Sri Chaitanya IIT Academy.,India.

A.P T.S KARNATAKA TAMILNADU MAHARASTRA DELHI RANCHI

A right Choice for the Real Aspirant

ICON Central Office - Madhapur - Hyderabad

SEC: Sr.Super60_STERLING BT	**JEE-MAIN**	**Date: 21-06-2025**
Time: 09:00AM to 12:00PM	**WTM-35**	**Max. Marks: 300**

IMPORTANT INSTRUCTION:

1. Immediately fill in the Admission number on this page of the Test Booklet with **Blue/Black** Ball Point **Pen** only.
2. The candidates should not write their Admission Number anywhere (except in the specified space) on the Test Booklet/ Answer Sheet.
3. The test is of **3 hours** duration.%
4. The Test Booklet consists of **75 Questions.** The maximum marks are **300.**
5. There are **three** parts in the question paper 1,2,3 consisting of **Mathematics, Physics** and **Chemistry** having **25 Questions** in each subject and subject having **two sections.**
   (I) Section –I contains **20 Multiple Choice Questions** with only one correct option.
   Marking scheme: +4 for correct answer, **0** if not attempt and **-1** in all other cases.
   (II) Section-II contains **05 Numerical Value Type Questions.**
   - The Answer should be within **0 to 9999.** If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i,e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11).**

   To cancel any attempted question bubble on the question number box.
   For example: To cancel attempted Question 21. Bubble on 21 as shown below

Question Answered for Marking **Question Cancelled for Marking**
Marking scheme: +4 for correct answer, **0** if **not attempt** and **-1** in all other cases.

6. Use **Blue / Black Point Pen only** for writing particulars / marking responses on the Answer 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 any electron device etc, except the Identity Card inside the examination hall.
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 Answer Sheet to the invigilator on duty in the Hall. **However, the candidate are allowed to take away this Test Booklet with them.**
10. **Do not fold of make any stray marks on the Answer Sheet**

Name of the Candidate (in Capital): _____

Admission Number: | | | | | | | | | |

Candidate's Signature:_____ **Invigilator's Signature:** _____

21-06-25_Sr.Super60_STERLING BT_Jee-Main_WTM-35_Test Syllabus

MATHEMATICS : Binomial theorem-expansion, properties of binomial coefficients and relation among the binomial coefficients and Problems, Numerically greatest term and greatest binomial coefficient

PHYSICS : Ray Optics: Reflection at plane and spherical Surfaces: Laws of reflection, Reflection at plane and spherical surfaces: Reflection of light by spherical mirrors, Relation between focal length and radius curvature of a spherical mirror, The mirror equation: Descartes formula for reflection at a spherical surface, Magnification (linear) produced by a spherical mirror, Magnification (linear) produced by a spherical mirror, Spherical aberration in mirrors, Applications of spherical mirrors

CHEMISTRY : Mechanism of Nucleophilic Substitution reactions (SNi), Susbtitution with allyl rearrangements, Grignard reagent: Formation and reactions,, ARYL HALIDES : Aryl halides,Reactions: Fittig, Wurtz-Fittig; Nucleophilic aromatic substitution in haloarenes and substituted haloarenes [SNAr] & SN1 type with benzene diazonium chlroide (excluding benzyne mechanism and cine substitution)., Polyhalogen compounds (NCERT content) & Mechanism of haloform reaction, **ALCOHOLS: Preparation of alcohols,Physical Properties, Preparation of alcohols from alkenes, alkyl halides, Aldehydes, ketones, carboxylic acids, esters and amines, Reactions: esterification, dehydration (formation of alkenes and ethers); Reactions with: sodium, phosphorus halides, ZnCl2/concentrated HCl, thionyl chloride; Conversion of alcohols into aldehydes, ketones and carboxylic acids. Tests for alcohols**

MATHEMATICS **Max Marks: 100**

SECTION-I (SINGLE CORRECT ANSWER TYPE)

This section contains **20 Multiple Choice Questions.** Each question has 4 options (1), (2), (3) and (4) for its answer, out of which ONLY ONE option can be correct.

Marking scheme: +4 for correct answer, 0 if not attempted and –1 in all other cases.

1. The sum of binomial coefficients $20_{C_0} + 20_{C_1} + 20_{C_2} + ----+20_{C_{10}}$ is equal to

   1) $2^{20} + \frac{20!}{(10!)^2}$ 2) $\left[2^{19} + \frac{1}{2}\frac{20!}{(10!)^2}\right]$ 3) $\left[2^{18} + \frac{1}{2}\frac{20!}{(10!)^2}\right]$ 4) $2^{19} + 19_{C_9}$

2. When 32^{33} is divided by 34 it leaves the remainder is λ then $\left[\frac{\lambda}{4}\right] =$

   ([.] Greatest integer function)

   1) 4 2) 8 3) 7 4) 6

3. The term independent of x in the expansion of $\left[\frac{x+1}{x^{2/3} - x^{1/3} + 1} - \frac{x-1}{x - x^{1/2}}\right]^{10}$ is

   1) $T_5 = 210$ 2) $T_5 = -210$ 3) $T_4 = 180$ 4) $T_4 = -180$

4. The coefficient of x^{50} in the expansion $(1+x)^{1000} + 2x(1+x)^{999} + 3x^2(1+x)^{998} + ----1001x^{1000}$ is

   1) $1002_{C_{50}}$ 2) $1002_{C_{51}}$ 3) $1005_{C_{50}}$ 4) $1005_{C_{48}}$

5. Fractional part of the number $\frac{7^{103}}{25}$ is equal to

   1) $\frac{4}{5}$ 2) $\frac{16}{25}$ 3) $\frac{18}{25}$ 4) $\frac{3}{5}$

6. Statement – I: Coefficient of $a^2b^3c^4$ in the expansion of $(a+b+c)^8$ is $\frac{8!}{2!3!4!}$

   Statement – II: Coefficient of $a^\alpha b^\beta c^\gamma$ where $\alpha+\beta+\gamma = n$ in the expansion of $(a+b+c)^n$ is $\frac{n!}{\alpha!\beta!\gamma!}$

