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: 09-08-2025**
Time: 09:00AM to 12:00PM	**RPTM-01**	**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:** _____

09-08-25_Sr.Super60_STERLING BT_Jee-Main_RPTM-01_Test Syllabus

MATHEMATICS : Functions and Inverse Trigonometric Function

PHYSICS : Thermal physics: Thermal expansion of solids, liquids and gases, Calorimetry, latent heat, Ideal gas laws, Specific heats (Cv and Cp for monoatomic and diatomic gases), Isothermal and adiabatic processes, bulk modulus of gases, Equivalence of heat and work, First law of thermodynamics and its applications (only for ideal gases), Mean free path

Experiments: Plotting a cooling curve for the relationship between the temperature of a hot body and time, Specific heat capacity of a given (i) solid and (ii) liquid by method of mixtures, Specific heat of a liquid using calorimeter

(In Phy & Che Each Out of 25Qs, 10 Qs From NCERT is Mandatory)

CHEMISTRY : Nomenclature, Isomerism: Structural, Stereo, Hybridisation of carbon, bonds, shapes of simple organic molecules, structural and geometrical isomerism, Optical isomerism of compounds containing upto two asymmetric centres, (R, S and E, Z nomenclature excluded) IUPAC nomenclature of simple organic compounds (only hydrocarbons, monofunctional and bi-functional compounds) Conformations of ethane and butane (Newman projections)

(In Phy & Che Each Out of 25Qs, 10 Qs From NCERT is Mandatory)

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. If $[x]$ and $\{x\}$ represent integral and fractional part of x then the function defined by $f(x)=[x]+\sum_{r=1}^{1000}\frac{\{x+r\}}{1000}$ is equal to

   1) $2[x]+\{x\}$ 2) $4x$ 3) x 4) $4[x]+1000\{x\}$

2. Suppose $f(x)=(x+1)^2$ for $x\geq -1$. If $h(x)$ is the function whose graph is the reflection of the graph of $f(x)$ with respect to the line $y=x$ and $g(x)$ is the function whose graph is obtained by shifting 3 units to the left the graph of $h(x)$, then $g(x)$ equals.

   1) $\sqrt{x-3}-1, x\geq 3$ 2) $\frac{1}{(x+4)^2}, x>-1$ 3) $\sqrt{x-2}, x>2$ 4) $\sqrt{x+3}-1, x>-3$

3. Let $f(x)=\frac{x-[x]}{1+x-[x]}$, $x\in R$, then the range of f is

   1) $[0,1]$ 2) $[0,1/2]$ 3) $[0,1/2)$ 4) $(0,1)$

4. A root of the equation $17x^2+17x\tan\left[2\tan^{-1}(1/5)-\pi/4\right]-10=0$ is

   1) 10/17 2) -1 3) $-1/17$ 4) 1

5. If $\tan^{-1}\frac{a}{x}+\tan^{-1}\frac{b}{x}+\tan^{-1}\frac{c}{x}+\tan^{-1}\frac{d}{x}=\frac{\pi}{2}$ then $x^4-x^2\sum ab+abcd$ is equal to

   1) -1 2) 0 3) 1 4) 2

6. **Statement-I :** $\cos^{-1}x=2\sin^{-1}\sqrt{\frac{1-x}{2}}=2\cos^{-1}\sqrt{\frac{1+x}{2}}$

   Statement-II : $\sin^{-1}(-x)=-\sin^{-1}x, \cos^{-1}(-x)=\pi-\cos^{-1}x \quad (-1\leq x\leq 1)$

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

7. The value of $\sin^{-1}\left\{\cot\left(\sin^{-1}\sqrt{\frac{2-\sqrt{3}}{4}}+\cos^{-1}\frac{\sqrt{12}}{4}+\sec^{-1}\sqrt{2}\right)\right\}$ is equal to

1) $\pi/4$ 2) $\pi/6$ 3) 0 4) $\pi/2$

8. If $1<x<\sqrt{2}$, the number of solutions of the equation

$\tan^{-1}(x-1)+\tan^{-1}x+\tan^{-1}(x+1)=\tan^{-1}3x$ is

1) 0 2) 1 3) 2 4) 3

9. $f:R\to R$ is defined by $f(x)=\begin{cases}[|x-5|] & for \quad x<5\\ |[x-5]| & for \quad x\geq 5\end{cases}$ then $fof\left(\frac{-7}{2}\right)=$ ____ (here [x] is the greatest integer not exceeding x)

