

JEE-ADVANCED-2014-P2-Model

Time: 2.00 PM to 5.00 PM

IMPORTANT INSTRUCTIONS

Max Marks: 180

PHYSICS:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 1 – 10)	Questions with Single Correct Choice	3	-1	10	30
Sec – II(Q.N : 11 – 16)	Questions with Comprehension Type (3 Comprehensions – 2 +2+2 = 6Q)	3	-1	6	18
Sec – III(Q.N : 17 – 20)	Matrix Matching Type	3	-1	4	12
Total				20	60

CHEMISTRY:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 21 – 30)	Questions with Single Correct Choice	3	-1	10	30
Sec – II(Q.N : 31 – 36)	Questions with Comprehension Type (3 Comprehensions – 2 +2+2 = 6Q)	3	-1	6	18
Sec – III(Q.N : 37 – 40)	Matrix Matching Type	3	-1	4	12
Total				20	60

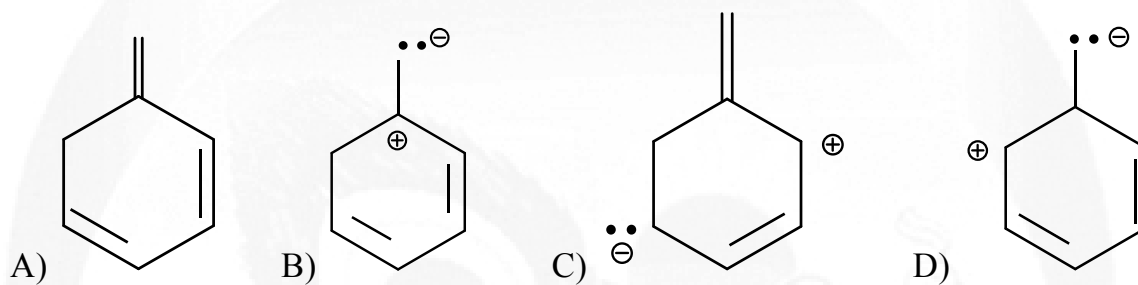
MATHEMATICS:

Section	Question Type	+Ve Marks	- Ve Marks	No.of Qs	Total marks
Sec – I(Q.N : 41 – 50)	Questions with Single Correct Choice	3	-1	10	30
Sec – II(Q.N : 51 – 56)	Questions with Comprehension Type (3 Comprehensions – 2 +2+2 = 6Q)	3	-1	6	18
Sec – III(Q.N : 57 – 60)	Matrix Matching Type	3	-1	4	12
Total				20	60

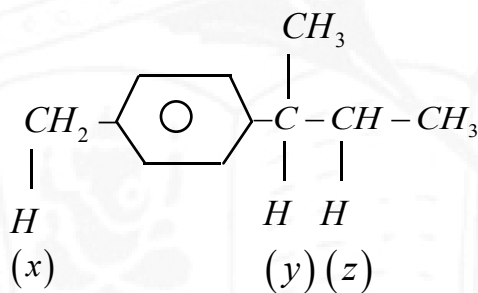
PART-II_CHEMISTRY**Max Marks : 60****Section-1****(One or more options correct type)**

This section contains 10 Multiple Choice questions. Each Question has Four choices (A), (B), (C) and (D). Out of Which **Only One is correct**

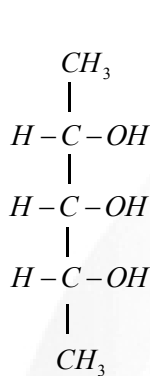
21. Which of the following is not a resonating structure of the others?



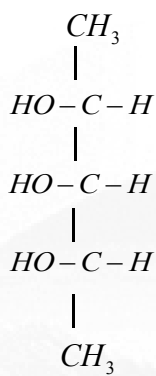
22. The acidic strength of the H-atoms notified is _____

A) $x > y > z$ B) $y > x > z$ C) $y > z > x$ D) $z > x > y$

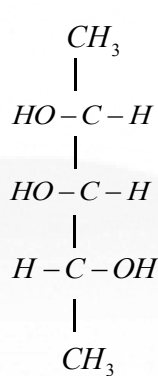
23. Which of the following are enantiomers ?



