarrow N_2 + H_2O$ (fast) then what will be the rate law for this reaction?

(a) $\frac{k_1 \times k_3}{k_2} [NO] [H_2]^2$

(b) $\frac{k_1 \times k_3}{k_2} [NO] [H_2]$

(c) $\frac{k_1 \times k_3}{k_2} [NO]^0 [H_2]^3$

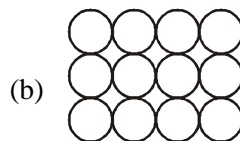
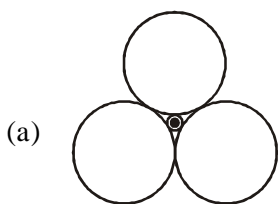
(d) $\frac{k_1 \times k_3}{k_2} [NO]^2 [H_2]$

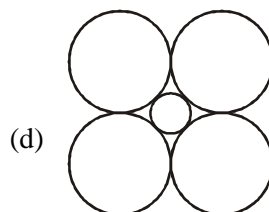
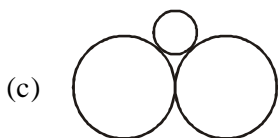
24. Calculate the equilibrium constant of the reaction $Cd^{2+}(aq) + Zn(s) \rightarrow Zn^{2+}(aq) + Cd(s)$ if

$$E_{Cd^{2+}/Cd}^{\circ} = -0.403 \text{ V} \text{ and } E_{Zn^{2+}/Zn}^{\circ} = -0.763 \text{ V} \text{ (antilog } 0.203 = 1.60)$$

- (a) $K = 1.60 \times 10^{12}$ (b) $K = 4.8 \times 10^{14}$ (c) $K = 1.60 \times 10^{18}$ (d) $K = 1.60 \times 10^{-12}$

25. Which of the following figures represents the cross-section of an octahedral site?

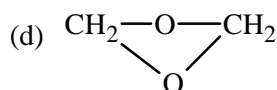
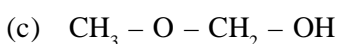
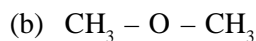
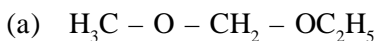




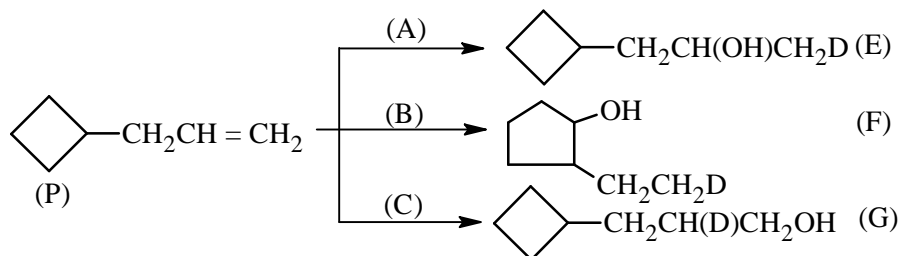
SECTION- II: MULTIPLE CORRECT ANSWERS TYPE

This section contains 5 multiple choice questions numbered 26 to 30. Each question has 4 choice (A), (B), (C) and (D), out of which ONE OR MORE is/are correct

26. When chloromethyl methyl ether reacts with ethanol and water, it gives



27. Three different alcohols (E), (F) and (G) are synthesized from the same alkene (P) by using three different reagents (A), (B) and (C) respectively as shown below. Identify the reagents



(a) (A) is $\text{D}^+/\text{H}_2\text{O}$

(B) is 1. $\text{Hg}(\text{OAc})_2$, THF- H_2O 2. NaBD_4

(C) is 1. B_2D_6 , THF 2. H_2O_2 , OH^-

(b) (A) is 1. $\text{Hg}(\text{OAc})_2$, THF - H_2O 2. NaBD_4

(B) is $\text{D}^+/\text{H}_2\text{O}$

(C) is 1. B_2D_6 - THF 2. H_2O_2 , OH^-

(c) Products (E), (F) and (G) are formed via free radical, carbocation and cyclic carbonium ion intermediate respectively.