1) $(fof)\left(\frac{-11}{2}\right)$ 2) $(fof)\left(\frac{-9}{2}\right)$ 3) $(fof)(3)$ 4) $(fof)\left(\frac{9}{2}\right)$

10. For $x\in R$ two real valued functions $f(x)$ and $g(x)$ are such that $g(x)=\sqrt{x}+1$ and $fog(x)=x+3-\sqrt{x}$. Then $f(1)$ is equal to

1) 1 2) 3 3) 0 4) -3

11. $\sin\left[\sin^{-1}\frac{3}{5}+\sin^{-1}\frac{5}{13}+\sin^{-1}\frac{33}{65}\right]$ is equal to

1) 0 2) $\frac{32}{65}$ 3) $\frac{33}{65}$ 4) 1

12. If $f(x)=\left[x^2\right]-[x]^2$ where [ ]is greatest integer function $x\in[0,n]n\in N$ then the no. of elements in the range of $f(x)$ are

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

13. If $\alpha>\beta>\gamma>0$ then the expression

$$\cot^{-1}\left\{\beta+\frac{(1+\beta^2)}{(\alpha-\beta)}\right\}+\cot^{-1}\left\{\gamma+\frac{(1+\gamma^2)}{(\beta-\gamma)}\right\}+2\pi+\cot^{-1}\left(\alpha+\frac{1+\alpha^2}{\gamma-\alpha}\right)=$$

1) 0 2) π 3) 2π 4) 3π

14. Consider the real valued function satisfying $2f(\sin x)+f(\cos x)=x$, then $f\left(\frac{1}{2}\right)=$ _____

1) 1 2) 2 3) 0 4) 4

15. If the function $f:[1,\infty)\to[1,\infty)$ is defined by $f(x)=2^{x(x-1)}$ then $f^{-1}(x)$ is equal to

1) $\left(\frac{1}{2}\right)^{x(x-1)}$ 2) $\frac{1}{2}\left(1+\sqrt{1+4\log_2 x}\right)$

3) $\frac{1}{2}\left(1-\sqrt{1-4\log_2 x}\right)$ 4) Not defined

16. If $f(x)=\frac{4x+3}{6x-4}, x\neq\frac{2}{3}$, and $(f0f)(x)=g(x)$ where $g:R-\left\{\frac{2}{3}\right\}\to R-\left\{\frac{2}{3}\right\}$, then $(gogogog)(5)$ is equal to

1) 5 2) -5 3) $-\frac{19}{20}$ 4) $\frac{19}{20}$

17. Matching the following

	Column-I		Column-II
I)	$\sin^{-1}\left(\frac{1}{2}\right)+\cos^{-1}\left(-\frac{1}{2}\right)$	p)	$\frac{7\pi}{6}$
II)	$\sin^{-1}\left(-\frac{1}{2}\right)+\cos^{-1}\left(\frac{1}{2}\right)$	q)	$\frac{5\pi}{6}$
III)	$\tan^{-1}\left(\sqrt{3}\right)+\cot^{-1}\left(-\sqrt{3}\right)$	r)	$\frac{\pi}{6}$
IV)	$\sin^{-1}\left(\frac{1}{\sqrt{2}}\right)+\cos^{-1}\left(\frac{-1}{\sqrt{2}}\right)$	s)	π

1) $I-q, II-r, III-p, IV-s$ 2) $I-q, II-r, III-s, IV-p$

3) $I-s, II-p, III-r, IV-q$ 4) $I-p, II-q, III-r, IV-s$

18. Let f be a function such that $f(x)+3\left(\frac{24}{x}\right)=4x(x\neq 0)$ then $f(3)+f(8)-13$ is equal to

1) 11 2) 13 3) -2 4) 0

19. Let $f:R\to R$ be defined as $f(x)=2x-1$ and $g:R-\{1\}\to R$ be defined as $g(x)=\frac{x-\frac{1}{2}}{x-1}$ then fog is

