IIT-JEE-2013-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 – 8)	Questions with Multiple Correct Choice	3	-1	8	24
Sec – II(Q.N : 9 – 16)	Questions with Comprehension Type (4 Comprehensions – 2 +2+2+2 = 8Q)	3	-1	8	24
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 –28)	Questions with Multiple Correct Choice	3	-1	8	24
Sec – II(Q.N : 29 – 36)	Questions with Comprehension Type (4 Comprehensions – 2 +2+2+2 = 8Q)	3	-1	8	24
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 – 48)	Questions with Multiple Correct Choice	3	-1	8	24
Sec – II(Q.N : 49 – 56)	Questions with Comprehension Type (4 Comprehensions – 2 +2+2+2 = 8Q)	3	-1	8	24
Sec – III(Q.N : 57 – 60)	Matrix Matching Type	3	-1	4	12
Total				**20**	**60**

CHEMISTRY: **Max. Marks: 60**

SECTION – I

(MULTIPLE CORRECT CHOICE TYPE)

This section contains **8 multiple choice questions.** Each question has 4 choices (A), (B), (C) and (D) for its answer, out of which **ONE OR MORE is/ are correct**

21. The following reaction is achieved by;

A) H_2 / Pd–$BaSO_4$ B) Na / liq.NH_3

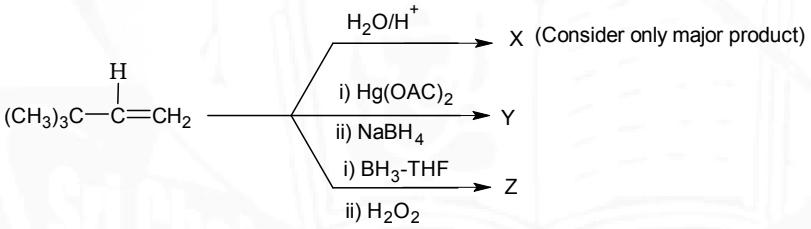
C) H_2 / Ni_2B(P-2 Catalyst) D)B_2H_6-THF;CH_3COOH

22. Which of the following alkanes can't be synthesized by the Wurtz reaction in good yield?

A) 2,4-dimethylpentane B) butane

C) 3,3-dimethylpentane D) 2,2,3,3-tetramethhylbutane

23. The correct statement(s) about the following reaction sequence is/are



A) X is optically inactive

B) Y optically inactive due to racemic mixture

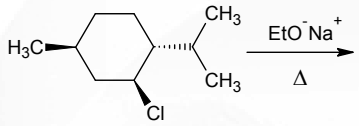
C) Z is optically inactive

D) Z is optically active

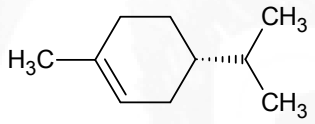
24. Which alkyl halide(s) gives more than one alkene (excluding stereo isomers) on reaction with EtOK?

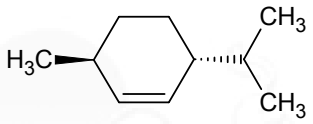
A) 2-bromo-2-methylpentane B) 1-bromo-2-methylpentane

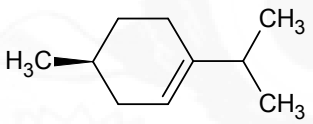
C) 3-bromo-3-ethylpentane D)3-bromo-2,2-dimethylpentane

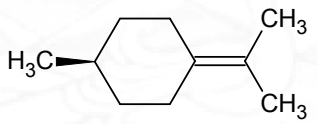
25. 

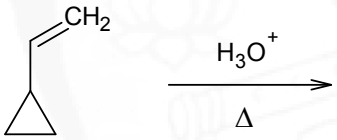
Product(s) formed in the above reaction is/are

A) 

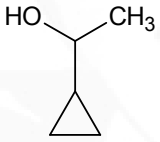
B) 

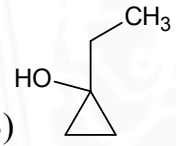
C) 

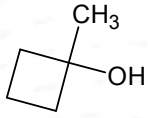
D) 

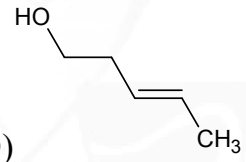
26. 

