



Major Test-3-(Phase-1+2(A)+2)-Talent-Pro

CLASS-XI-(JEE MAIN)

CLASSROOM CONTACT PROGRAMME

NURTURE COURSE

Test Pattern : JEE Main

Instructions

CODE: 4602CJA105021240017

1. Immediately fill in Name and form number on this page of the Test Booklet with Blue/Black Ball Point Pen. Use of pencil is strictly prohibited.
2. The candidates should not write their Form Number anywhere else (except in the specified space) on the Test Booklet/OMR Sheet.
3. The test is of **3 hours** duration.
4. The Test Booklet consists of **90** questions. The maximum marks are **300**.
5. There are **three** parts in the question paper A, B, C consisting of **Physics, Chemistry and Mathematics** having **30 questions** in each subject and each subject having **Two sections**.
 - (i) Section-I contains **20 multiple choice** questions (All are to be answered) with **only one correct** option. **Marking scheme** : +4 for correct answer, 0 if not attempted and -1 in all other cases.
 - (ii) Section-II contains **05 Numerical Value Type** questions. (All are to be answered) **Marking scheme** : +4 for correct answer, 0 if not attempted and -1 in all other cases.
6. Use **Blue/Black Ball Point Pen only** for writing particulars/markings responses on **Side-1** and **Side-2** of the OMR Sheet. **Use of pencil is strictly prohibited.**
7. No candidate is allowed to carry any textual material, printed or written, bits of papers, mobile phone or any electronic device etc, except the Identity Card inside the examination hall/room.
8. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
9. On completion of the test, the candidate must hand over the OMR Sheet to the invigilator on duty in the Room/Hall. **However, candidates are allowed to take away this Test Booklet with them.**
10. **Do not fold or make any stray marks on the OMR Sheet.**

Name of the Candidate :

Form Number :

SECTION-I : (Maximum Marks: 80)

This section contains **20 questions**. Each question has 4 options for correct answer. Multiple-Choice

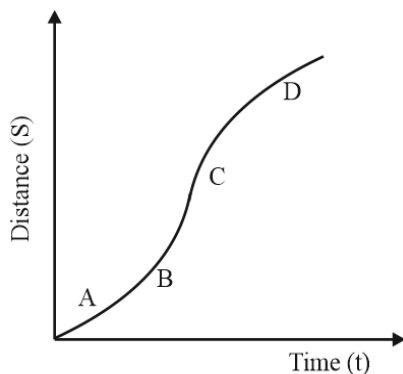
Questions (MCQs) **Only one option is correct**. For each question, marks will be awarded as follows:

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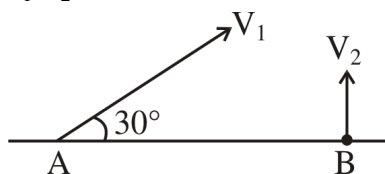
Zero Marks : 0 If none of the option is selected.

Negative Marks : -1 If wrong option is selected.

1. A particle shows distance-time curve as given in this figure. The maximum instantaneous velocity of the particle is around the point.



- (A) A (B) B
(C) C (D) D
2. If A and B are projected simultaneously such that they collide at the highest point of particle '1', the value of V_1/V_2 will be :-

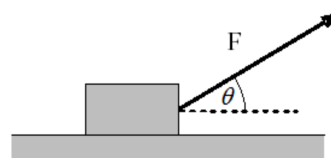


- (A) 1 (B) 2
(C) 1/2 (D) Cannot be determined

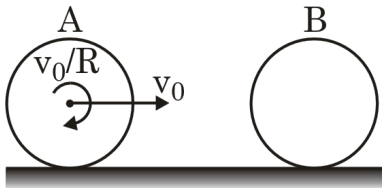
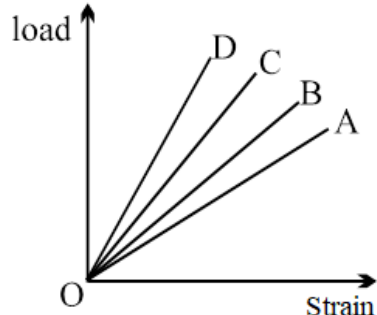
3. Four blocks of same mass connected by cords are pulled by force F on a smooth horizontal surface, as in figure. The tension T_1 , T_2 and T_3 will be :-