   1) Both Statement-I and statement-II are true.
   2) Both Statement-I and statement-II are false.
   3) Statement-I is true statement-II is false
   4) Statement-I is false, statement-II is true

7. List – I List – II

A) If $\sum_{r=0}^{10}\left(r+2^r\right)10_{C_r}=10.2^a+3^b$ then $(a+b)$ is P) 7

B) If 4^{th} term in the binomial expansion of $\left(x+\frac{1}{ax}\right)^m, m\in N$ is $\frac{5}{2}$ then ma is equal to Q) 12

C) let λ be the value of numerically greatest term in the expansion of $(1+5x)^{10}$ at $x=1$ then $\frac{\lambda}{10_{C_9}5^7}$ R) 19

D) If $n_{p_r}=5040\left((n-1)_{C_r}+(n-1)_{C_{r-1}}\right)$, then r is equal to S) 25

1) $A\to R, B\to Q, C\to S, D\to P$ 2) $A\to R, B\to Q, C\to P, D\to S$

3) $A\to Q, B\to R, C\to S, D\to P$ 4) $A\to R, B\to S, C\to Q, D\to P$

8. The sum of rational terms in the expansion of $\left(3^{1/3}+5^{1/2}\right)^9$ is

1) 31527 2) 26717 3) 15517 4) 40571

9. The coefficient of x^4 in the expansion of $\left(1+x-2x^2\right)^7$ is

1) -81 2) -91 3) 81 4) 91

10. If the coefficient of $x^2 and\ x^3$ in the expansion of $(3+kx)^9$ are equal, then the value of k is

1) $\frac{-9}{7}$ 2) $\frac{9}{7}$ 3) $\frac{7}{9}$ 4) $\frac{-7}{9}$

11. $30_{C_0}.30_{C_{10}}-30_{C_1}.30_{C_{11}}+----+30_{C_{20}}.30_{C_{30}}$ is equal to

1) $30_{C_{11}}$ 2) $60_{C_{10}}$ 3) $30_{C_{10}}$ 4) $65_{C_{55}}$

12. If n is a positive integer, then in the trinomial expansion of $\left(x^2+2x+2\right)^n$ coefficient of

1) x is n. 2^n-1 2) x^2 is $n^2.2^n+1$ 3) x^3 is $2^n.(n+1)_{C_3}$ 4) x^3 is $2^{n+1}.(n+1)_{C_3}$

13. If the sum of the coefficient of $1^{st}, 2^{nd}$ and 3^{rd} terms in the expansion of $\left(x^2+\frac{1}{x}\right)^m$ is 46 then constant term of expansion is

1) 80 2) 82 3) 78 4) 84

14. If $\sum_{r=0}^{2n} a_r (x-2)^r = \sum_{r=0}^{2n} b_r (x-3)^r$ and $a_k = 1$ for all $k \geq n$ then the value of b_n is

1) $2n+1C_{2n}$ 2) $2n+1C_{n+1}$ 3) $2n+1C_n$ 4) $2n+1C_{2n+1}$

15. For what value of x is the ninth term in the expansion of

$\left\{ 3^{\log_3 \sqrt{25^{x-1}+7}} + 3^{-\frac{1}{8}\log_3 \left(5^{x-1}+1\right)} \right\}^{10}$ is equal to 180 ?

1)1 2) -1 3) 0 4) $\log_5^{15}$

16. The greatest term in the expansion of $(1+x)^{2n}$ has also the greatest coefficient, then $x \in$

1) $\left(\frac{2n}{n+1}, \frac{n+1}{2n}\right)$ 2) $\left(\frac{n}{n+1}, \frac{n+1}{n}\right)$ 3) $\left(\frac{n}{2n+1}, \frac{2n+1}{n}\right)$ 4) $\left(\frac{n+1}{n}, \frac{n}{n+1}\right)$

17. The coefficient of $x^3 y^4 z^5$ in the expansion of $(xy + yz + zx)^6$ is

1) 50 2) 55 3) 60 4) 65

18. If n is on odd natural number, then the value of $\sum_{r=o}^{n} \frac{(-1)^r}{nC_r}$

1) $n/2$ 2) 0 3) $n/3$ 4) $n/4$

19. It the second, third and fourth terms in the expansion of $(x+y)^n$ are 135 , 30 and $\frac{10}{3}$ respectively , then n is

1) 7 2) 6 3) 5 4) 8

20. $\sum_{r=1}^{n} \left\{ \sum_{r_1=0}^{r-1} nC_r \cdot rC_{r_1} \cdot 2^{r_1} \right\}$ is equal to

1) $4^n - 3^n + 1$ 2) $4^n - 3^n - 1$ 3) $4^n - 3^n + 2$ 4) $4^n - 3^n$

SECTION-II (NUMERICAL VALUE TYPE)

This section contains **5 Numerical Value Type Questions.** The Answer should be within **0 to 9999.** If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i,e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11).**

Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases.

21. The coefficient of x^8 in the expansion $(2+x)^2(3+x)^3(4+x)^4$ must be

22. The largest value for $x=2\sqrt{2}-\lambda$ such that $\sum_{k=0}^{4}\left(\frac{5^{4-k}}{(4-k)!}\right)\left(\frac{x^k}{k!}\right)=\frac{8}{3}$, then λ is

23. The value of the expression $\left(\sum_{r=0}^{10}10C_r\right)\left(\sum_{k=0}^{10}(-1)^k.\frac{10C_k}{2^k}\right)$ is

24. Let a and b the coefficient of x^3 in $\left(1+x+2x^2+3x^3\right)^4$ and $\left(1+x+2x^2+3x^3+4x^4\right)^4$ respectively, then the value of $(a-b+4)$ is

25. If $\frac{1}{1!10!}+\frac{1}{2!9!}+\frac{1}{3!8!}+..+\frac{1}{10!1!}=\frac{2}{k!}\left(2^{k-1}-1\right)$, Then the value of k is

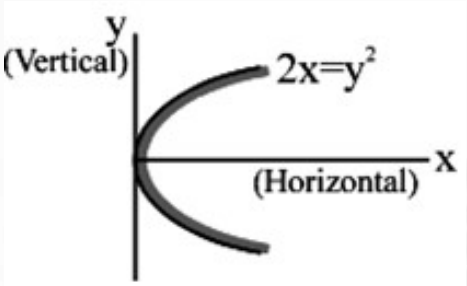
PHYSICS **Max Marks: 100**

SECTION-I (SINGLE CORRECT ANSWER TYPE)

This section contains **20 Multiple Choice Questions.** Each question has 4 options (1), (2), (3) and (4) for its answer, out of which ONLY ONE option can be correct.