Possible Product(s) is/are

A) 

B) 

C) 

D) 

27. **Cyclohexene** can be converted into **3-chlorocyclohexene** by

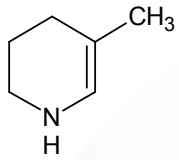
A) Heating it with Cl_2 at high temperatures

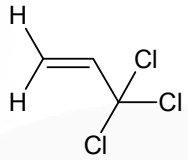
B) Treating it with SO_2Cl_2 in presence of light

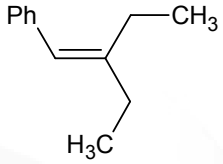
C) Treating it with Me_3COCl in presence of light

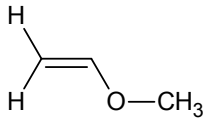
D) Treating it with Cl_2/H_2O

28. Which gives Markovnikov product as a major during addition of HBr?

A) 

B) 

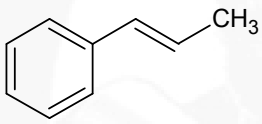
C) 

D) 

SECTION - II
(COMPREHENSION TYPE)

This section contains **4 groups of questions.** Each group has 2 multiple choice questions based on a paragraph. Each question has 4 choices A), B), C) and D) for its answer, out of which **ONLY ONE** is **correct.**

Paragraph for Questions 29 and 30



on treatment with DBr in presence of benzoylperoxide gives (A) as major product. (A) on treatment with NBS gives (B) as major product. (A) on treatment with alc. KOH gives (C) as major product.

Answer the following questions.

29. Number of chiral carbon atom(s) present in (A) and (B) are

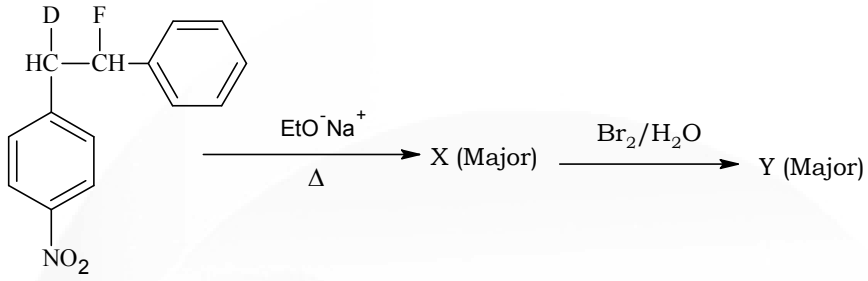
A) 2, 2 B) 2, 1 C) 1, 2 D) 1, 1

30. The structure of (C) is

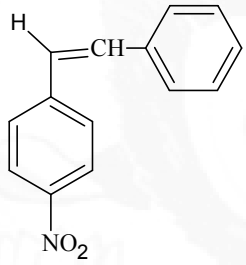
A) $PhCD=CHCH_3$ B) $PhCHDCH=CH_2$

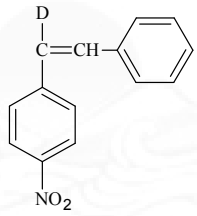
C) $PhCH=CHCH_3$ D) $PhCH_2CD=CH_2$

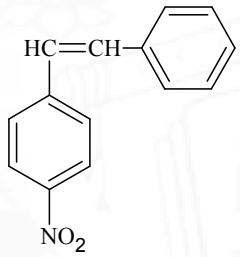
Paragraph for Questions 31 and 32

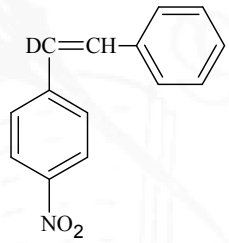


31. The product (X) and the most possible path of its formation are

A)  , E_i

B)  , E_1

(C)  , E_2

(D)  , E_1cb

32. The correct information about the reaction leading to the formation of (Y) is

A) Regioselective, non stereoselective, nucleophillic addition

B) Nonregioselective, nonstereoselective, electrophillic addition

C) Regio selective, stereo specific, electrophillic substitution

D) Regioselective, stereospecific, electrophillic addition

Paragraph for Questions 33 and 34

A and B are structural isomers of C_6H_{10}. Both the isomers decolorizes one equivalent of Bayer's reagent. A on ozonolysis produces 5-oxohexanal where as B on ozonolysis produces 2-methyl pentane-1,5-dial

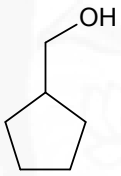
Answer the following questions

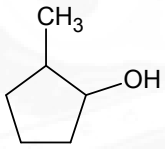
33. Compound B is

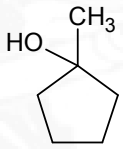
A) 1-methyl cyclopentene B) 1-methyl cyclopent-2-ene

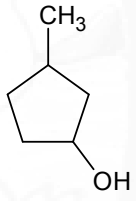
C) 2-methyl cyclopentene D) 3-methyl cyclopentene

34. Compound A on oxymercuration-demercuration produces

A) 

B) 

C) 

D) 

Paragraph for Questions 35 and 36

Catalytic hydrogenation is the phenomena in which H_2 is added to alkene or alkyne in presence of Ni/Pt/Pd.