- (A) $T_1 = F/4$, $T_2 = 3F/2$, $T_3 = F/4$
(B) $T_1 = F/4$, $T_2 = F/2$, $T_3 = F/2$
(C) $T_1 = 3F/4$, $T_2 = F/2$, $T_3 = F/4$
(D) $T_1 = 3F/4$, $T_2 = F/2$, $T_3 = F/2$
4. A block is being pulled by a force F on a long frictionless level floor. Magnitude of the force is gradually increases from zero until the block lifts off the floor. Immediately before the block leaves the floor, its acceleration is



- (A) $g \cos \theta$ (B) $g \cot \theta$
(C) $g \sin \theta$ (D) $g \tan \theta$
5. A cricket player throws a ball straight upward in the air. It rises and falls back to the hands of the player. During the catch, his hands are displaced downward a few inches as the ball slows down, then.
- (A) During the catch while the ball is in hand and is moving downward, the work done by the player on the ball is positive
(B) During the throw work done by gravity is positive
(C) During the throw while ball is in hand and moving upward, work done by ball on hand is negative
(D) During the catch while the ball is in hand and moving downward, work done by hand plus gravity on the ball is positive.

6. A body of mass 0.5 kg travels in a straight line with velocity $v = ax^{3/2}$ where $a = 5 \text{ m}^{-1/2}\text{s}^{-1}$. The work done by the net force during its displacement from $x = 0$ to $x = 2 \text{ m}$ is
- (A) 1.5 J (B) 50 J
(C) 10 J (D) 100 J
7. Ring, Disc, Solid sphere and hollow sphere, all of same mass and same radius are released from rough inclined plane. Friction is sufficient for pure rolling. Which of them will reach first to ground?
- (A) Ring (B) Disc
(C) Solid sphere (D) Hollow sphere
8. If $\vec{\tau} \times \vec{L} = 0$ for a rigid body, where $\vec{\tau}$ = resultant torque & \vec{L} angular momentum about a point and both are non - zero. Then:
- (A) $\vec{L} = \text{constant}$ (B) $|\vec{L}| = \text{constant}$
(C) $|\vec{L}|$ will increase (D) $|\vec{L}|$ may increase
9. A hollow smooth uniform sphere A of mass 'm' rolls without sliding on a smooth horizontal surface. It collides elastically and headon with another stationary smooth solid sphere B of the same mass m and same radius. The ratio of kinetic energy of 'B' to that of 'A' just after the collision is :
- 
- (A) 5 : 2 (B) 1 : 1
(C) 2 : 3 (D) 3 : 2
10. A ball of mass m hits the floor with a speed v making an angle of incidence $\theta = 45^\circ$ with the normal to the floor. If the coefficient of restitution $e = \frac{1}{\sqrt{2}}$, then the speed of the reflected ball and the angle of reflection are :-
- (A) $\frac{\sqrt{3}}{2}v, \tan^{-1}\sqrt{2}$ (B) $\frac{\sqrt{3}}{2}v, \tan^{-1}\sqrt{3}$
(C) $\frac{2\sqrt{3}}{5}v, \tan^{-1}\sqrt{3}$ (D) $\frac{\sqrt{3}}{5}v, \tan^{-1}\sqrt{2}$
11. A small spherical droplet of density d is floating exactly half immersed in a liquid of density ρ and surface tension T . The radius of the droplet is (take note that the surface tension applies an upward force on the droplet):
- (A) $r = \sqrt{\frac{2T}{3(d+\rho)g}}$ (B) $r = \sqrt{\frac{3T}{(2d-\rho)g}}$
(C) $r = \sqrt{\frac{T}{(d-\rho)g}}$ (D) $r = \sqrt{\frac{T}{(d+\rho)g}}$
12. The load versus strain graph for four wires of the same material is shown in the figure. The thickest wire is represented by the line :-
- 
- (A) OB (B) OA
(C) OD (D) OC

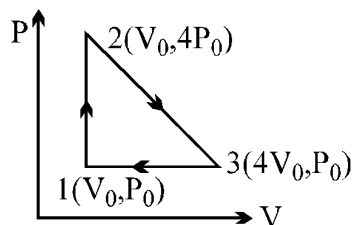
13. One mole of an ideal diatomic gas is taken through the cycle as shown in the figure.