1) Both one-one and onto 2) onto but not one-one

3) Neither one-one nor onto 4) one-one but not on-to

20. Let $f(x)=\frac{x-2}{2x+1}, g(x)=3x+1, h(x)=x^2$ then then value of $(fogoh)(x)$ is

1) $\frac{3x^2+1}{6x^2+3}$ 2) $\frac{3x^2-1}{6x^2+3}$ 3) $\frac{3x^2+1}{6x^2-3}$ 4) $\frac{3x^2-1}{6x^2-3}$

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. Sum of the all solutions of $\sin^{-1}2x+2\cos^{-1}x=\pi+\sin^{-1}x$ is equal to

22. If $\sin^{-1}x+\sin^{-1}y+\sin^{-1}z=3\pi/2$,then the value of $3000(x+y+z)-\frac{816}{x^2+y^2+z^2}=8728K$.

Then K=

23. Let $f(x)=\frac{e^x-e^{-x}}{2}$ and if $f(g(x))=x$, then $g\left(\frac{e^{1002}-1}{2e^{501}}\right)$ is equal to 167K. Then

K=

24. The least integral value of k for which

$(k-2)x^2+8x+k+4>\sin^{-1}(\sin 12)+\cos^{-1}(\cos 12)$ for all $x\in R$ is _____

25. If 'f' is a polynomial function satisfying

$2+f(x)f(y)=f(x)+f(y)+f(xy)\forall x,y\in R$ and if $f(2)=5$. Then the value of $f(7)=$_____

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. In the resistance thermometer the resistance at 0^0C and 100^0C are 6.74 and 7.74 ohm respectively. The temperature corresponding to 6.53 ohm resistance is :

1) $+53^0C$ 2) $+21^0C$ 3) -53^0C 4) -21^0C

27. A rod X of length l and of coefficient of linear expansion α is joined in series with another rod Y of length $2l$ and of coefficient of linear expansion 2α. Average coefficient of linear expansion of the composite rod is :

1) 2.25α 2) 1.67α 3) 3.33α 4) 1.5α

28. A lead bullet just melts when stopped by an obstacle Assuming that 25% of heat is absorbed by the obstacle, find the minimum velocity of the bullet if its initial temperature is 27^0C. [Melting point of lead=327^0C; specific heat of lead =0.03 cal/g^0C ; Latent heat of fusion of lead = 6 cal/g and J=4.2 J/cal]

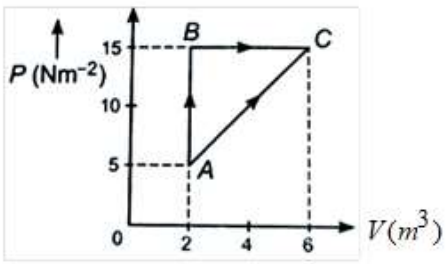
1) 210 m/s 2) 520 m/s 3) 410 m/s 4) 4 km/s

29. How many gram of ice at -14^0C is needed to cool 200g of water from 25^0C to 10^0C?

($c_{ice}=0.5$ c_{ice}=0.5cal/g^{0}C and L_{ice} =80 cal/g)

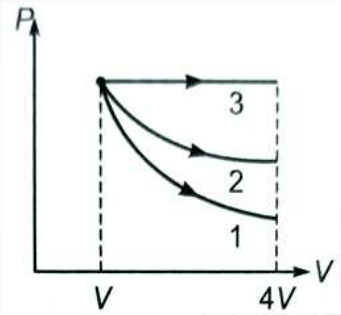
1) 31 g 2)20 g 3) 41 g 4) 62 g

30. In the given figure, an ideal gas changes its state from state A to state C by two paths ABC and AC. The internal energy of gas at A is10J and amount of heat supplied to change its state to C through the path AC is 200J. Calculate the internal energy at C.



1) 150J 2) 170J 3) 180J 4)200J

31. An ideal gas is made to expand from an initial volume V to a final volume 4V through three different thermodynamic processes as shown in Fig. Process I is adiabatic, 2 isothermal and 3 isobaric. If $\Delta U_1, \Delta U_2$ and ΔU_3 denote the charge in internal energy of the gas in the three processes respectively, then :



1) $\Delta U_1 > \Delta U_2 > \Delta U_3$ 2) $\Delta U_1 < \Delta U_3 < \Delta U_2$ 3) $\Delta U_1 < \Delta U_2 < \Delta U_3$ 4) $\Delta U_3 < \Delta U_2 < \Delta U_1$

32. A certain quantity of heat energy is given to diatomic ideal gas which expands at constant pressure. The fraction of the heat energy that is converted into work is :