(d) Product (E), (F) and (G) are formed via mercury-bridged carbocation, carbocation and four-centre transition

state respectively.

28. Which of the following statements are correct?

- (a) Cellulose consists of D(+)-glucose units which exist in the α -form
- (b) Cellulose consist of D(+)-glucose units which exist in the β -form
- (c) Unlike starch, cellulose have α -1, 4- glycosidic linkage
- (d) Unlike starch, cellulose have β -1, 4- glycosidic linkage

5 a cell for the electrolytic p

Because of a side reaction, the anode efficiency for the desired reaction is 60%

- (a) 6.43×10^5 C
- (b) 6.67 F
- (c) 6.43×10^6 C
- (d) 66.67 F

30. Which of the following are correct for NH_3 and PH_3 ?

- (a) Both are reducing agent
- (b) Both form complex compound
- (c) PH_3 is weaker base than NH_3
- (d) PH_3 is softer Lewis base than NH_3

MATHEMATICS

SECTION- I: STRAIGHT OBJECTIVE TYPE

This section contains 10 multiple choice questions numbered 31 to 40. Each question has 4 choice (A), (B), (C) and (D), out of which ONLY-ONE is correct

31. If $|z_1 - 1| < 1$, $|z_2 - 2| < 2$, $|z_3 - 3| < 3$, then $|z_1 + z_2 + z_3|$

- (a) is less than 6
- (b) is more than 3
- (c) is less than 12
- (d) lies between 6 and 12

32. If $|z - 1| + |z + 3| \leq 8$, then the range of values of $|z - 4|$, (where $i = \sqrt{-1}$) is

- (a) (0, 7)
- (b) (1, 8)
- (c) [1, 9]
- (d) [2, 5]

33. If $0 < x < 1000$ and $\left[\frac{x}{2}\right] + \left[\frac{x}{3}\right] + \left[\frac{x}{5}\right] = \frac{31}{30}x$, where $[x]$ is the greatest integer less than or equal to x , the number of possible values of x is

- (a) 34
- (b) 33
- (c) 32
- (d) none of these

34. The number of solutions of $|[x] - 2x| = 4$, where $[x]$ denotes the greatest integer $\leq x$, is

- (a) infinite
- (b) 4
- (c) 3
- (d) 2

35. The coefficient of x^{15} in the product $(1-x)(1-2x)(1-2^2x)(1-2^3x)\dots(1-2^{15}x)$ is
 (a) $2^{105} - 2^{121}$ (b) $2^{121} - 2^{105}$ (c) $2^{120} - 2^{104}$ (d) $2^{105} - 2^{104}$
36. Number of points having position vector $a\hat{i} + b\hat{j} + c\hat{k}$ where $a, b, c \in \{1, 2, 3, 4, 5\}$ such that $2^a + 3^b + 5^c$ is divisible by 4 is
 (a) 70 (b) 140 (c) 21 (d) 280
37. If $(1+x)^n = C_0 + C_1x + C_2x^2 + \dots + C_nx^n$, then $\sum_{0 \leq i < j \leq n} C_i C_j$ is
 (a) $2^{2n-1} - \frac{2n!}{n!n!}$ (b) $2^{2n-1} - \frac{2 \cdot 2n!}{n!n!}$ (c) $2^{2n+1} - \frac{2n!}{2 \cdot n!}$ (d) $2^{2n-1} - \frac{2^n C_n}{2}$
38. If α, β, γ are real numbers, then $\Delta = \begin{vmatrix} 1 & \cos(\beta - \alpha) & \cos(\gamma - \alpha) \\ \cos(\alpha - \beta) & 1 & \cos(\gamma - \beta) \\ \cos(\alpha - \gamma) & \cos(\beta - \gamma) & 1 \end{vmatrix}$ is equal to
 (a) -1 (b) $\cos\alpha \cos\beta \cos\gamma$ (c) $\cos\alpha + \cos\beta + \cos\gamma$ (d) none of these
39. The interval of x in which the inequality $5^{1/4(\log_5^2 x)} \geq 5x^{1/5(\log_5 x)}$
 (a) $(0, 5^{-2\sqrt{5}}]$ (b) $[5^{2\sqrt{5}}, \infty)$ (c) both (a) and (b) (d) none of these
40. If $f(x) = -\frac{x|x|}{1+x^2}$, then $f^{-1}(x)$ equals
 (a) $\sqrt{\frac{|x|}{1-|x|}}$ (b) $(\text{Sgn } x) \sqrt{\frac{|x|}{1-|x|}}$ (c) $-\sqrt{\frac{x}{1-x}}$ (d) none of these