1 → 2 : isochoric process

2 → 3 : straight line on P-V diagram

3 → 1 : isobaric process

The average molecular speed of the gas in the states 1, 2 and 3 are in the ratio



- (A) 1 : 2 : 2 (B) 1 : $\sqrt{2}$: $\sqrt{2}$
(C) 1 : 1 : 1 (D) 1 : 2 : 4

14. Two bodies of masses m and M are placed at distance d apart. The gravitational potential (V) at the position where the gravitational field due to them is zero V is :-

(A) $V = -\frac{G}{d}(m + M)$

(B) $V = -\frac{G}{d}$

(C) $V = -\frac{GM}{d}$

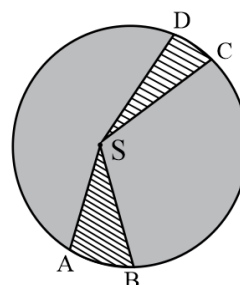
(D) $V = -\frac{G}{d}(\sqrt{m} + \sqrt{M})^2$

15. A satellite is in a circular orbit very close to the surface of a planet. At some point it is given an impulse along its direction of motion, causing its velocity to increase n times. It now goes into an elliptical orbit. The maximum possible value of n for this to occur is

(A) 2 (B) $\sqrt{2}$

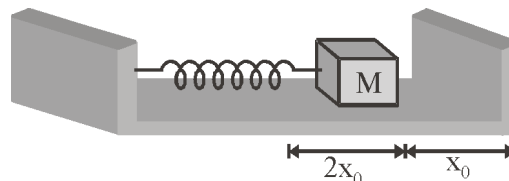
(C) $\sqrt{2} + 1$ (D) $\frac{1}{\sqrt{2} - 1}$

16. The figure represents an elliptical orbit of a planet around the sun. The planet takes time T_1 to travel from A to B and it takes time T_2 to travel from C to D. If the area CSD is double that of area ASB, then



- (A) $T_1 = T_2$ (B) $T_1 = 2T_2$
(C) $T_1 = 0.5T_2$ (D) Data insufficient

17. One end of a spring of force constant k is fixed to a vertical wall and the other to a block of mass m resting on a smooth horizontal surface. There is another wall at a distance x_0 from the block. The spring is then compressed by $2x_0$ and released. The time taken to strike the wall is:



- (A) $\frac{1}{6}\pi\sqrt{\frac{m}{k}}$ (B) $\sqrt{\frac{m}{k}}$
(C) $\frac{2\pi}{3}\sqrt{\frac{m}{k}}$ (D) $\frac{\pi}{4}\sqrt{\frac{m}{k}}$

18. The phase difference between SHM,

$x_1 = 10 \sin\left(\pi t + \frac{\pi}{3}\right)$ and

$x_2 = 20 \sin\left(\pi t + \frac{\pi}{6}\right)$ at $t = 0$ sec.

- (A) 150° (B) 90°
(C) 120° (D) 30°

19. A particle executes simple harmonic motion with a frequency f . The frequency with which its kinetic energy oscillates is :-
 (A) $\frac{f}{2}$ (B) f (C) $2f$ (D) $4f$
20. Which of the following quantities are always positive in a simple harmonic motion?
 (A) $\vec{F} \cdot \vec{a}$ (B) $\vec{v} \cdot \vec{r}$ (C) $\vec{a} \cdot \vec{r}$ (D) $\vec{F} \cdot \vec{r}$

SECTION-II : (Maximum Marks: 20)

This section contains **05 Questions**, all questions are mandatory. The answer to each question is a Numerical Value Type questions.

For each question, enter the correct numerical value (in decimal notation, truncated/rounded off to the second decimal place; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).

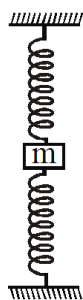
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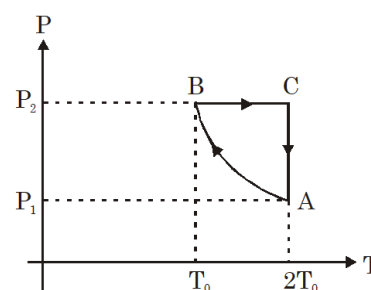
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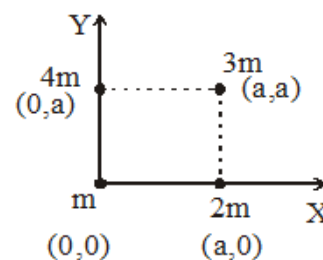
1. One end of a spring is fixed to the ceiling and other end is attached to a block. The block is released when spring is relaxed. The product of time period and amplitude is 8 S.I. units. If spring is cut in two equal parts and the two springs are attached to the block as shown in figure. The block is released when both springs are relaxed. Now find the product of time period and amplitude in S.I. units.