1) 2/3 2) 2/7 3) 1/5 4) 1/7

33. In an adiabatic charge, the pressure P and temperature T of a diatomic gas are related by the relation $P\alpha T^c$ where c equals

1) 5/3 2) 2/5 3) 3/5 4) 7/2

34. In an experiment a sphere of aluminum of mass 0.20 kg is heated upto $150^0 C$. Immediately, it is put into water of volume 150 cc at $27^0 C$ kept in a calorimeter of water equivalent 0.025 kg. Final temperature of the system is $40^0 C$. The specific heat of aluminum is : (take 4.2 joule =1 calorie)

1) $378 J / kg -^0 C$ 2) $315 J / kg -^0 C$ 3) $476 J / kg -^0 C$ 4) $434 J / kg -^0 C$

35. A mixture of hydrogen and oxygen has volume $2000 cm^3$, temperature 300K, pressure 100kPa and mass 0.76g. The ratio of number of moles of hydrogen to number of moles of oxygen in the mixture will be :

1) 1/3 2) 3/1 3) 1/16 4) 16/1

36. A flask contains hydrogen and oxygen in the ratio of 2:1 by mass at temperature 27^0C. The ratio of average kinetic energy per molecule of hydrogen and oxygen respectively.

1) 2:1 2) 1:1 3) 1:4 4) 4:1

37. A gas mixture consists of 2 moles of oxygen and 4 moles of neon at temperature T. Neglecting all vibrational modes, the total internal energy of the system will be :

1) 8 RT 2) 16 RT 3) 4 RT 4) 11 RT

38. In the adiabatic process, the density of a diatomic gas becomes 32 times its initial value. The final pressure of the gas is found to be n times the initial pressure. The values of n is :

1) 32 2) 326 3) 128 4) 1/32

39. The height of victoria falls is 63m. What is the difference is temperature of water at the top and at the bottom of fall? [Given 1cal =4.2J and specific heat of water =1 $\text{cal}\,g^{-1}\,{}^0C^{-1}$]

1) 0.147^0C 2) 14.76^0C 3) 1.476^0C 4) 0.014^0C

40. **Assertion (A) :** A temperature change which increases the length of a steel rod by 1% will increase its volume by 3%

Reason (R) : The coefficient of volume expansion is nearly three times the coefficient of linear expansion.

1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
2) If both Assertion and Reason are true and the Reason is not a correct explanation of the Assertion.
3) If Assertion is true but Reason is false.
4) If both Assertion and Reason are false.

41. **Assertion (A) :** An ideal gas expands isothermally. During this process, it absorbs 25 J heat. In the light of the first law of thermodynamics, work done on the gas will be $25J$.

Reason (R) : There will be no change in the internal energy of the gas during isothermal expansion.

1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.

2) If both Assertion and Reason are true and the Reason is not a correct explanation of the Assertion.

3) If Assertion is true but Reason is false.

4) If both Assertion and Reason are false.

42. Statement-I : If heat is added to a system, its temperature must increase.
Statement-II : If positive work is done by a system in a thermodynamic process, its volume must increase. In the light of the above statements, choose the correct answer from the options given below

1) Statement-I is true, Statement-II is false

2) Both Statement-I and Statement-II are false

3) Statement-I is false, Statement-II is true

4) Both Statement-I and Statement-II are true

43. Statement-I : The total translational kinetic energy of all the molecules of a given mass of an ideal gas is 1.5 times the products of its pressure and its volume. Because
Statement-II : The molecules of gas collide with each other and the velocities of the molecules change due to the collisions.

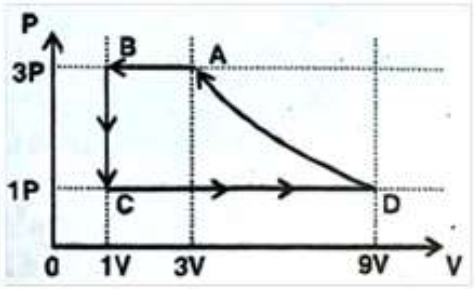
1) Statement-I is true, Statement-II is false

2) Both Statement-I and Statement-II are false

3) Statement-I is false, Statement-II is true

4) Both Statement-I and Statement-II are true

44. One mole of a monatomic gas is taken through a cycle ABCDA as shown in the P.V. diagram Column-II give the characteristics involved in the cycle. Match them with each of the processes given in Column-I.