Marking scheme: +4 for correct answer, 0 if not attempted and –1 in all other cases.

26. The reflecting surface represented by the equation $2x = y^2$ as shown in figure. A ray travelling horizontal becomes vertical after reflection. The co-ordinates of the point of incidence can be :

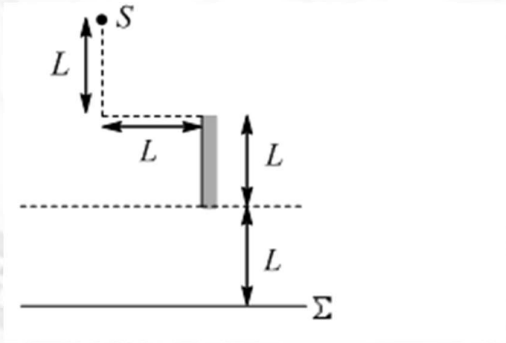


1) $(1/2,1)$ 2) $(1,1/2)$ 3) $(1/2,1/2)$ 4) $(1/2,\pm 1)$

27. Rear window of a car has a size of $120\times 45\,cm^2$. the driver sits at a distance $L = 2m$ from rear window what should be the minimum size of flat mirror, hanging at a distance of 0.5m in front of the driver so that he has best view of road situation behind the car?

1) $(24cm\times 9cm)$ 2) $(30cm\times 11.25cm)$ 3) $(40cm\times 15cm)$ 4) $(20cm\times 7.5cm)$

28. A point source of light is placed in front of a plane mirror as shown in the figure. Determine the length of reflected patch of light on the screen $\sum$:



1) L 2) 2L 3) $\frac{3L}{2}$ 4) $\frac{L}{2}$

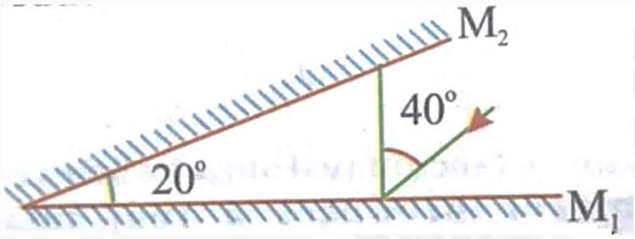
29. A convex mirror has a radius of curvature of 20 cm. An object is placed at such a distance from the mirror that the size of the image is exactly half that of the object. The object distance must be:

1) 20 cm 2) 30 cm 3) 10 cm 4) 40 cm

30. The incident ray, reflected ray and the outward normal are denoted by the unit vectors $\vec{a},\vec{b}$ *and* $\vec{c}$ respectively. Then choose the correct relation for these vectors.

1) $\vec{b}=\vec{a}+2\vec{c}$ 2) $\vec{b}=\vec{a}-2\left(\vec{a}.\vec{c}\right)\vec{c}$ 3) $\vec{b}=2\vec{a}+\vec{c}$ 4) $\vec{b}=\vec{a}-\vec{c}$

31. Two plane mirrors are arranged as shown in figure. A ray has been incident on M_1 at an angle of 40^0, find the deviation produced in it after three reflections:

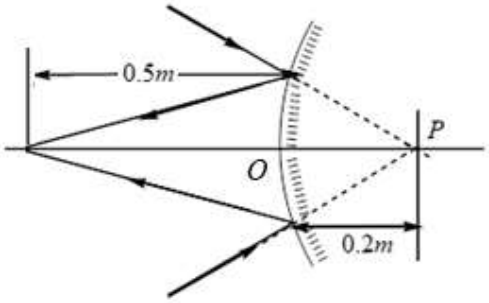


1) 40^0 *clockwise* 2) 40^0 *anti – clockwise* 3) 140^0 *clockwise* 4) 140^0 *anti – clockwise*

32. A spherical mirror is polished on both sides, When the convex side is used as a mirror image is erect with magnification 1/4 . What is the magnification when the concave side is used as a mirror, the object remaining the same distance from the mirror?

1) $-\frac{1}{4}$ 2) $-\frac{1}{2}$ 3) $-\frac{1}{3}$ 4) $+\frac{1}{4}$

33. A beam of convergent light converges to a point 0.5 m in front of the mirror after reflection at a convex mirror but in the absence of the mirror the beam converges to a point 0.2m behind the mirror. The radius of curvature of the mirror is:



1) 20 cm 2) 50 cm 3) 66.67 cm 4) 28.57 cm

34. An object is placed beyond the center of curvature C of the given concave mirror. If the distance of the object is d_1 from C and the distance of the image formed is d_2 from C. the radius of curvature of this mirror is :

1) $\frac{2d_1d_2}{d_1-d_2}$ 2) $\frac{2d_1d_2}{d_1+d_2}$ 3) $\frac{d_1d_2}{d_1+d_2}$ 4) $\frac{d_1d_2}{d_1-d_2}$

35. A ray of light is incident on a plane mirror, along the direction given by, $\vec{A} = 2\hat{i} - 3\hat{j} + 4\hat{j}$. Find the unit vector along the reflected ray. Take normal to mirror along the direction of $\vec{B} = 3\hat{i} - 6\hat{j} + 2\hat{k}$.