2. The density inside a solid sphere of radius $R = 5$ m is given by $\rho = \frac{\rho_0 R}{r}$ where ρ_0 is the density at the surface and r is the distance from the centre. The gravitational field due to this sphere at distance $2R$ from its centre is $k(\pi G \rho_0)$. Find K .
3. Three moles of an ideal diatomic gas are taken through a cyclic process ABCA as shown in the P-T graph. During the process AB, pressure and temperature of the gas vary such that $PT = \text{constant}$, if $T_0 = 200\text{K}$ then the modulus of work done on the gas in the process AB is xR (in Joule), where R is the universal gas constant then fill value of x .



4. Consider the system of point masses as shown. If the X- co-ordinate of COM of system is $\frac{ma}{10}$ and Y- co-ordinate of COM of system is $\frac{na}{10}$ then find $n - m$.



5. Two forces \vec{F}_1 and \vec{F}_2 have a resultant \vec{F}_3 . If $\vec{F}_1 = 2\hat{i} - 3\hat{j}$ and $\vec{F}_3 = 5\hat{i} - 4\hat{j}$ then magnitude of \vec{F}_2 is X . The value of $\frac{X}{\sqrt{10}}$ is

SECTION-I : (Maximum Marks: 80)

This section contains **20 questions**. Each question has

4 options for correct answer. Multiple-Choice

Questions (MCQs) **Only one option is correct**. For

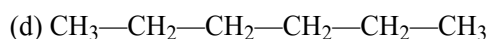
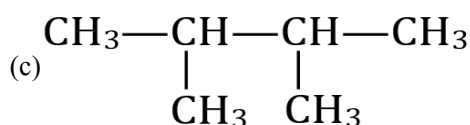
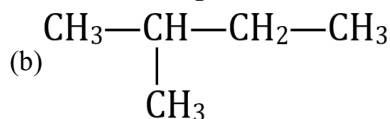
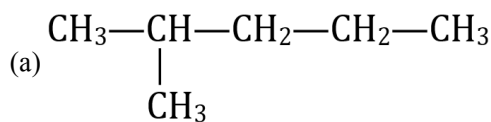
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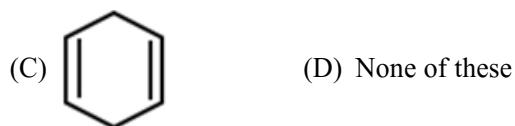
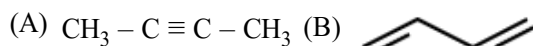
1. If isopropyl chloride and propyl chloride both react with Na in presence of dry ether which alkane obtains :-



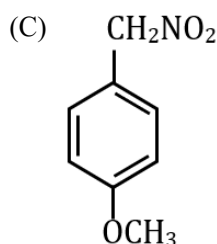
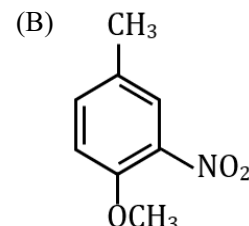
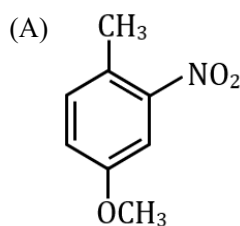
(A) a, b only (B) a, c, d only

(C) b, c, d only (D) All of these

2. Which of the following will be most reactive in the addition reaction with HBr?

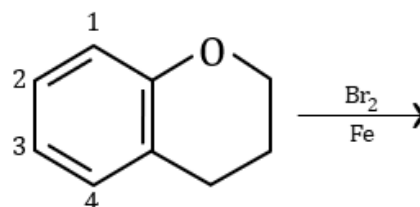


3. If p-methoxy toluene is nitrated, the major product is:



(D) No reaction

- 4.



Substitution take place at the position.

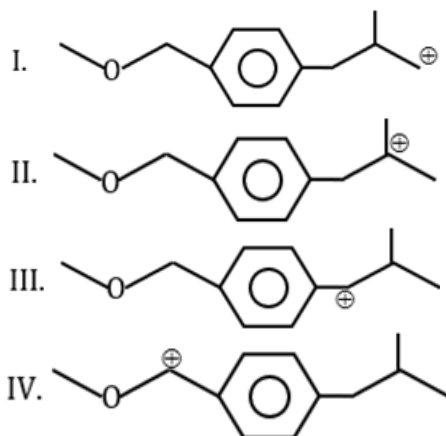
- (A) 4
(B) 2
(C) 3
(D) both (A) & (C)

5. Arrange pH of the given compounds in decreasing order:

(i) Phenol (ii) Ethyl alcohol
iii) Formic acid (iv) Benzoic acid

- (A) i > ii > iii > iv
(B) ii > i > iv > iii
(C) iii > ii > iv > i
(D) iv > iii > i > ii