SECTION- II: MULTIPLE CORRECT ANSWERS TYPE

This section contains 5 multiple choice questions numbered 41 to 45. Each question has 4 choice (A), (B), (C) and (D), out of which ONE OR MORE is/are correct

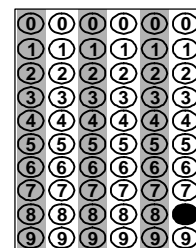
41. If α is a complex constant such that $\alpha z^2 + z + \bar{\alpha} = 0$ has a real root, then
 (a) $\alpha + \bar{\alpha} = 1$ (b) $\alpha + \bar{\alpha} = 0$
 (c) $\alpha + \bar{\alpha} = -1$ (d) absolute value of the real root is 1
42. The common roots of the equations $z^3 + (1+i)z^2 + (1+i)z + i = 0$, (where $i = \sqrt{-1}$) and $z^{1993} + z^{1994} + 1 = 0$ are

- (a) 1 (b) ω (c) ω^2 (d) ω^{981}

43. If A, G and H are the Arithmetic mean, Geometric mean and harmonic mean between two unequal positive integers. Then the equation $Ax^2 - |G|x - H = 0$ has
- (a) both roots are fractions (b) at least one root which is negative fraction
(c) exactly one positive root (d) at least one root which is an integer
44. If a, b, c are in AP and a^2, b^2, c^2 are in HP, then
- (a) $a = b = c$ (b) $a^2 = b^2 = c^2/2$ (c) a, b, c are in GP (d) $-a/2, b, c$ are in GP
45. If $\alpha = x_1 x_2 x_3$ and $\beta = y_1 y_2 y_3$ be two three digits numbers, the number of pairs of α and β can be formed so that α can be subtracted from β without borrowing is
- (a) $2! 10! 10!$ (b) $(45)(55)^2$ (c) $3^2 \cdot 5^3 \cdot 11^2$ (d) 136125

SECTION- III: INTEGER ANSWER TYPE

This section contains 15 questions. The answer to each of the question is a single digit integer, ranging from 0 to 9. The bubble corresponding to the correct answer is to be darkened in the ORS. The appropriate bubbles corresponding to the answers to these questions have to be darkened as illustrated in the following example: If answer of question number (1) is 8, then the correct darkening of bubbles will look like the following.

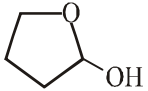


PHYSICS

1. A capacitor of capacitance $C_1 = 1.0 \mu\text{F}$ withstands the maximum voltage $V_1 = 6.0 \text{ kV}$ while a capacitor of capacitance $C_2 = 2.0 \mu\text{F}$, the maximum voltage $V_2 = 4.0 \text{ kV}$. What voltage (in kV) will system of these two capacitors withstand if they are connected in series ?
2. A sample of monoatomic hydrogen gas contains n atoms all in third excited state. Find the minimum value of n so that on subsequent de-excitation all possible different energy photons are emitted.
3. In Young's double slit experiment assume intensity of each source is I_0 and K_1 is equal to difference of maximum and minimum intensity. Now intensity of one source is made $(I_0/4)$ and K_2 is again difference of maximum and minimum intensity. Find K_1/K_2 .
4. Assume that two deuteron nuclei in the core of fusion reactor at temperature T are moving towards each other, each with kinetic energy 1.5 kT , when the separation between them is large enough. Neglect any interaction with other particle. The minimum temperature required for them to reach a separation of $4 \times 10^{-15} \text{ m}$ is in range $T = 1.4 \times 10^k$. Find k .