1) $\frac{-94\hat{i} + 237\hat{j} + 68\hat{k}}{49\sqrt{29}}$ 2) $\frac{-94\hat{i} + 68\hat{j} - 237\hat{k}}{49\sqrt{29}}$ 3) $\frac{3\hat{i} + 6\hat{j} - 2\hat{k}}{7}$ 4) $\frac{-94\hat{i} - 237\hat{j} + 68\hat{k}}{49\sqrt{29}}$

36. A particle is projected above a horizontal plane mirror (under gravity). Taking up as positive and down as negative. Mark the correct options:

1) Image is moving upwards during upward motion of object

2) Image is moving downward during downward motion of object

3) Sign of acceleration of object is positive and image negative

4) Sign of acceleration of object is negative and image positive

37. A plane mirror is placed in y-z plane facing towards negative x-axis. The mirror is moving parallel to y-axis with a speed of 2cm/s. A point object p is moving in front of the mirror with a velocity $(1\,cm/s)\hat{i} + (1\,cm/s)\hat{j}$. Then which of the following statements is incorrect?

1) The velocity of image is $\left(-\hat{i} + \hat{j}\right)$ cm/s

2) The velocity of image with respect to mirror is -$\left(\hat{i} + \hat{j}\right)$ cm/s

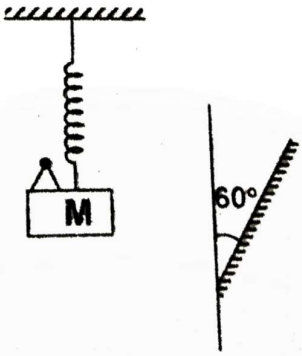
3) The velocity of image with respect to object is $\left(-2\hat{i}\right)$ cm/s

4) The unit vector is the direction of reflected ray is $\left(\hat{i} + \hat{j}\right)$

38. Car B overtakes another car A at a relative speed $40ms^{-1}$. How fast the image of car B appear to move in the mirror of focal length 10 cm fitted in car A, when the car B is 1.9 m away from the car A?

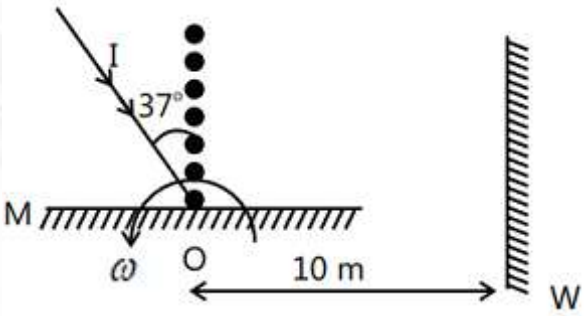
1) $4ms^{-1}$ 2) $0.2ms^{-1}$ 3) $40ms^{-1}$ 4) $0.1ms^{-1}$

39. An insects of negligible mass is sitting on a block of mass M, tied with a spring of force constant k. The block performs simple harmonic motion with amplitude A in front of a plane mirror placed as shown. The maximum speed of insect relative to its image will be:



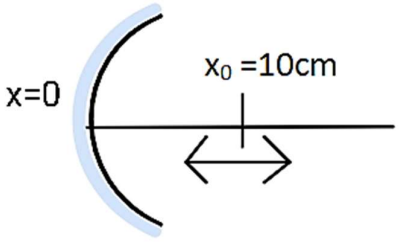
1) $A\left(\frac{\sqrt{k}}{M}\right)$ 2) $\frac{A\left(\sqrt{3}\right)}{2}\left(\sqrt{\frac{k}{M}}\right)$ 3) $A\sqrt{3}\left(\sqrt{\frac{k}{M}}\right)$ 4) $2A\left(\sqrt{\frac{M}{k}}\right)$

40. A light ray I is incident on a plane mirror M. The mirror is rotated in the direction as shown in the figure by an arrow at frequency $9/\pi$ rps. The light reflected by the mirror is received on the wall at a distance 10 m from the axis of rotation. When the angle of incidence becomes 37^0, the speed of the spot (a point) on the wall is



1) $10ms^{-1}$ 2) $1000ms^{-1}$ 3) $500ms^{-1}$ 4) None of these

41. A particle is oscillating on the X-axis with an amplitude 2cm about the point $x_0 = 10cm$ with a frequency ω. A concave mirror of focal length 5cm is placed at the origin (see figure) Identify the correct statements :



A) The image executes periodic motion

B) The image executes non-periodic motion

C)The turning points of the image are asymmetric w.r.t the image of the point at x=10cm

D) The distance between the turning points of the oscillation of the image is $\frac{100}{21}$

1) (B),(D) 2) (B), (C) 3) (A),(C),(D) 4) (A),(D)

42. Statement-I: Keeping a point object fixed, if a plane mirror is moved, then the image will also move.

Statement-II: In case of a plane, mirror, distance of object and its image is equal from any point on the mirror

1) Statement-I is True, Statement-II is true; Statement-II is correct explanation for Statement-I

2) Statement-I is True, Statement-II is true; Statement-II NOT a correct explanation for Statement-I

3) Statement-I is True, Statement-II is False

4) Statement-I is False, Statement-II is True

43. Statement-I: We cannot produce a real image by plane or convex mirror under any circumstances

Statement-II: The focal length of a convex mirror is always taken as positive

1) Statement-I is True, Statement-II is true; Statement-II is correct explanation for Statement-I

2) Statement-I is True, Statement-II is true; Statement-II NOT a correct explanation for Statement-I

3) Statement-I is True, Statement-II is False

4) Statement-I is False, Statement-II is True

44. Statement-I: The formula connecting u,v and f for a spherical mirror is valid only for mirrors whose sizes are very small compared to their radii of curvature.

Statement-II: Laws of reflection are strictly valid for plane surfaces, but not for large spherical surfaces.