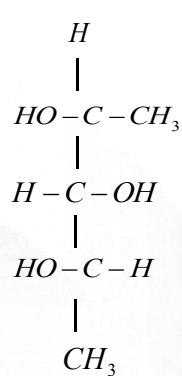
(P)



(Q)



(R)



(S)

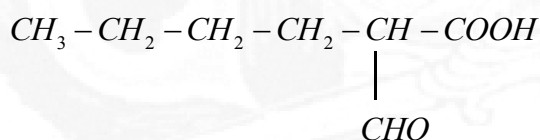
A) P and Q

B) P and R

C) P & S

D) R & S

24. The IUPAC name of the following compound is ____



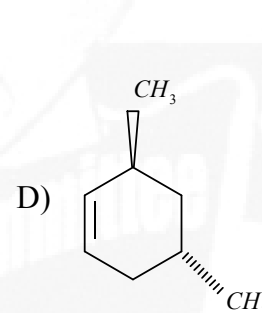
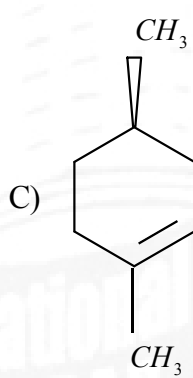
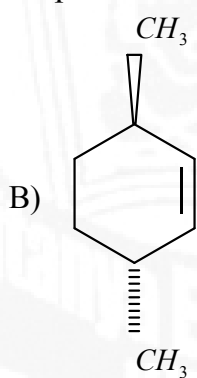
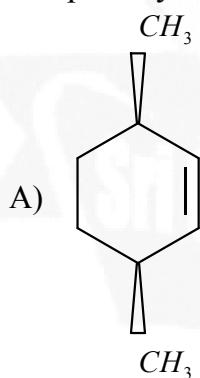
A) 2-formyl hexanoic acid

B) 2-n-butyl-2-oxo-propanoic acid

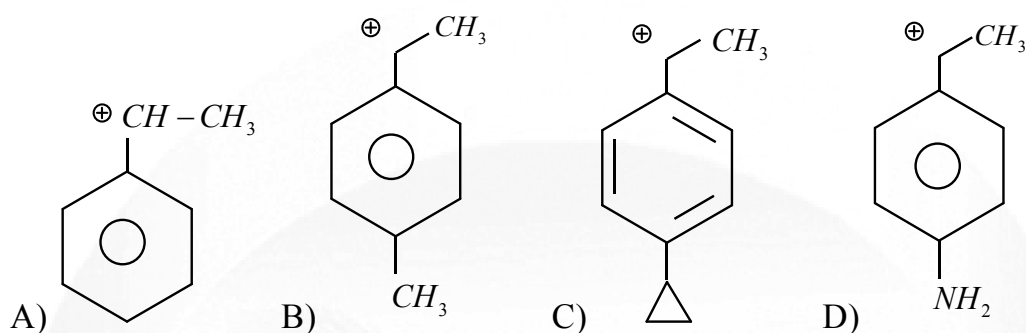
C) 2-formyl-2-n butyl propanoic acid

D) 2-n-butyl-2-formyl propanoic acid

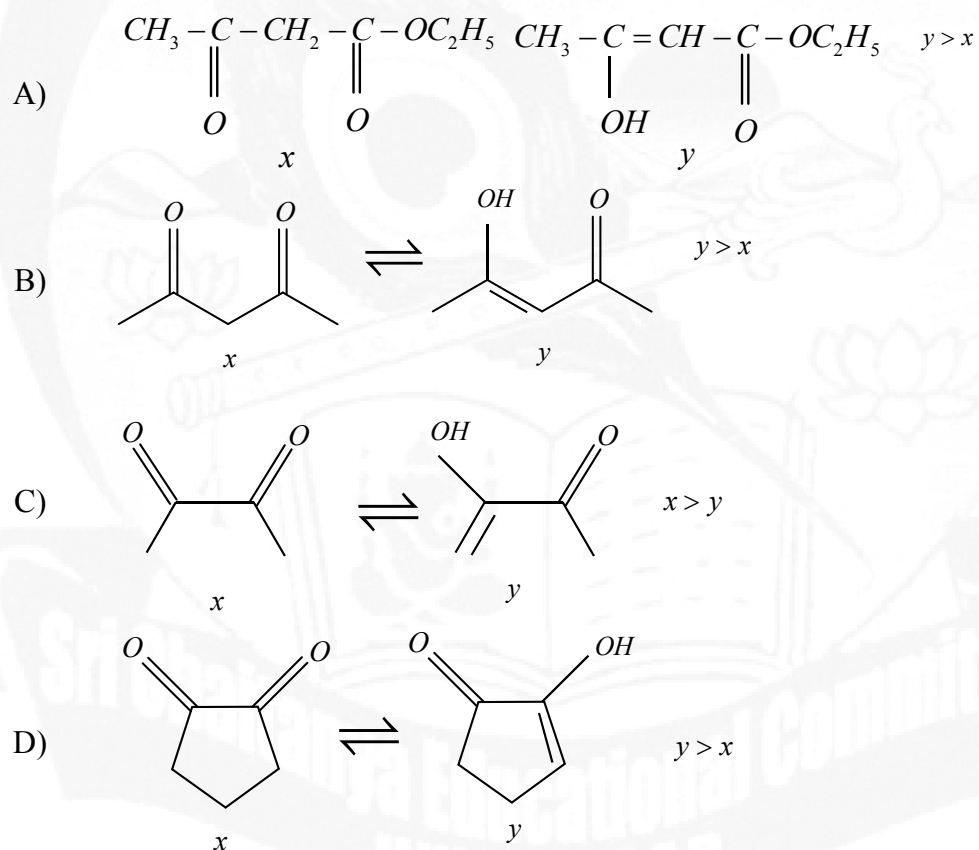
25. An optically active compound with the formula C_8H_{14} on hydrogenation gives an optically inactive compound. It is



