PAPER-12

SECTION- I

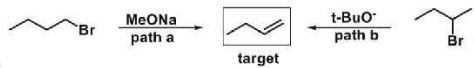
(ONE OR MORE THAN ONE)

Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
For each question, choose the correct option(s) to answer the question.
Answer to each question will be evaluated according to the following marking scheme:

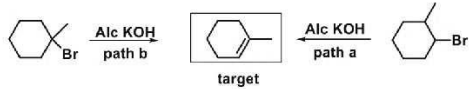
Full Marks:	+4 If only (all) the correct option(s) is (are) chosen.
Partial Marks:	+3 If all the four options are correct but **ONLY** three options are chosen.
Partial Marks:	+2 If three or more options are correct but **ONLY** two options are chosen, both of which are correct options.
Partial Marks:	+1 If two or more options are correct but **ONLY** one option is chosen and it is a correct option.
Zero Marks:	0 If none of the options is chosen (i.e. the question is unanswered).
Negative Marks:	-2 In all other cases.

1. Which among the following **path b** is better than **path a** to achieve target molecule

A)



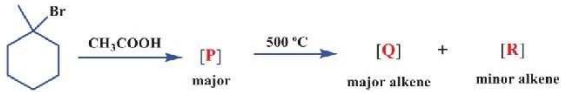
B)



C)

D)

2. Choose the **CORRECT** options(s) regarding given scheme



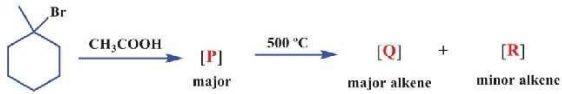
A) Formation of **[P]** involves bimolecular substitution mechanism

B) **[P]** can be obtained by addition of acetic acid to **[R]**

C) **[P]** can be obtained by addition of acetic acid to **[P]**

D) Formation of **[P]** to **[Q]** is an anti-elimination reaction

3. Choose the **CORRECT** options regarding **[Q]** and **[R]**



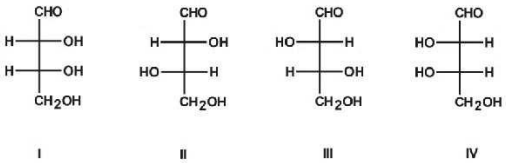
A) Addition of Br_2 to **[R]** gives product **[S]** which contains two chiral centers

B) Addition of Br_2 to **[Q]** gives product **[T]** which contains two chiral centers

C) **[R]** up on treatment with NBS/ROOR gives 3 monobrominated products

D) **[R]** up on treatment with NBS/ROOR gives 6 monobrominated products

4. For the aldotetroses I-IV, the combination of **TRUE** statements, among P-S, is:



P = I and II are diastereomers and II and III are enantiomers.

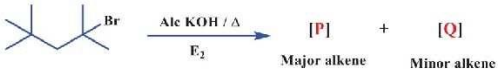
Q = I and IV are mesomers and are optically inactive.

R = I and III can be interconverted by a base catalysed isomerisation.

S = I and IV are HIO_4 cleavable.

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

5. Choose the **CORRECT** option(s) for given reaction scheme



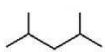
A) Position of double bond in **[P]** is 2

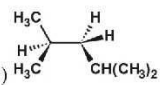
B) Position of double bond in **[P]** is 1

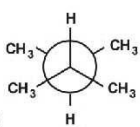
C) Above reaction can be taken as an example of stereoselective

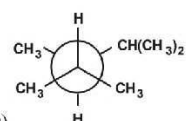
D) Above reaction can be taken as an example of regioselective

6. Which compound is different from the other?

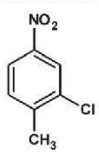
A) 

B) 

C) 

D) 

7. Which of the following is/are **CORRECT IUPAC** name of given compound



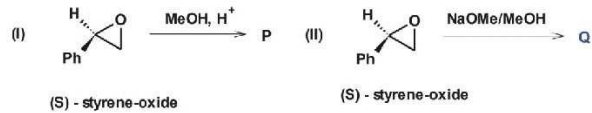
A) 2-chloro-1-methyl-4-nitrobenzene

B) 4-methyl-5-chloronitrobenzene

C) 2-chloro-4-nitrotoluene

D) 2-methyl-5-nitrochlorobenzene

8. For the reactions shown below, identify the **CORRECT** statement with regard to the products formed.



(S) - styrene-oxide (S) - styrene-oxide

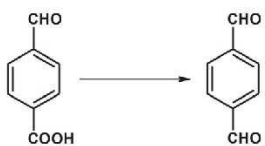
A) **P** and **Q** are identical, both are optically active.