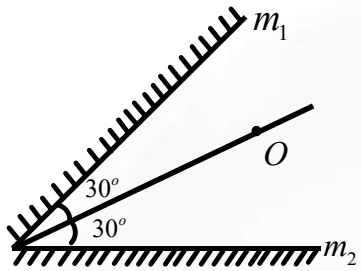
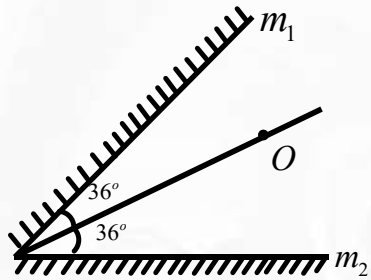
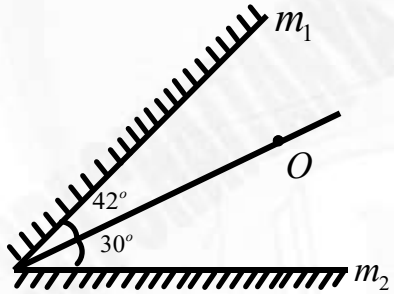
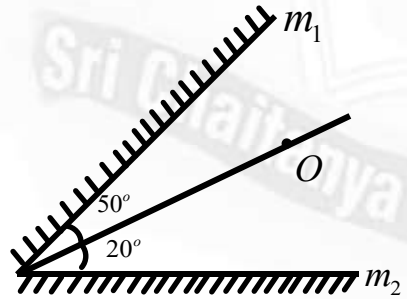
1) If both Statement-I and Statement-II are true and Statement-II is the correct explanation of Statement-I.

2) If both Statement-I and Statement-II are true but Statement-II is not the correct explanation of Statement-I.

3) If Statement-I is true, but Statement-II is false.

4) If Statement-I is false, but Statement-II is true.

45. Column I shows a configuration of two plane mirrors and an object. Match them against the numbers of unique images (N) formed by two mirrors.

a) 	p) $N=3$
b) 	q) $N=4$
c) 	r) $N=5$
d) 	s) $N=6$

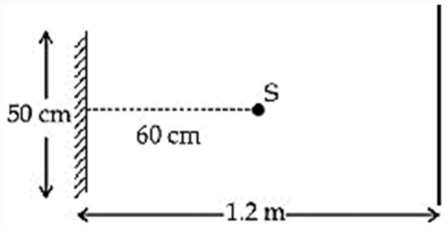
1) $a \to r, b \to r, c \to r, d \to r$
3) $a \to r, b \to r, c \to q, d \to r$
3) $a \to r, b \to q, c \to r, d \to s$
4) $a \to r, b \to q, c \to r, d \to r$

SECTION-II (NUMERICAL VALUE TYPE)

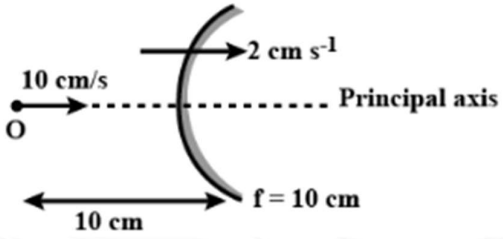
This section contains **5 Numerical Value Type Questions.** The Answer should be within **0 to 9999.** If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i,e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11).**

Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases

46. A point source of light S, placed at a distance 60cm in front of the centre of a plane mirror of width 50 cm, hangs vertically on a wall. A man walks in front of the mirror along a line parallel to the mirror at a distance 1.2 m from it (see in the figure). The distance between the extreme points where he can see the image of the light source in the mirror is_____ cm.



47. What is the velocity (in cm/s) of image in situation shown below. (O = object, f=focal length). Object moves with velocity 10 cm/s and mirror moves with velocity 2 cm/s as shown



48. Image of an object (real) approaching a convex mirror of radius of curvature 20m along its optical axis is observed to move from $\frac{25}{3}m$ *to* $\frac{50}{7}m$ in 30 seconds. What is the average speed of the object in km per hour?

49. A thin rod length $f/3$ is placed along the optic axis of a concave mirror of focal length f such that its image which is real and elongated, just touches the rod. The magnification is_____

50. A bright point S is on the principal optical axis of a concave mirror of radius R = 40 cm at d = 30 cm from its pole. At what distance (in cm) in front of the concave mirror should a plane mirror be placed so that after two reflections, the rays converge back at point S.

CHEMISTRY

Max Marks: 100

SECTION-I (SINGLE CORRECT ANSWER TYPE)

This section contains **20 Multiple Choice Questions.** Each question has 4 options (1), (2), (3) and (4) for its answer, out of which ONLY ONE option can be correct.

Marking scheme: +4 for correct answer, 0 if not attempted and –1 in all other cases.

51. Identify R-(alkyl group) and C respectively in the following sequence of reaction.

$$R-Br+Mg \xrightarrow{\text{dryether}} C \xrightarrow{D_2O} CH_3-\underset{\displaystyle D}{\underset{|}{CH}}-CH_3$$

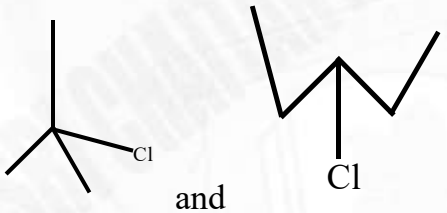
1) $CH_3CH_2CH_2-,\ CH_3CH_2CH_2MgBr$

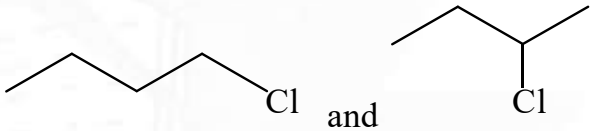
2) $CH_3CH_2CH_2-,\ CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}\ Mg\ Br$

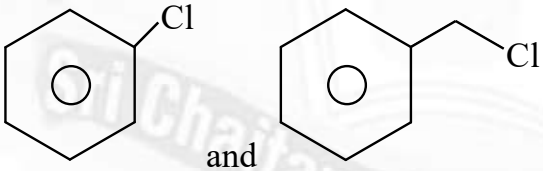
3) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-,\ CH_3CH_2CH_2-MgBr$

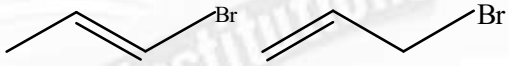
4) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-,\ CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-Mg\ Br$