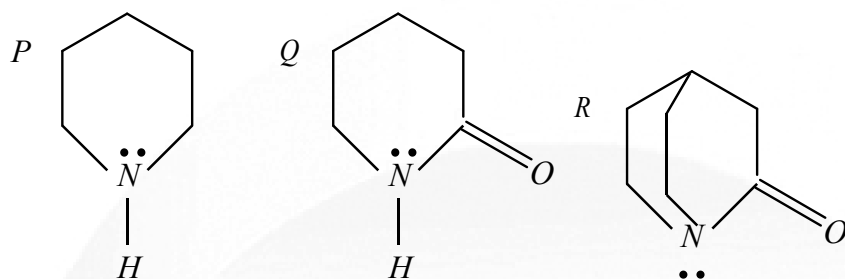
26. Which of the following carbocation is more stable



27. Which of the following statement is not correct ?



28. Which is the correct order of basic strength of the following

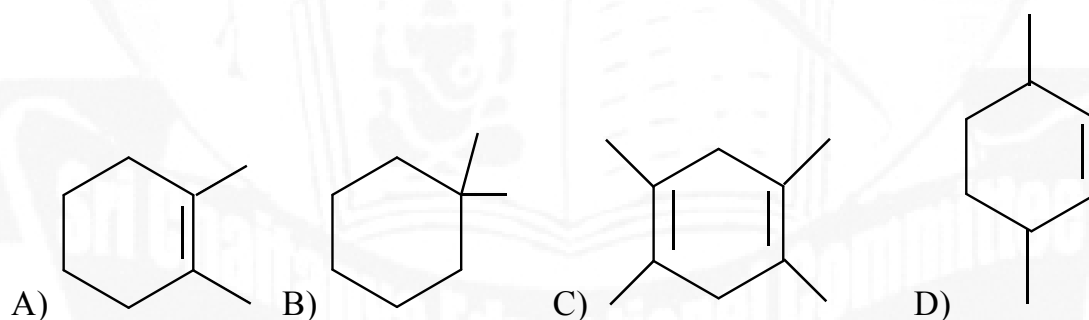


- A) $P > Q > R$ B) $P > R > Q$ C) $R > P > Q$ D) $P > Q \equiv R$

29. Which of the following is correct statement ?

- A) The first pK_a of maleic acid is greater than that of fumaric acid
B) The first pK_a of maleic acid is less than that of fumaric acid
C) The second pK_a of fumaric acid is greater than that of maleic acid
D) The second pK_a of both acids is equal

30. Which of the following exhibits stereoisomerism ?



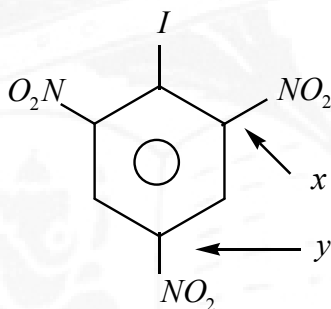
Section-2
(Paragraph Type)

This section contains 3 paragraphs each describing theory, experiment, data etc. Six questions relate to three paragraphs with two questions on each paragraph. Each question pertaining to a particular **paragraph** should have only one correct answer among the four choices A, B, C and D.