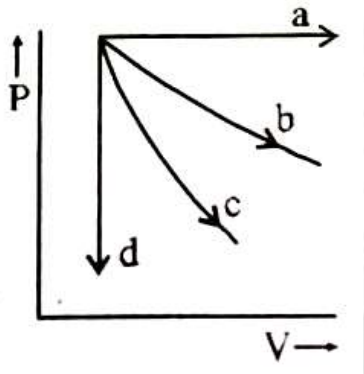


Column-I	Column-II
I) Process $A \to B$	p) Internal energy decreases
II) Process $B \to C$	q) Internal energy increases
III) Process $C \to D$	r) Heat is lost
IV) Process $D \to A$	s) Heat is gained
	t) Work is done on the gas.

1) $I-prt; II-pr; III-qs; IV-rt$ 2) $I-qs; II-rt; III-ps; IV-rt$

3) $I-rt; II-qr; III-sr; IV-rt$ 4) $I-tq; II-pr; III-st; IV-ps$

45. The given diagram shows four process i.e., isochoric isobaric, isothermal and adiabatic. The correct assignment of the process, in the same order is given by :



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

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. The area of cross-section of a railway track is 0.01 m^2. The temperature variation is 10^0C. Coefficient of linear expansion of material of track is $10^{-5}\ /^0\ C$. The energy (in J/m) stored per meter in the track is _____ (Youngs's modulus of material of track is $10^{11}\ Nm^{-2}$)

47. A liquid at 30^0C is poured very slowly into a calorimeter that is at temperature of 110^0C. The boiling temperature of the liquid is 80^0C. It is found that the first 5gm of the liquid completely evaporates. After pouring another 80 gm of the liquid. The equilibrium temperature is found to be 50^0C. The ratio of latent heat of liquid to its specific heat will be _____ ^0C

48. A diatomic gas $(\gamma = 1.4)$ does 400J of work when it is expanded isobarically. The heat given to the gas in the process is _____(in J)

49. At a certain temperature, the degree of freedom per molecule for gas is 8. The gas performs 150 J of work when it expands under constant pressure. The amount of heat absorbed by the gas will be _____J.

50. A cubical block of co-efficient of linear expansion α, is submerged partially inside a liquid of co-efficient of volume expansion γ_l. On increasing the temperature of the system by ΔT, the height of the cube inside the liquid remains unchanged.

Then $\frac{\gamma_l}{\alpha}$ is _____

CHEMISTRY

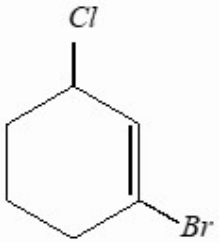
Max Marks: 100

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. The correct IUPAC Nomenclature for the following compound is :



1) 2-Bromo-6-chloro cyclohex-1-ene 2) 6-Bromo-2-chloro cyclohexene

3) 3-Bromo-1-chloro cyclohexene 4) 1-Bromo-3-chloro cyclohexene

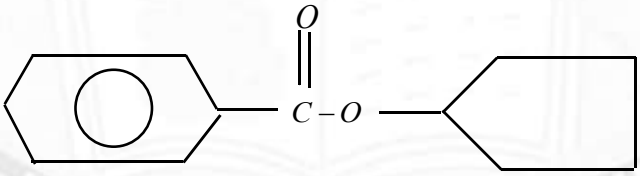
52. Match the following

Column-I	Column-II
I) Cyclo hexane	p) Aromatic (Bicyclic)
II) Napthalene	q) Aromatic (Tricyclic)
III) Anthracene	r) Hetero cyclic
IV) Pyridine	s) Alicyclic

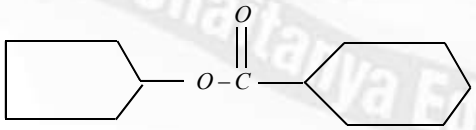
1) $I-q, II-s, III-q, IV-r$ 2) $I-s, II-p, III-q, IV-r$

3) $I-s, II-p, III-r, IV-q$ 4) $I-s, II-q, III-p, IV-r$

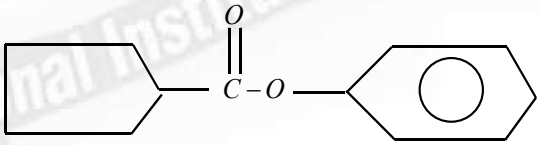
53. Which of the following is metamer of given compound (X) ?