52. In the following pairs of halogens compounds in which one, compound on left under goes faster 'S_N1'. Reaction

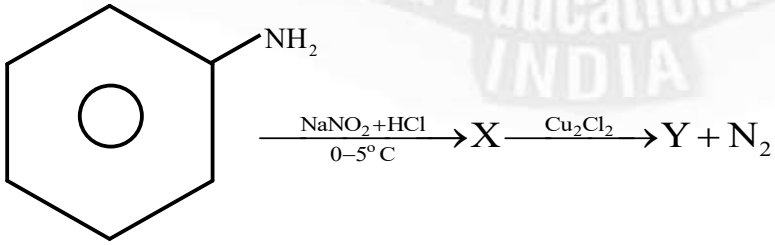
1)  and

2)  and

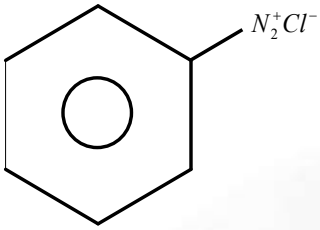
3)  and

4) 

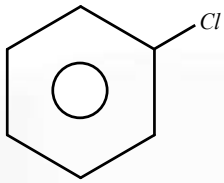
53. Identify compounds Y in the following reaction.



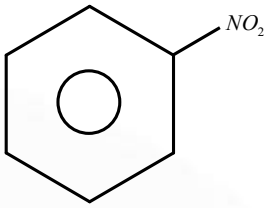
$$\xrightarrow[0-5^{\circ}C]{NaNO_2+HCl} X \xrightarrow{Cu_2Cl_2} Y+N_2$$



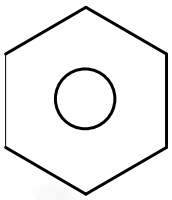
1)



2)

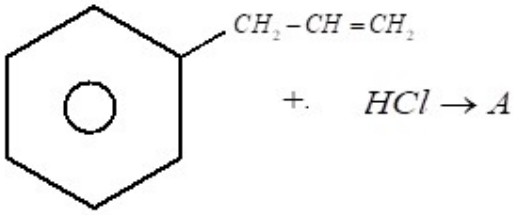


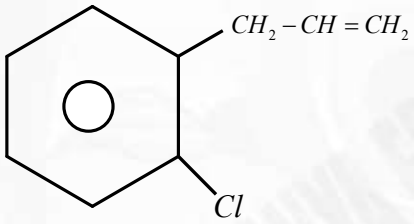
3)



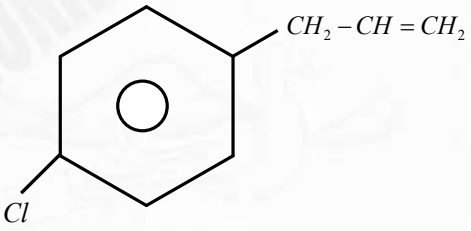
4)

54. What is 'A' in the following reaction?

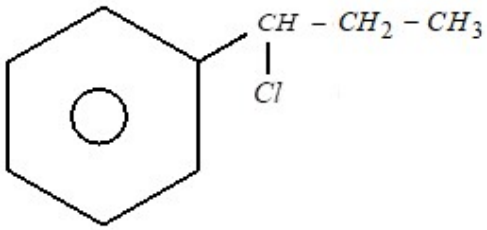




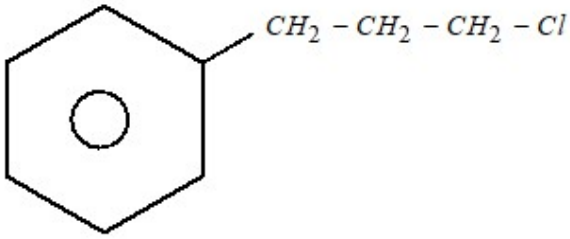
1)



2)

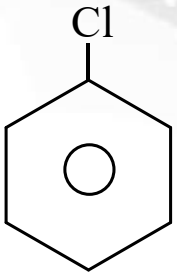


3)

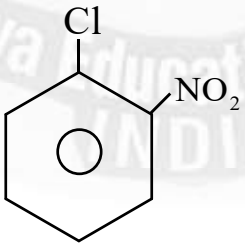


4)

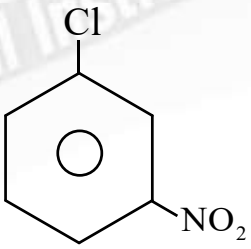
55. Arrange the following compounds in the increasing order or rate of reaction towards nucleophilic substitution



(a)

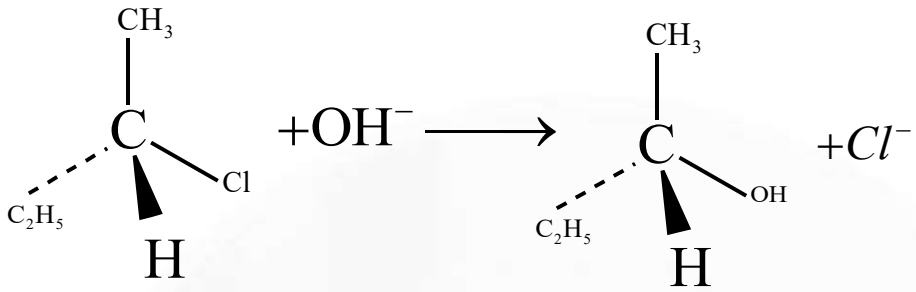


b)



c)

1) a < b < c 2) c < b < a 3) b < c < a 4) a < c < b

56. 

Statement – I: A carbocation will be formed as an intermediate in the reaction and reaction proceeds by SN_1

Statement – II: An unstable intermediate will be formed in which OH^- and Cl^- will be attached by weak bond.