Paragraph For Questions 31 & 32

A molecule or ion or radical can exhibit resonance when it is planar. Delocalisation of π electron cloud is not possible if it is not planar. When atoms or groups in a molecule are forced out of plane due to crowding around them, they are not involved in resonance with the rest of the species. This is steric inhibition. Properties change due to steric inhibition

31. There are two C-N bonds in the following compound one between ortho carbon and NO_2 group. It is x . The other between paracarbon and NO_2 It is y . Which of the following statement is correct regarding x and y



- A) bond length of x and y are same
B) bond length of x is greater than that of y
C) bond length of x is less than that of y
D) bond length of x and y depend on temperature

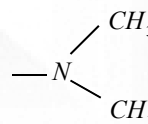
32. 2,4,6-trinitro-N,N-dimethyl aniline is a stronger base than 2,4,6-trinitro aniline. Which of the following is a valid reason for it ?

A) 2,4,6 – trinitro aniline is a primary amine

B) 2,4,6 trinitro-N,N dimethyl aniline is a tertiary amine

C) In 2,4,6-trinitro-N,N-dimethyl aniline due to crowding

D) The conjugate acid of 2,4,6-trinitro-N,N-dimethyl aniline is stabilised by resonance

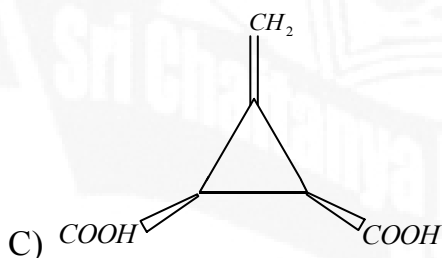
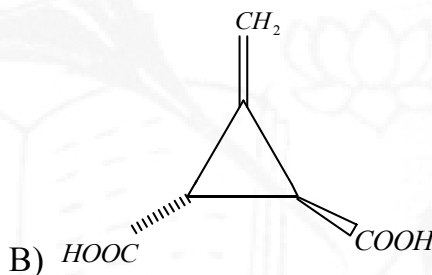
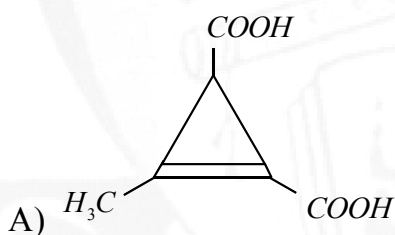


group goes out of plane of the amine

Paragraph For Questions 33 & 34

Feist's acid is a dibasic acid with a three membered ring. It is optically active resolvable and has two chiral centres

33. The structures of Feist's acid is _____



D) all

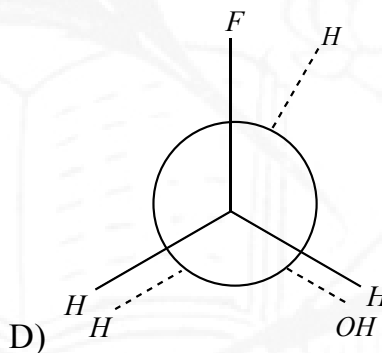
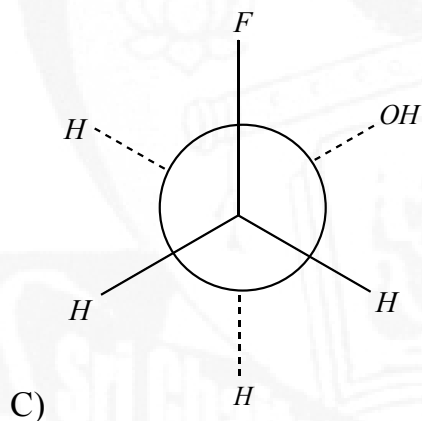
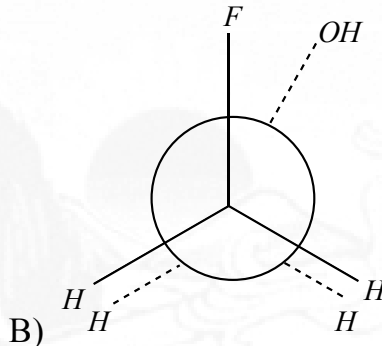
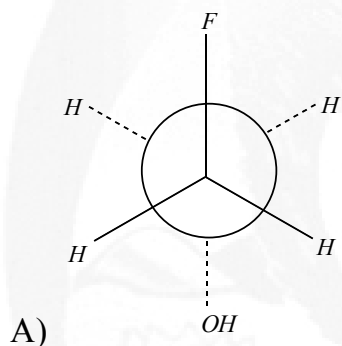
34. In how many stereoisomeric forms it exists ?