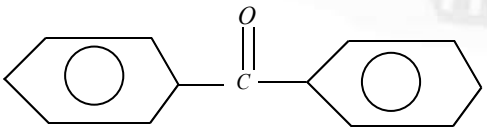
1)



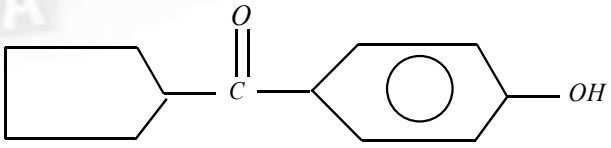
2)



3)



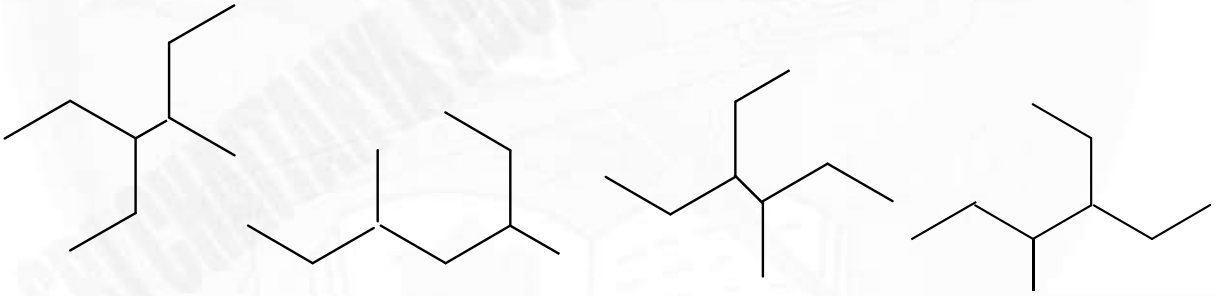
4)



54. Assertion (A) : The IUPAC name of $CH_3-CH=CH-C\equiv C-H$ is pent-3-en-1-yne and not pent-2-en-4-yne.
Reason (R) : Lowest locant rule for multiple bond is preferred.
1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
2) If both Assertion and Reason are true and the Reason is not a correct explanation of the Assertion.
3) If Assertion is true but Reason is false.
4) If both Assertion and Reason are false.

55. Assertion (A) : All compounds having $C=C$ bond exhibits geometrical Isomerism.
Reason (R) : Rotation about $C=C$ bond is not restricted
1) If both Assertion and Reason are true and the Reason is the correct explanation of the Assertion.
2) If both Assertion and Reason are true and the Reason is not a correct explanation of the Assertion.
3) If Assertion is true but Reason is false.
4) If both Assertion and Reason are false

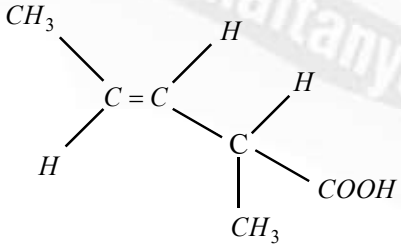
56.



(1) (2) (3) (4)

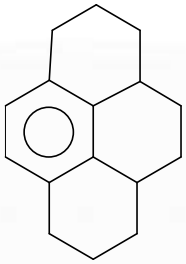
Choose the statement that best describes given compounds.
1) 1,3,4 represent same compound
2) 1 and 3 are isomer of 2 and 4
3) 1,4 are isomer of 2 and 3
4) All the structure represent the same compound

57. The given compound shows :



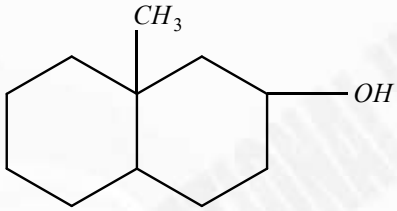
1) tautomerism
2) geometrical isomerism only
3) optical isomerism only
4) geometrical and optical isomerism

