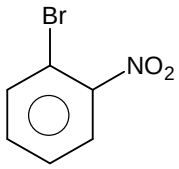
Chemistry PART - II

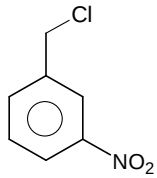
SECTION – A

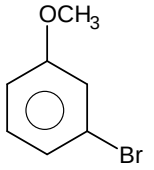
Straight Objective Type

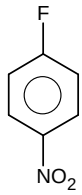
This section contains **10 multiple choice** questions. Each question has 4 choices (A), (B), (C) and (D) for its answer, out which **ONE OR MORE** is/are correct.

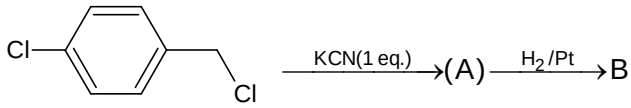
1. Which of the following undergo substitution by NH_2^- / NH_3 ?

(A) 

(B) 

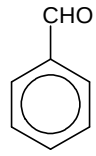
(C) 

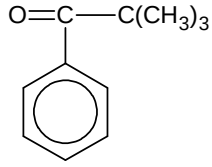
(D) 

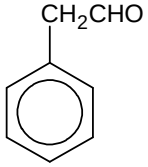
2. 

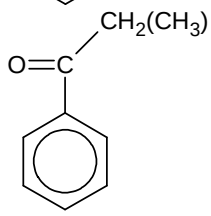
Correct statement for product B is
(A) It is gives positive carbyl amine test
(B) It gives coupting reaction with diazonum salt
(C) It gives alcohol on treatment with nitrous acid
(D) It forms dibromo derivative with bromine water

3. Which of the following molecule (s) contain deuterium after reaction with dil. NaOD in D_2O?

(A) 

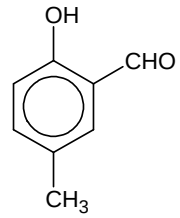
(B) 

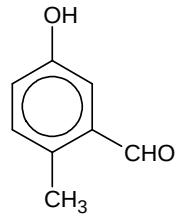
(C) 

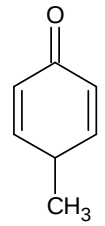
(D) 

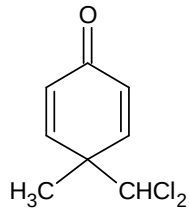
Rough Work

4. Which of the following compounds are formed when p-cresol is treated with $CHCl_3$ in the presence of NaOH?

(A) 

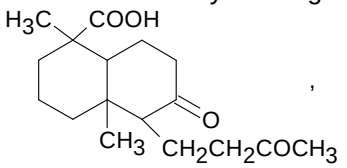
(B) 

(C) 

(D) 

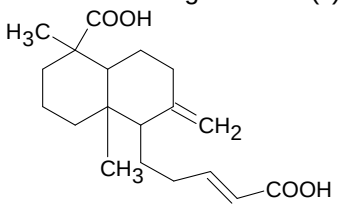
5. $CH_3–CH_2–NO_2$ (X) $\xrightarrow{H_2 / Ni}$ K (organic compound)
and functional isomer of (X) on hydrogenation (H_2 / Ni) gives L (organic compound) and M (gas). Then which of the following are true?
(A) K forms solid oxamide with diethyl oxalate
(B) K does not give Libermann nitroso test
(C) L gives yellow compound with IO^-
(D) L is $CH_3–CH_2–O–NHOH$

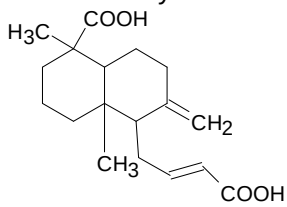
6. Reductive ozonolysis of agathene dicarboxylic acid gives