6. Decreasing order of stabilities of following carbocation is:

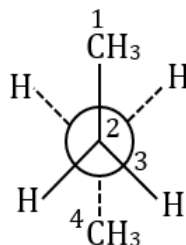


- (A) IV > III > II > I (B) I > II > III > IV
(C) II > IV > III > I (D) I > III > IV > II

7. Geometrical isomerism is not shown by-

- (A) 1,1-dichloro-1-pentene
(B) 1,2-dichloro-1-pentene
(C) 1,3-dichloro-2-pentene
(D) 1,4-dichloro-2-pentene

8. If C_2 in below compound is rotated by 120° angle in anticlockwise direction along C_2-C_3 , which of the following form will be produced :

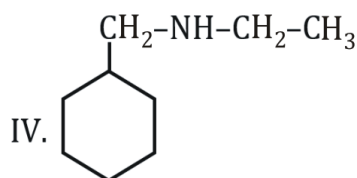
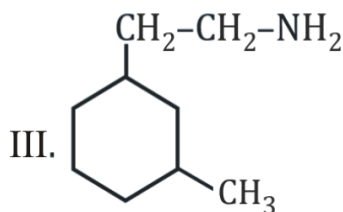
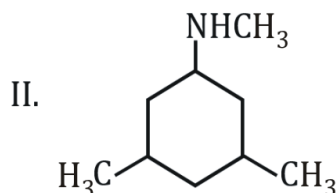
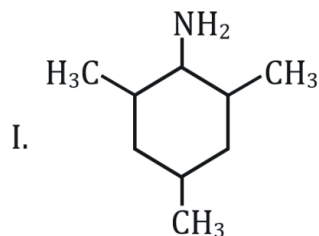


- (A) Partial eclipsed
(B) Perfectly eclipsed
(C) Perfectly staggered
(D) Gauche conformation

9. Minimum number of carbon atom required by a Hydrocarbon alkane, alkene and alkyne to show chain isomerism respectively are :

- (A) 4, 4, 4 (B) 4, 3, 3
(C) 4, 4, 3 (D) 4, 4, 5

10. Which of the following is the incorrect relationship ?



- (A) I and II are functional isomers
(B) II and IV are metamers
(C) I and IV are position isomers
(D) I and III are constitutional isomer

11. A solution which is 10^{-3} M each in Mn^{2+} , Fe^{2+} , Zn^{2+} and Hg^{2+} is treated with 10^{-16} M sulphide ion. If K_{sp} of MnS , FeS , ZnS and HgS are 10^{-15} , 10^{-23} , 10^{-20} and 10^{-54} respectively, which one will precipitate first ?
- (A) FeS (B) MnS
(C) HgS (D) ZnS
12. CH_3NH_2 (0.1 mole, $K_b = 5 \times 10^{-4}$) is added to 0.08 moles of HCl and the solution is diluted to one litre, resulting hydrogen ion concentration is
- (A) 1.6×10^{-11} (B) 8×10^{-11}
(C) 5×10^{-5} (D) 2×10^{-2}
13. The enthalpy of combustion of methane(g) at constant pressure is $-18,500$ cal/mol at 27°C . The enthalpy of formation at constant volume would be
- (A) $-19,700$ cal (B) $-17,300$ cal
(C) $-18,498.8$ cal (D) $-18,500$ cal
14. Given that standard enthalpy of formation of CH_4 , C_2H_4 and C_3H_8 are -17.9 , 12.5 , -24.8 kCal/mol. The ΔH for $\text{CH}_4 + \text{C}_2\text{H}_4 \rightarrow \text{C}_3\text{H}_8$ at standard conditions is :
- (A) -55.2 kCal (B) -30.2 kCal
(C) 55.2 kCal (D) -19.4 kCal
15. For the reaction $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}_{(s)} \rightleftharpoons \text{CuSO}_4 \cdot 3\text{H}_2\text{O}_{(s)} + 2\text{H}_2\text{O}_{(g)}$. Which one is correct representation?
- (A) $K_p = (P_{\text{H}_2\text{O}})^2$ (B) $K_c = [\text{H}_2\text{O}]^2$
(C) $K_p = K_c(RT)^2$ (D) All of these
16. The equilibrium constant for the given reaction : $\text{SO}_3(\text{g}) \rightleftharpoons \text{SO}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g})$; $K_c = 5 \times 10^{-2}$. The value of K_c for the reaction : $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$, will be
- (A) 400 (B) 2.40×10^{-3}
(C) 9.8×10^{-2} (D) 4.9×10^{-2}
17. Among the following compounds given below, what is the sum of the oxidation states of all underlined elements?
 CO_2 , K_2MnO_4
- (A) 8 (B) 9
(C) 10 (D) 12
18. Consider the redox reaction $2\text{S}_2\text{O}_3^{2-} + \text{I}_2 \rightarrow \text{S}_4\text{O}_6^{2-} + 2\text{I}^-$
- (A) $2\text{S}_2\text{O}_3^{2-}$ gets oxidised to $\text{S}_4\text{O}_6^{2-}$
(B) I_2 gets reduced to I^-
(C) I_2 gets oxidised to I^-
(D) Both (A) & (B)
19. If the radius of 3rd Bohr's orbit of H is x, then radius of 4th orbit of Li^{2+} ion would be :-
- (A) $\frac{27}{16}x$ (B) $\frac{16}{27}x$
(C) $\frac{9}{16}$ (D) None of these
20. The correct set of four quantum numbers for the valence electrons of rubidium atom ($Z = 37$) is:
- (A) $5, 1, 1, +\frac{1}{2}$ (B) $5, 0, 1, +\frac{1}{2}$
(C) $5, 0, 0, +\frac{1}{2}$ (D) $5, 1, 0, +\frac{1}{2}$