58. Total number of sp^3-hybridized orbitals in the given compound is :



1) 20 2) 50 3) 40 4) 30

59. Number of stereo center and stereoisomer of the given compound :

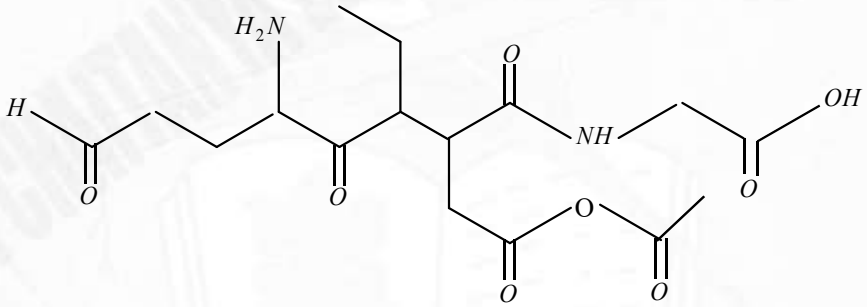


1) 1 and 2 2) 2 and 4 3) 3 and 8 4) 3 and 6

60. Which of the following conformations of n-butane is least stable?

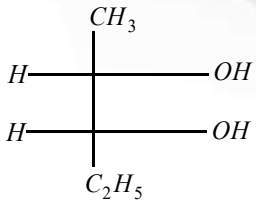
1) Gauche 2) Anti 3) Eclipsed 4) Fully eclipsed

61. Number of functional groups present in the following compound is :

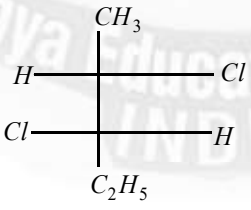


1) 5 2) 7 3) 6 4) 8

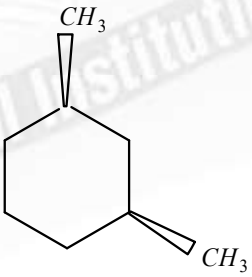
62. Which of the following compounds are meso forms?



(1)



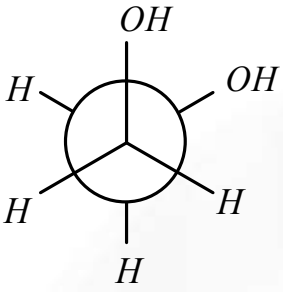
(2)

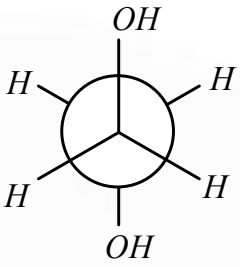


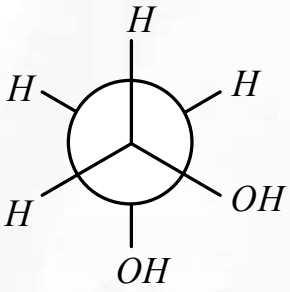
(3)

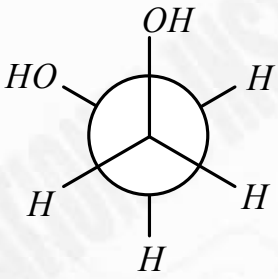
1) 1 only 2) 3 only 3) 1 and 2 4) 2 and 3

63. Which of the following conformers of 1,2-diol cannot form intramolecular H-bond?

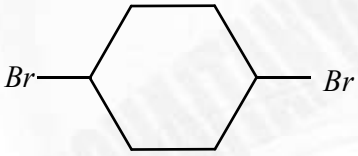
1) 

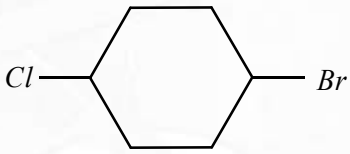
2) 

3) 

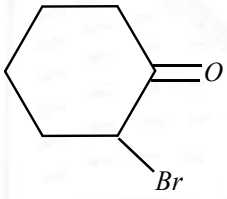
4) 

64. Among the following compounds, the one which can exhibit chirality is :

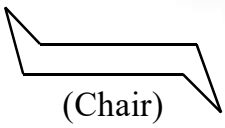
1) 

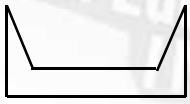
2) 

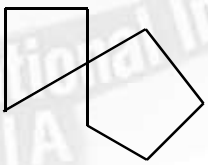
3) 

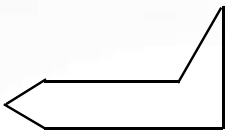
4) 