1) Both Statements I & II are correct
2) Both statements I & II are incorrect
3) Statement-I is correct, statement II is incorrect
4) Statement I is incorrect, Statement II is correct

57. Which of the following compounds can be classified as aryl halide

a) $P-ClC_6H_4CH_2CH(CH_3)_2$ b) $P-CH_2CH(Cl)(C_6H_4)C_2H_5$

c) $O-BrH_2C-C_6H_4CH(CH_3)CH_2CH_3$ d) C_6H_5Br

1) a,b,c,d 2) a,b,d only 3) a,c,d only 4) a,d only

58. Assertion (A): Nitration of chlorobenzene leads to the formation of m-nitrobenzene

Reason (R): NO_2 group is m-directing group

1) Both A & R are correct, R-explain A
2) Both A & R are wrong
3) A is correct, R is incorrect
4) A is incorrect, R is correct

59. Assertion (A): Presence of nitro group at ortho or para position increase the reactivity of haloarenes towards nucleophilic substitution

Reason (R): Nitro group, being electron withdrawing group decreases the electron density over benzene ring

1) Both A & R are correct and R is correct explanation of A
2) Both A & R are incorrect
3) Both A & R are correct, but R does not explain A
4) A is correct, R is incorrect

60. Match reaction in column-I with names given in column-II

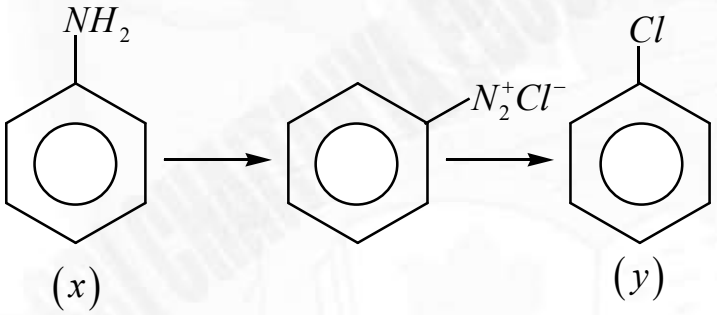
	column-I		column-II
A)	$Ar-X+RX \xrightarrow{Na} Ar-R$	1)	Fitting reaction
B)	$Ar-X+2Na \xrightarrow{ether} Ar-Ar+2NaX$	2)	Wurtz-Fitting reaction
C)	$Ar\ N_2^+Cl^- \xrightarrow{Cu_2X_2} ArX+N_2$	3)	Finkel stein reaction
D)	$C_2H_5Cl+NaI \xrightarrow{dryacetone} C_2H_5I+Na$	4)	Sandmeyer reaction

Correct match is

1) $A-2, B-1, C-4, D-3$ 2) $A-1, B-2, C-3, D-4$

3) $A-2, B-1, C-3, D-4$ 4) $A-1, B-2, C-4, D-3$

61.



In above conversion of (x) to (y), the sequence of reagent to be used will be

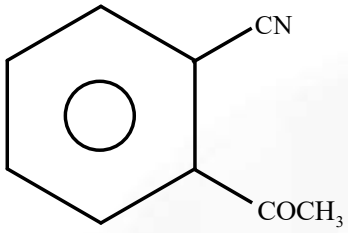
1) $CuCl+HCl, HNO_2$ 2) $HNO_2, CuCl+HCl$

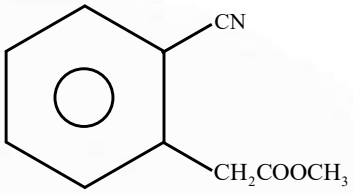
3) $CuCl+HCl, HNO_3$ 4) $HNO_3, CuCl+HCl$

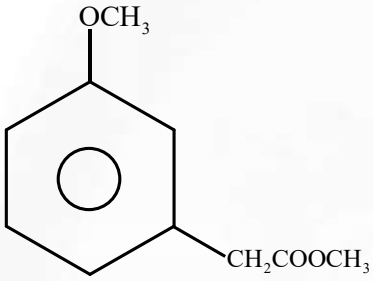
62. In the following halogenated organic compounds the one with maximum numbers of chlorine atoms in the structure is

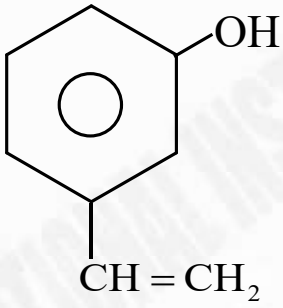
1) Freon – 12 2) Chloral 3) Chloropicrin 4) Gammaxene

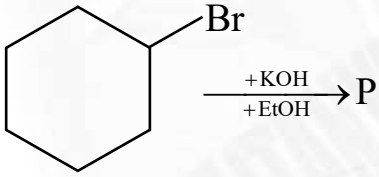
63. Which of the following compounds react with ethylmagnesium bromide and also decolorises bromide water solution

1) 

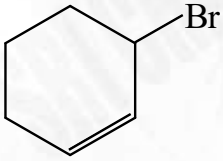
2) 

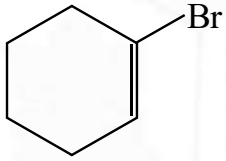
3) 

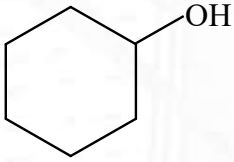
4) 

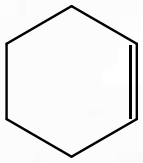


64. Product 'P' is.

1) 

2) 

3) 

4) 

65. Statement-I: $C_6H_6 + Cl_2\,(excess) \xrightarrow[dark]{any.AlCl_3} C_6Cl_6$

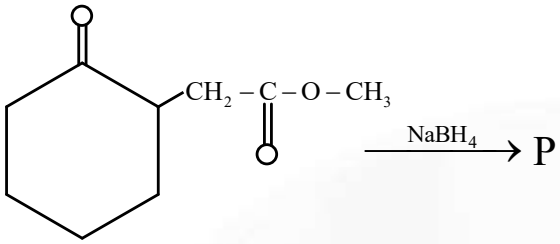
Statement – II: $C_6H_6 + CH_2 = CH - CH_2 - Cl \xrightarrow{any.AlCl_3} C_6H_5 - CH_2 - CH = CH_2$

1) Both statement-I and statement-II are correct

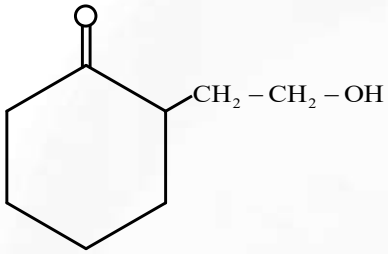
2) Statement-I is correct and statement-II is incorrect

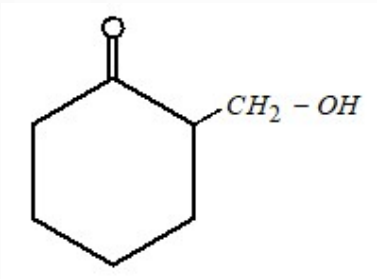
3) Statement-I is incorrect and statement-II is correct

4) Both statement I and statement-II are incorrect

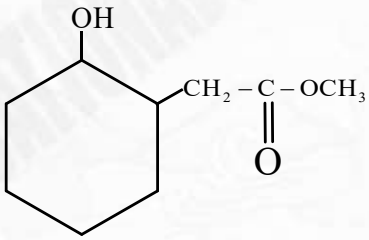
66. 