35. Which has more heat of hydrogenation?

A) Trans-2-butene B) Cis-2-butene

C)1,3-butadiene D) 1-butene

36. Which is most reactive towards catalytic hydrogenation?

A) Trans-2-butene B) Cis-2-butene

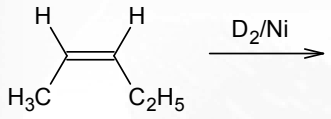
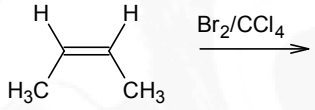
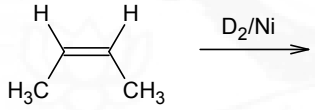
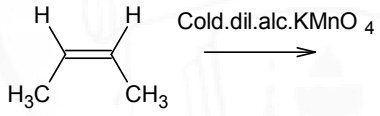
C)1,2-dimethylethene D) 2,3-dimethylbut-2-ene

SECTION – III

(MATRIX MATCH TYPE)

This section contains **4 multiple choice questions.** Each question has matching lists. The codes for the lists have choices (A), (B), (C), and (D) out of which **ONLY ONE** is correct.

37. Match the following

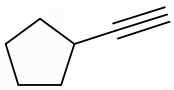
Column I		**Column II**
(P)		(1) Racemic mixture
(Q)		(2) Syn addition
(R)		(3) Anti addition
(S)		(4) Meso compound

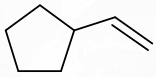
Code:

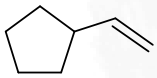
	P	**Q**	**R**	**S**
(A)	4	3	2	1
(B)	1	4	2	3
(C)	1	3	2	4
(D)	2	4	3	1

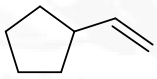
38. Match the reactions in column I with appropriate major products given in column II

Column I

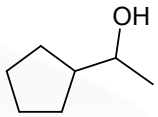
(P)  (i) Sia_2BH - THF, (ii) H_2O_2/NaOH

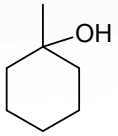
(Q)  (i) B_2H_6 - THF, (ii) H_2O_2/NaOH

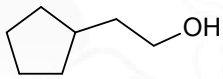
(R)  (i) $Hg(OAc)_2$ - H_2O, (ii) $NaBH_4$

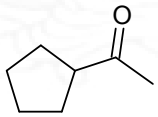
(S)  H_3O^+

Column II

(1) 

(2) 

(3) 

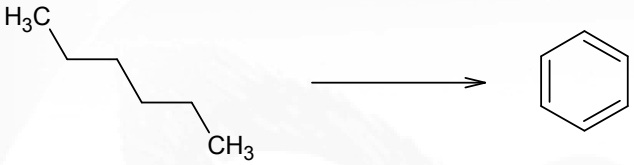
(4) 

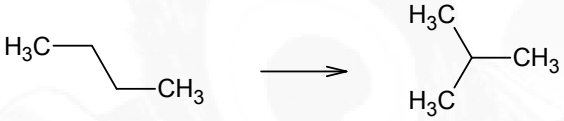
Code:

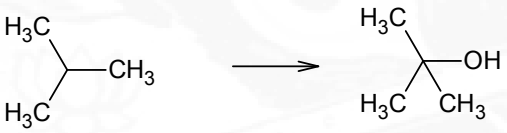
	P	Q	R	S
(A)	1	3	4	2
(B)	4	1	2	3
(C)	1	3	2	4
(D)	4	3	1	2

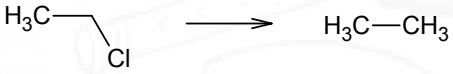
39. The unbalanced chemical reactions given in List I show missing reagent or condition (?) which are provided in List II. Match List I with List II and select the correct answer using the code given below the lists:

List-I **List-II**

P)  1) Zn in dil.HCl

Q)  2) $KMnO_4$

R)  3) Mo_2O_3

S)  4) $Anhy.AlCl_3$ / HCl

Code:

	P	Q	R	S
(A)	3	1	4	2
(B)	4	1	2	3
(C)	3	4	2	1
(D)	4	2	3	1

40. Match the following

Column I	Column II
(P) Hydroboration on alkene	(1) Cyclic threemembered ring
(Q) Addition of bromine to alkene	(2) Cyclic fivemembered ring
(R) Ozonolysis of alkene	(3) Cyclic fourmembered ring
(S) Trimerisation of ethyne	(4) Cyclic sixmembered ring

Code:

	P	Q	R	S
(A)	4	1	2	3
(B)	3	1	2	4
(C)	1	3	4	2
(D)	2	3	4	1