SECTION-II : (Maximum Marks: 20)

This section contains **05 Questions**, all questions are mandatory. The answer to each question is a Numerical Value Type questions.

For each question, enter the correct numerical value (in decimal notation, truncated/rounded off to the second decimal place; e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).

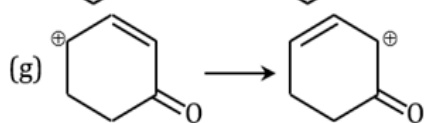
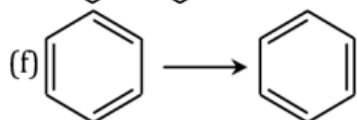
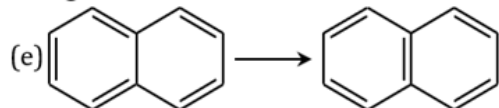
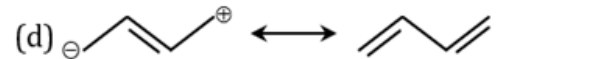
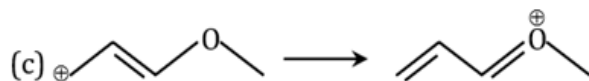
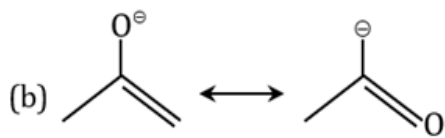
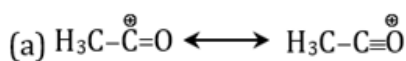
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Zero Marks : 0 If none of the option is selected.

Negative Marks : -1 If wrong option is selected.

1. Total number of pairs of resonating structure in which second is more stable than first.

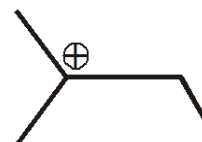


2. How many of the followings have $I.E_2 < I.E_1$.

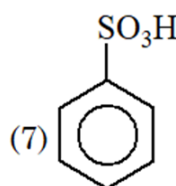
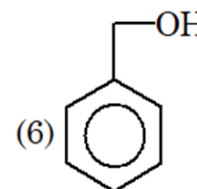
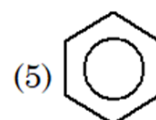
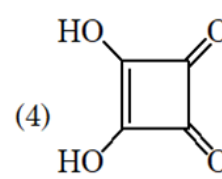
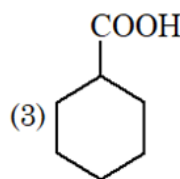
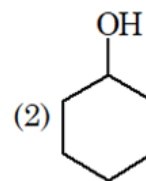
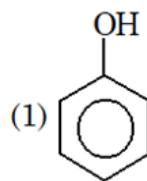
B, C, N, O, F, Ne, Na, Mg, Al

3. what is the number d-electrons in element with atomic number 21.

4. Identify total number of hyper conjugating structures involving C-H bond in following carbocation ?



5. Identify total number of compounds soluble in aq. NaOH



PART-3 : MATHEMATICS

SECTION-I : (Maximum Marks: 80)

This section contains **20 questions**. Each question has 4 options for correct answer. Multiple-Choice Questions (MCQs) **Only one option is correct**. For each question, marks will be awarded as follows:

Full Marks : +4 If correct answer is selected.