B) **P** and **Q** are positional isomers, **P** is racemic and **Q** is optically active.

C) **P** and **Q** are positional isomers, **P** is optically active and **Q** is racemic.

D) **P** and **Q** are positional isomers, both are optically inactive.

9. Identify the set of reagent/reaction condition for the following transformation

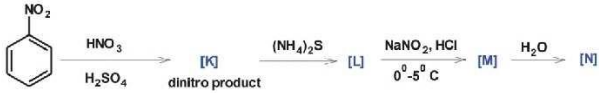


A) Conc. HI/red P

B) (i) PCl_5, (ii) H_2 / Ni

C) (i) $HOCH_2CH_2OH$ / dry HCl (ii) $SOCl_2$ (iii) H_2 / $Pd-BaSO_4$ (iv) H_3O^+

D) (i) PCl_5, (ii) $NaBH_4$ / EtOH

10. 

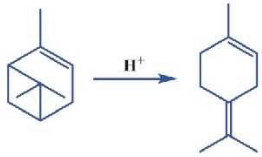
How many maximum atoms are in one plane in any possible conformation

A) 15 B) 14 C) 13 D) 12

SECTION- II
(NUMERICAL VALUE)

The answer to each question is a **NUMERICAL VALUE**
For each question, enter the correct numerical value (in decimal notation, truncated/rounded off to the **second decimal place**; e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30) designated to enter the answer.
Answer to each question will be evaluated according to the following marking scheme:
Full Marks: +3 If **ONLY** the correct numerical value is entered as answer.
Zero Marks: 0 in all other cases.

11. If **[Y]** is the number of transition state in the given conversion, what is the value of **[Y]**?



12. The total number of chiral isomers possible with molecular formula $\mathbf{C_5H_{12}O}$ is?

13. Calculate the cyclic constitutional isomers of $C_4H_6Cl_2$

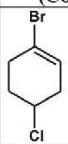
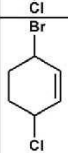
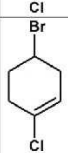
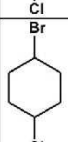
14. How many isomers (containing alkyne) of the fifth member of the alkyne can be converted in to corresponding alkene using Na in liqNH_3

15. How many alkenes give 2-methylbutan-2-ol as a major product upon reaction with dil H_2SO_4?

SECTION- III
(MATRIX MATCH WITH NUMERICAL)

Each question has **TWO (02)** matching lists: **LIST-I** and **LIST-II**.
FOUR options are given representing matching of elements from **LIST-I** and **LIST-II**.
For each question, choose the option corresponding to the correct matching.
For each question, choose the option corresponding to the correct matching.
Full Marks : +3 If ONLY the option corresponding to the correct matching is chosen.
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered).
Negative Marks : –1 in all other cases.

16. Match the column

	List-I **(Compound)**		List-II **(IUPAC names)**
P)		1)	1-Bromo-4-chloro cyclohexene
Q)		2)	1-Bromo-4-chloro cyclohexane
R)		3)	3-Bromo-6-chloro cyclohexene
S)		4)	4-Bromo-1-chloro cyclohexene

Note: Correctly match **P, Q, R, S** with 1, 2, 3 & 4 and give your answer in integer values

If

P	Q	R	S
4	1	2	3

then your answer is [4123]

ANSWERS

1	2	3	4	5	6	7	8	9	10
AB	**BC**	**BC**	**B**	**BD**	**C**	**AC**	**B**	**C**	**A**
11	12	13	14	15	16				
3	**8**	**9**	**3**	**3**	**1342**				