BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: B. PHARM. **SEMESTER: 2nd**
BRANCH: PHARMACY **SESSION: SP25**

SUBJECT: BP202T PHARMACEUTICAL ORGANIC CHEMISTRY-I

TIME: 3.00 Hours **FULL MARK: 75**

INSTRUCTIONS:

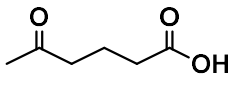
1. **The missing data, if any, may be assumed suitably.**
2. **Before attempting the question paper, be sure that you have got the correct question paper.**
3. **Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.**
4. **This question paper consists of (03) three parts. Read the part wise instructions before attempting the questions.**

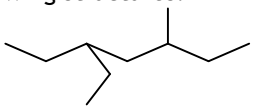
PART-I
Objective types questions (Instruction: Answer all questions)

Q1. (10 x 2 = 20 Marks)

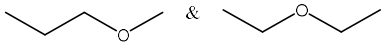
A. Draw the bond-line structures of the followings:
(i) 7,7-dimethylbicyclo[2.2.1]heptane; (ii) 4,5-dibromopent-1-ene

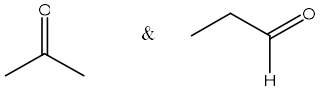
B. State the IUPAC name of the following structures:

(i) 

; (ii) 

C. Recall which class of structural isomers the following compounds are:

(a) 

(b) 

D. Arrange the following with increasing order of acidity: (i) Dichloroacetic acid; (ii) monochloroacetic acid; (iii) Acetic acid.

E. Which carboxylic acid(s) can be prepared from p-bromotoluene (a) by direct oxidation; (b) by free radical chlorination followed by nitrile synthesis.

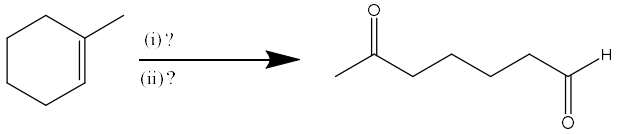
F. Fill in the blanks: S_N2 is a ……steps(s) reaction; follows ……..order reaction kinetics and it is ……. in rate determining step.

G. 'The boiling point of Octane is higher than pentane'. The statement is true/false, justify your answer.

H. Ammoniacal $AgNO_3$ is known as ……reagent, used to detect ……functional group.

I. State the Markovnikov and Anti-markovnikov's rule with examples.

J. Identify the reaction and state the other reagents and condition of the following reaction:



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PART-II
Short Answers
(Instruction: Answer seven out of nine questions)

(7 x 5 = 35 Marks)

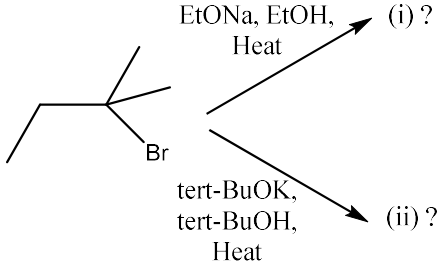
Q2. Classify organic compounds with examples.
Q3. Discuss the effect of substituents on the acidity of carboxylic acids.
Q4. Compare S_N1 vs S_N2 reaction.
Q5. Write a note on structural isomerism in organic compounds.
Q6. Describe the qualitative tests to detect aldehydes and ketones.
Q7. Explain the rearrangement of carbocations in nucleophilic substitution reactions.
Q8. Write the structure and use of the following compounds: Dichloromethane, formaldehyde, hexamine.
Q9. Write a note on the stability of alkenes.
Q10. Explain the mechanism of the halogenation of alkanes.

PART-III
Long Answers
(Instruction: Answer two out of three questions)

(2 x 10 = 20 marks)

Q11. a) Explain the mechanism of S_N1 and S_N2 reactions. [5]
b) Discuss the various factors affecting S_N1 and S_N2 reactions. [5]

Q12. a) Explain the mechanism of E1 and E2 reactions. [5]
b) Write down the major product formed in the following reaction. If such product formation follows certain rules, state the rules. [5]



Q13. Explain the reaction mechanism of the following: [5+5]
a) Aldol condensation reaction.
b) Cannizzaro reaction.

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