Zero Marks : 0 If none of the option is selected.

Negative Marks : -1 If wrong option is selected.

- If $x, y \in \mathbb{N}$ and $xy - 3x - 2y = 54$, then number of ordered pairs (x, y) is
(A) 7 (B) 8
(C) 12 (D) 24
- Number of integers in between 500 to 2023 which are divisible by 3 or 5 but not multiple of 2
(A) 356 (B) 355
(C) 710 (D) 711
- If $x = 8 - \sqrt{60}$, then $\frac{1}{2} \left[\sqrt{x} + \frac{2}{\sqrt{x}} \right] =$
(A) $\sqrt{5}$ (B) $\sqrt{3}$
(C) $2\sqrt{5}$ (D) $2\sqrt{3}$
- If $(5 + 2\sqrt{6})^{x^2-3} + (5 - 2\sqrt{6})^{x^2-3} = 10$, then all possible values of x are
(A) -2, 2 (B) $\sqrt{2}, -\sqrt{2}$
(C) $2, +\sqrt{2}$ (D) $2, -2, \sqrt{2}, -\sqrt{2}$
- If x satisfies the inequality $\log_{25} x^2 + (\log_5 x)^2 < 2$, then $x \in$
(A) $\left(\frac{1}{25}, 5 \right)$ (B) (1, 2)
(C) (4, 5) (D) (0, 1)

- If, for a positive integer n , the quadratic equation, $x(x+1) + (x+1)(x+2) + \dots + (x+n-1)(x+n) = 10n$ has two consecutive integral solutions, then n is equal to
(A) 11 (B) 12
(C) 9 (D) 10
- If $a, a_1, a_2, \dots, a_{10}, b$ are in A.P. and $a, g_1, g_2, \dots, g_{10}, b$ are in G.P. and h is the H.M. between a and b , then $\frac{a_1 + a_2 + \dots + a_{10}}{g_1 g_{10}} + \frac{a_2 + a_3 + \dots + a_9}{g_2 g_9} + \dots + \frac{a_5 + a_6}{g_5 g_6}$ is
(A) $\frac{10}{h}$ (B) $\frac{15}{h}$
(C) $\frac{30}{h}$ (D) $\frac{5}{h}$
- Maximum and minimum value of $2\sin^2 \theta - 3\sin \theta + 2$ is
(A) $\frac{1}{4}, -\frac{7}{4}$ (B) $\frac{1}{4}, \frac{21}{4}$
(C) $\frac{21}{4}, -\frac{3}{4}$ (D) $7, \frac{7}{8}$
- Let r_1, r_2, r_3 be roots of equation $x^3 - 2x^2 + 4x + 5074 = 0$, then the value of $(r_1 + 2)(r_2 + 2)(r_3 + 2)$ is
(A) 5050 (B) -5050
(C) -5066 (D) -5068
- In a triangle ABC, $\angle A = 60^\circ$ and $b : c = (\sqrt{3} + 1) : 2$ then $(\angle B - \angle C)$ has the value equal to
(A) 15° (B) 30°
(C) 22.5° (D) 45°