- A) 2 B) 4 C) 3 D) 5

Paragraph For Questions 35 & 36

Conformers are different forms of a molecule arising due to C-C bond rotation with a difference in the spatial arrangement of atoms or groups, around carbon atom. They are eclipsed and staggered forms

35. The most stable conformer of 2-fluoro ethanol is



36. Antiform of butane is more stable than cis eclipsed because _____

- A) It does not have steric strain B) It does not have angle strain
C) It does not have torsional strain D) Both a & c

Section-3
(Matching List Type)

This section contains four questions, each having two matching lists (List-I & List-II). The options for the **correct match** are provided as (A), (B), (C) and (D) out of which **ONLY ONE** is correct.

37. Match the Following: (Four ideal solutions, A, B, C, D are given)

Column I

Column II

(Group)

effect exerted when connected to
benzene ring

A)



P)

exerts –M effect

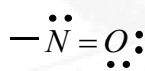
B)



Q)

Exerts +M effect

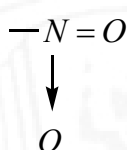
C)



R)

Exerts – I effect

D)



S)

activating

T)

deactivating

A) A-QR, B-ST, C-QST, D-RT

B) A-QS, B-B-RT, C-RT, C-ST

C) A-QRS, B-RT, C-QRS, D-PRT

D) A-QRS, B-ST, C-RT, D-RST

38. Match the Following: (Four ideal solutions, A, B, C, D are given)

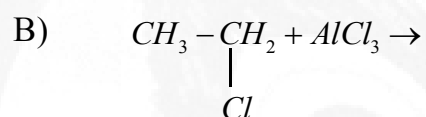
Column I**Column II**

Reaction

Intermediate formed



P) Carbene



Q) Free radical



R) Carbocation



S) Carbanion

A) A-R, B-S, C-R, D-P

B) A-S, B-R, C-Q, D-P

C) A-R, B-Q, C-P, D-S

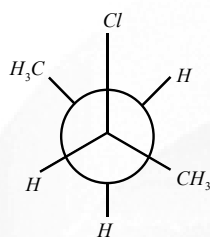
D) A-S, B-R, C-P, D-Q

39. Match the Following: (Four ideal solutions, A, B, C, D are given)

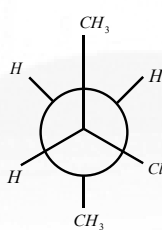
Column I

Column II

A)



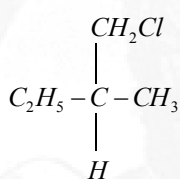
and



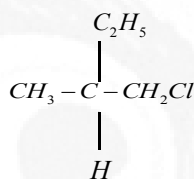
P)

Same

B)



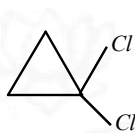
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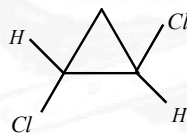
Q)

enantiomers

C)



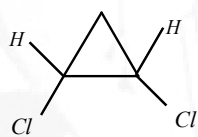
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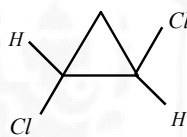
R)

Diastereomers

D)



and



S)

Structural isomers

A) A-Q, B-P, C-S, D-R

B) A-Q, B-S, C-P, D-P

C) A-P, B-Q, C-S, D-R

D) A-P, B-S, C-P, D-R

40. Match the Following: (Four ideal solutions, A, B, C, D are given)

Column I

Column II

A) BH_3

P) cannot act as electrophile or nucleophile

B) singlet carbene

Q) acts as both nucleophile as well as lone pair donor

C) triplet carbene

R) Nucleophile

D) acetylide ion

S) electrophile

A) A-S, B-Q, C-P, D-R

B) A-Q, B-P, C-Q, D-R

C) A-P, B-R, C-P, D-S

D) A-Q, B-R, C-S, D-P