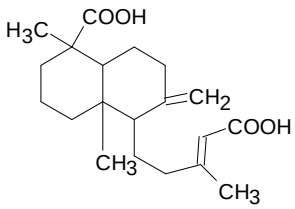


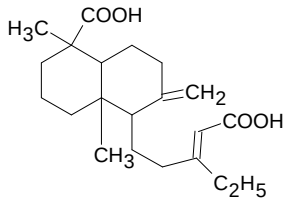
, H_2CO and 

Which of the following structure(s) can not be of agathene dicarboxylic

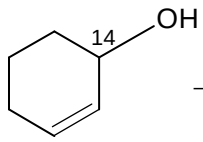
(A) 

(B) 

(C) 

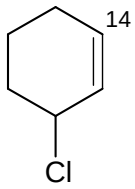
(D) 

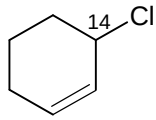
Rough Work

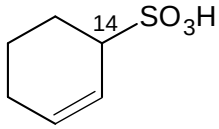
7. 

$\xrightarrow{SOCl_2}$ Possible product(s) is/are

Which of the following options is major product?

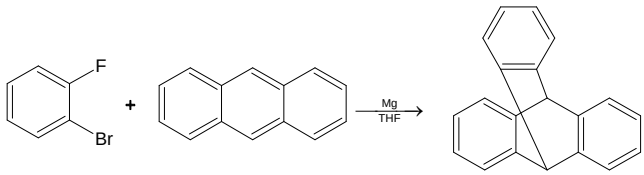
(A) 

(B) 

(C) 

(D) None of the above

8. Which of the following statements do not evaluate the reaction shown below?



(A) A Grignard reagent from the dihalobenzene adds to anthracene, followed by nucleophilic displacement of fluoride anion to form the product.

(B) Magnesium reduces anthracene to a reactive dianion that bonds to the dihalobenzene.

(C) A Grignard reagent from the dihalobenzene adds to the anthracene, and this nucleophile adds to the remaining fluorobenzene.

(D) A Grignard reagent from the dihalobenzene decomposes to benzyne, then cyclo addition to anthracene.

Rough Work

9. $C_2H_4Cl_2 \xrightarrow{KCN} (B) \xrightarrow{H_3O^+} (C) \xrightarrow{\Delta} (D)$

(A)

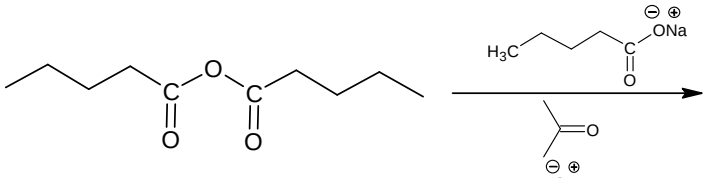
The compound D has the characteristic(s)

(A) It is succinic anhydride if (A) is vic dihalide (B) It is propionic acid if (A) is gem dihalide

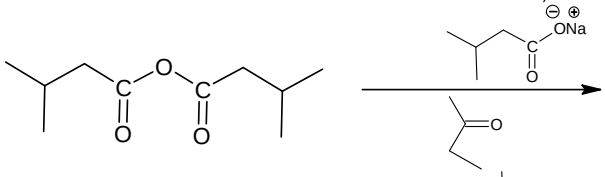
(C) It is succinic anhydride if (A) is gem dihalide (D) It is propionic acid if (A) is vic dihalide

10. Which of the following will produce an α,β unsaturated carboxylic acid.

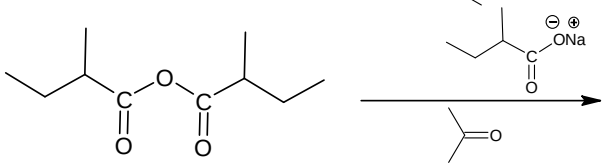
(A)



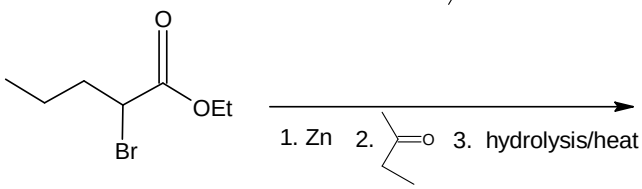
(B)



(C)



(D)