Product 'P' in this equation will be

1) 

2) 

3) Both 1 & 2

4) 

67. 2-Propanol can be obtained as major product by

1) Catalytic reduction of propanal

2) Hydration of propene in presence of dilute H_2SO_4

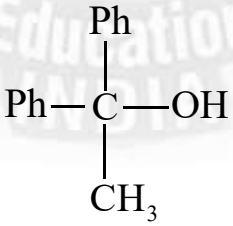
3) Reaction of propanone with methyl magnesium bromide followed by hydrolysis

4) All of these

68. What is the major product of acid catalysed dehydration of 1-Butanol

1) 1-Butene 2) Methylpropene 3) 2-Butene 4) Isobutene

69. Which reactant will give following alcohol on reaction with one mole of phenyl magnesium bromide followed by acid hydrolysis



1) $CH_3 - CN$ 2) $Ph - CN$ 3) $CH_3COOC_6H_5$ 4) $C_6H_5 - COCH_3$

70. In the following sequence of reaction $C_3H_6 \xrightarrow{H_2O/H^+} A \xrightarrow[dilKOH]{KIO} B + C$ compound B and C are

1) CI_3COOK, CH_3I
2) $CH_3I, HCOOK$
3) $CI_3COOK, HCOOH$
4) CHI_3, CH_3COOK

SECTION-II (NUMERICAL VALUE TYPE)

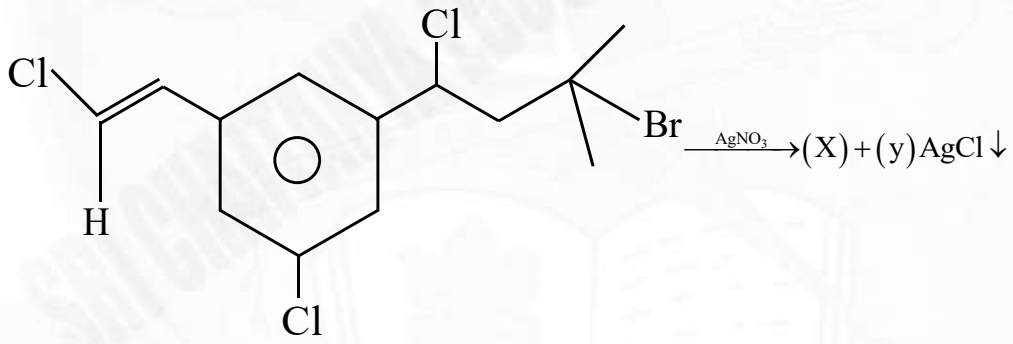
This section contains **5 Numerical Value Type Questions.** The Answer should be within **0 to 9999.** If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i,e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and less than **11** round off is **11).**

Marking scheme: +4 for correct answer, 0 if not attempt and -1 in all other cases

71. Number of only 3^0 alkyl halides among the following is 'x' and number of allylic halides (any type) is 'y'. Then $(x-y)^2$ is_____

1) $(CH_3)_2CHCH(Cl)CH_3$
2) $CH_3CH_2C(CH_3)_2CH_2I$
3) $CH_3CH=CHC(Br)(CH_3)_2$
4) $CH_3CH=C(Cl)CH_3$
5) $CH_2=CHCH(I)CH_3$
6) $CH_3CH(Cl)CH_2CH_3$

72. Number of moles of AgCl formed in the following reaction is _____

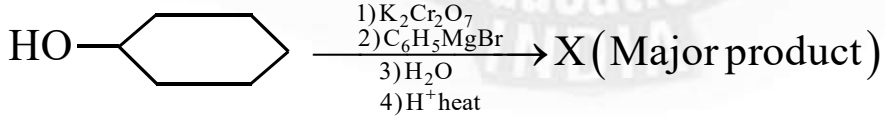


73. How many alcohols with molecular formula $C_4H_{10}O$ are chiral in nature?

74. How many of the following reagents can be used to oxidise primary alcohols to aldehydes?

I) CrO_3 in anhydrous medium
II) $KMnO_4$ in acidic medium
III) Pyridium chlorochromate
IV) Heat in presence of copper at 573K

75.



Of no.of sp^3 hybridised carbon atoms is 'a' and numbers of sp^2 hydrid orbitals is b in X. then $(b-a)^2$ is_____

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BELOW 100	BELOW 500	BELOW 10	BELOW 100	BELOW 1000
31	95	10	98	579
ALL INDIA OPEN CATEGORY RANKS	ALL INDIA OPEN CATEGORY RANKS	ALL INDIA CATEGORY RANKS COUNT	ALL INDIA CATEGORY RANKS COUNT	ALL INDIA CATEGORY RANKS COUNT

TOTAL QUALIFIED RANKS FOR JEE ADVANCED-2025 22,094

*DLP/AITS

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UJJWAL KESARI
H.T.No. 252016104*

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BELOW 100	BELOW 500	BELOW 1000	BELOW 1000	NUMBER OF QUALIFIED RANKS
ALL INDIA OPEN CATEGORY RANKS	ALL INDIA OPEN CATEGORY RANKS	ALL INDIA OPEN CATEGORY RANKS	ALL INDIA CATEGORY RANKS COUNT	
29	113	205	745	4,212

*DLP/AITS