65. Which of the following is most stable conformer of cyclo hexane

1)  (Chair)

2)  (Boat)

3)  (Twist boat)

4)  (Half chair)

66. How many optically active stereoisomers are possible for 2,-3-butanediol?

1) 1 2) 2 3) 3 4) 4

67. The correct decreasing order of priority of functional groups in naming an organic compound as per IUPAC system of nomenclature is :

1) $-COOH > -CONH_2 > -COCl > -CHO$ 2) $-SO_3H > COCl > -CONH_2 > -CN$

3) $-COOH > -COCl > -NH_2 > C=O$ 4) $-COOH- > -COOR > -CONH_2 > COCl$

68. Which of the following is the correct IUPAC name :

1) 3-Ethyl-4,4-dimethylheptane 2) 4,4-dimethyl-3-ethylheptane

3) 5-Ethyl-4,4-dimethylheptane 4) 4,4-Bis(methyl)-3-ethylheptane.

69. **Statement-I :** Chain isomerism is observed in compounds containing four or more than four carbon atoms.

Statement-II : Only alkanes show chain isomerism.

1) Statement-I is true, Statement-II is false

2) Both Statement-I and Statement-II are false

3) Statement-I is false, Statement-II is true

4) Both Statement-I and Statement-II are true

70. **Statement-I :** Pent-1-ene and pentan-2-one are positional isomers.

Statement-II : Positional isomers differ in the position of substituents or functional groups.

1) Statement-I is true, Statement-II is false

2) Both Statement-I and Statement-II are false

3) Statement-I is false, Statement-II is true

4) Both Statement-I and Statement-II are true

SECTION-II (NUMERICAL VALUE TYPE)

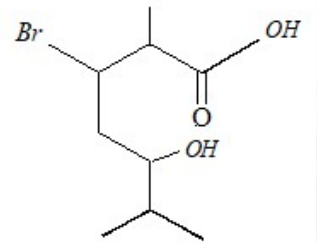
This section contains **5 Numerical Value Type Questions.** The Answer should be within **0 to 9999.** If the Answer is in **Decimal** then round off to the **Nearest Integer** value (Example i,e. If answer is above **10** and less than **10.5** round off is **10** and If answer is from **10.5** and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

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

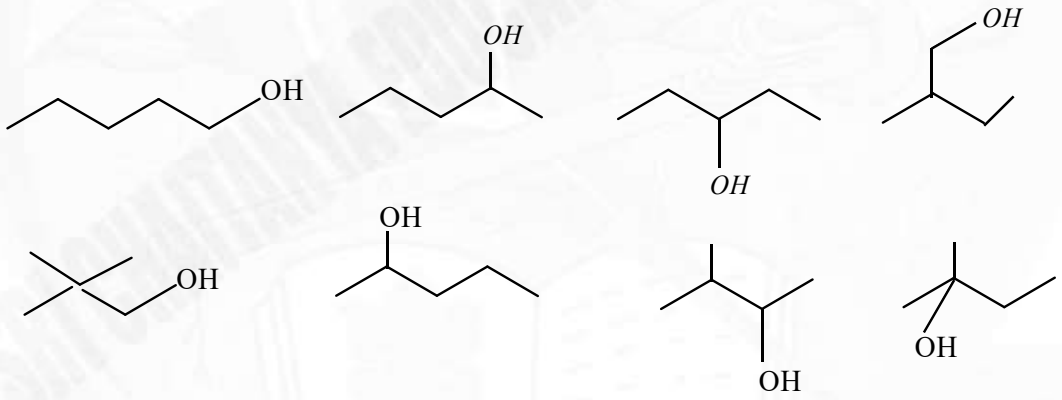
71. The number of structural isomers for C_7H_{16} is_____

72. Total number of possible stereo isomers of Dimethyl cylco butane _____

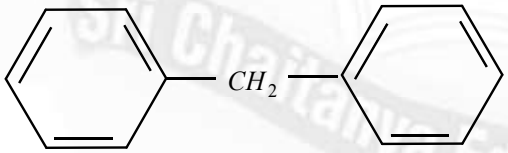
73. Sum of the position of locants for the given organic compound as per IUPAC_____



74. How many number of compounds, which have same IUPAC name?



75. In the given compound how many structural isomers are possible when one of the hydrogen is replaced by chlorine atom?



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29	113	205	745	4,212

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