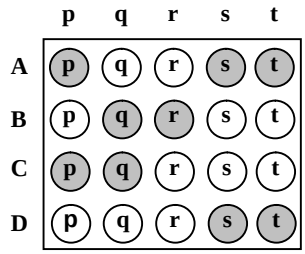


Rough Work

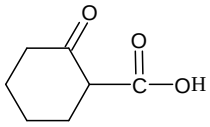
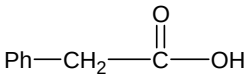
SECTION – B
Matrix – Match Type

This section contains 2 questions. Each question contains statements given in two columns, which have to be matched. The statements in **Column I** are labelled A, B, C and D, while the statements in **Column II** are labelled p, q, r, s and t. Any given statement in **Column I** can have correct matching with **ONE OR MORE** statement(s) in **Column II.** The appropriate bubbles corresponding to the answers to these questions have to be darkened as illustrated in the following example:

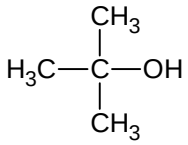
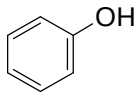
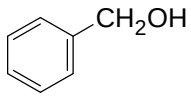
If the correct matches are A – p, s and t; B – q and r; C – p and q; and D – s and t; then the correct darkening of bubbles will look like the following:



1. Match the following:

Column-I	Column-II
(A) $HCOOH$	(p) Decarboxylates on heating
(B) CH_3COOH	(q) Reacts with Br_2/P
(C) 	(r) With Tollen's reagent gives silver mirror
(D) 	(s) Decarbonylates (removal of CO) on heating with H_2SO_4
	(t) Reduces $HgCl_2$

2. Match the following

Column-I	Column -II
(A) $CH_3—CH_2—OH$	(p) No response to Victor Meyer,s reagent.
(B) 	(q) Turbidity immediately when treated with Lucas reagent
(C) 	(r) No response to Lucas reagent
(D) 	(s) Red colour in Victor Maeyer's test
	(t) Gives test with dil. $AgNO_3$

Rough Work

SECTION-C (Integer value correct Type)

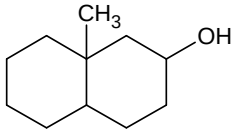
This section contains **8** questions. The answer to each of the questions is a **single digit integer,** ranging from 0 to 9. (both inclusive).

1. When 1-bromomethylcyclohexene under-goes solvolysis in ethanol, what will be the number of major products.

2. 5-Hydroxyhexanal forms a six member hemiacetal, which predominates at equilibrium in aqueous solution. How many stereoisomers are possible for this cyclic hemiacetal?

3. What is the number of optically active structural isomers of $C_4H_8O_3$. Which evolve CO_2 with aq. $NaHCO_3$?

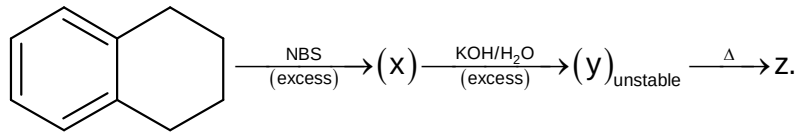
4. What will be the number of stereo-isomers of the given compound?



5. 0.1 mol of a hydroxyl compound reacts with 62.5 g of PCl_5 (mol. wt. 208.5). Determine the number of —OH groups.

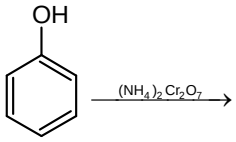
Rough Work

6. A hydrocarbon 'P' having molecular formula C_8H_{10} can form only three monochloroderivative. 'P' on oxidation with $KMnO_4$ yields a compound, which on heating with aq. NH_3 yields 'Q'. 'Q' on treatment with NaOH followed by NaOCl yields a salt which on acidification yields a compound 'R' having molecular formula $C_7H_7O_2N$. The compound 'R' is further treated with ($NaNO_2$ + HCl) and then with base to give dipolar ion 'S' which readily losses two gases to give an intermediate 'T' is finally converted into hydrocarbon 'U' on dimerisation. Degree of unsaturation in the hydrocarbon 'U' will be:

7. 

The sp^2-hybridised carbon atoms present in one molecule of the end product z is:

8. The n-factor for phenol in following reaction is



Rough Work