5. When a particle is restricted to move along X-axis between $x = 0$ and $x = a$, its energy can take only certain specific values. The allowed energies of particle in this zone correspond to formation of standing wave with nodes at $x = 0$ and $x = a$. The energy of particle of mass m is $E = \frac{p^2}{2m}$, where p is momentum. If $E \propto \frac{n^x}{a^y}$ then find $\frac{x}{y}$.

CHEMISTRY

6. $\text{Cl}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OC}_2\text{H}_5 \xrightarrow[\text{NH}_4\text{Cl}]{\text{nRMgX}} 3^\circ \text{Alcohol}$. The value of n is
7. One mole of ethanol is treated with one mole of ethanoic acid at 25°C . Half of the acid change into ester at equilibrium. The equilibrium constant for the reaction will be
8. Of the following compounds, how many would give positive test with tollen's reagent CH_3CHO , CH_3COOH , HCOOH , CH_3COCH_3 , PhCHO , $\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{H}}{\text{C}}}-\overset{\text{OH}}{\text{C}}-\text{OC}_2\text{H}_5$, $\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\text{OC}_2\text{H}_5$, , $\text{CH}_3-\text{C}\equiv\text{C}-\text{H}$
9. The ratio of excluded volume (b) to molar volume of a gas molecule is
10. Among the following number of compounds that would required electrolysis process to get their respective metal is NaCl , Cr_2O_3 , MgCl_2 , Al_2O_3 , CaCl_2 , Fe_2O_3

MATHEMATICS

11. The triangle formed by the tangent to the parabola $y = x^2$ at the point whose abscissa is x_0 ($x_0 \in [1, 2]$), the y-axis and the straight line $y = x^2$ has the greatest area if x_0 is equal to
12. If $(a - 2)x^2 + ay^2 = 4$ represents rectangular hyperbola then integral value of a equals
13. In a quadrilateral if then $\sum \cos \frac{A}{2} \cos \frac{B}{2}$ is equal to
14. The number of solution (s) of the equation $\sin^3 x \cos x + \sin^2 x \cos^2 x + \sin x \cos^3 x = 1$ in the interval $[0, 2\pi]$ is/are
15. If \vec{a} , \vec{b} , \vec{c} are unit vectors then $|\vec{a} - \vec{b}|^2 + |\vec{b} - \vec{c}|^2 + |\vec{c} - \vec{a}|^2$ does not exceed

JEE-ADVANCE: TEST-02

TEST SERIES

PAPER-I

Time : 3 hrs.

M.M.: 180

TEST CODE - A

ANSWERS

Physics: Section I to II

- | | | | | | |
|-------------|-----------|-------------|---------|-----------|---------------|
| 1. (d) | 2. (d) | 3. (c) | 4. (a) | 5. (b) | 6. (c) |
| 7. (b) | 8. (c) | 9. (d) | 10. (a) | 11. (b,d) | 12. (a,b,c,d) |
| 13. (a,b,d) | 14. (a,d) | 15. (a,c,d) | | | |

Chemistry: Section I to II

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|-----------|-----------|---------------|---------|-----------|-----------|
| 16. (b) | 17. (b) | 18. (b) | 19. (c) | 20. (a) | 21. (a) |
| 22. (b) | 23. (d) | 24. (a) | 25. (d) | 26. (a,c) | 27. (b,d) |
| 28. (b,d) | 29. (a,b) | 30. (a,b,c,d) | | | |

Mathematics: Section I to II

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|-----------|-------------|-------------|---------|-------------|-----------|
| 31. (c) | 32. (c) | 33. (b) | 34. (c) | 35. (a) | 36. (a) |
| 37. (d) | 38. (d) | 39. (c) | 40. (d) | 41. (a,c,d) | 42. (b,c) |
| 43. (b,c) | 44. (a,c,d) | 45. (b,c,d) | | | |

Section-III (PCM)

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|---------|---------|---------|---------|---------|---------|
| 1. (9) | 2. (4) | 3. (2) | 4. (9) | 5. (1) | 6. (3) |
| 7. (1) | 8. (6) | 9. (4) | 10. (4) | 11. (2) | 12. (1) |
| 13. (3) | 14. (0) | 15. (9) | | | |