11. The greatest slope along the graph represented by the equation $x^2 - 7xy + 12y^2 = 0$
- (A) 3 (B) 4
(C) $\frac{1}{3}$ (D) $\frac{1}{4}$
12. If $a + b + c = 0$, the line $3ax + by + 2c = 0$ passes through a fixed point
- (A) $\left(2, \frac{2}{3}\right)$ (B) $\left(\frac{2}{3}, 2\right)$
(C) $\left(-2, \frac{2}{3}\right)$ (D) (2,3)
13. The angle between the two tangents from the origin to the circle $(x - 7)^2 + (y + 1)^2 = 25$ equals
- (A) $\frac{\pi}{2}$ (B) $\frac{\pi}{3}$
(C) $\frac{\pi}{4}$ (D) None
14. The equation of the circle symmetric to the circle $x^2 + y^2 - 2x - 4y + 4 = 0$ about the line $x - y = 3$ is
- (A) $x^2 + y^2 - 10x + 4y + 28 = 0$
(B) $x^2 + y^2 + 6x + 8 = 0$
(C) $x^2 + y^2 - 14x - 2y + 49 = 0$
(D) $x^2 + y^2 + 8x + 2y + 16 = 0$
15. A committee of 11 members is to be formed from 8 males and 5 females. If m is the number of ways the committee is formed with at least 6 males and n is the number of ways the committee is formed with at least 3 females, then
- (A) $m - n = 0$ (B) $n = m - 8$
(C) $m + n = 68$ (D) $m = n = 68$
16. The number of 4 digit numbers without repetition that can be formed using the digits 1, 2, 3, 4, 5, 6, 7 in which each number has two odd digits and two even digits is
- (A) 432 (B) 450
(C) 436 (D) 454
17. 8 cards and 8 envelopes are numbered 1, 2, 3, 4, 5, 6, 7, 8 and cards are to be placed in envelopes so that each envelope contains exactly one card and no card is placed in the envelope bearing the same number and moreover the card numbered 2 & 4 always placed in envelopes numbered 1 & 3 respectively, then number of ways of placing cards in envelopes with above constraint is
- (A) 255 (B) 362
(C) 9 (D) 97
18. The value of $\frac{C_1}{C_0} + 2 \cdot \frac{C_2}{C_1} + 3 \cdot \frac{C_3}{C_2} + \dots + 15 \cdot \frac{C_{15}}{C_{14}}$ is
- (A) 100 (B) 120
(C) -120 (D) None
19. Let $(1 + x^2)^2(1 + x)^n = \sum_{k=0}^{n+4} a_k x^k$.
If a_1, a_2, a_3 are in A.P., then n can't be
- (A) 1 (B) 2
(C) 3 (D) 4
20. Absolute value of slope of a line, common tangent to both the curves given by $y = x^2$ and $x^2 + y + 1 = 0$ will be
- (A) $\sqrt{5}$ (B) 2
(C) $\sqrt{3}$ (D) $\sqrt{2}$

SECTION-II : (Maximum Marks: 20)

This section contains **05 Questions**, all questions are mandatory. The answer to each question is a Numerical Value Type questions.

For each question, enter the correct numerical value (in decimal notation, truncated/rounded off to the second decimal place; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct).

Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +4 If correct answer is selected.

Zero Marks : 0 If none of the option is selected.

Negative Marks : -1 If wrong option is selected.

1. If the tangents drawn at $P(3, 2\sqrt{3})$ and $Q(2, -2\sqrt{2})$ to the parabola $y^2 = 4x$. Intersects at T. Sum of the abscissa and ordinate of the point T is $\sqrt{\alpha} - \sqrt{\beta} - \sqrt{\gamma}$ then find value of $(\alpha \cdot \beta \cdot \gamma)$

2. Number of common tangents of the ellipse $\frac{(x-2)^2}{9} + \frac{(y+2)^2}{4} = 1$ and the circle $x^2 + y^2 - 4x + 2y + 4 = 0$ is
3. Maximum distance between two points lying on the curve $4x^2 + 9y^2 + 8x - 36y + 4 = 0$ is
4. From the centre C of the hyperbola $\frac{x^2}{16} - \frac{y^2}{9} = 1$, perpendicular CN is drawn on any tangent to it at the point P in the first quadrant. If A denotes the maximum area of the triangle CPN, then the value of (4A) is
5. Product of length of the perpendiculars drawn from foci on any tangent to hyperbola $x^2 - \frac{y^2}{4} = 1$ is

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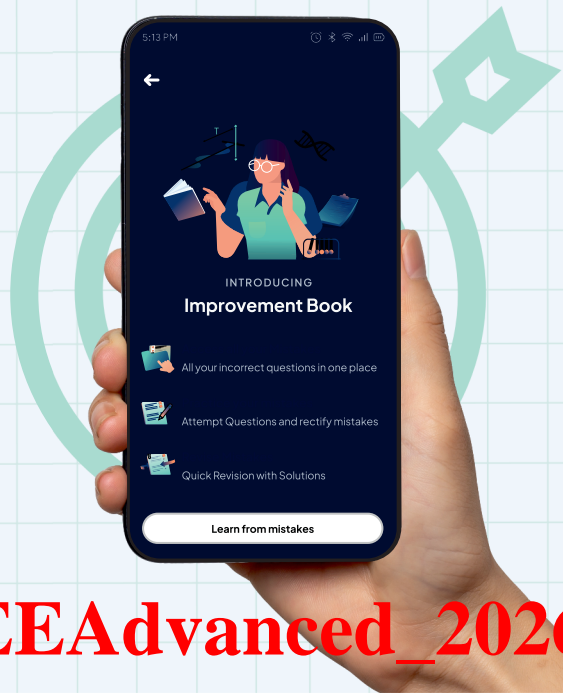
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