P.G. Semester-IV Examination, 2023

CHEMISTRY

Course ID : 41451 **Course Code : CHEM-401E**

Course Title : Organic Chemistry Special

Time : 2 Hours Full Marks : 40

The figures in the right-hand margin indicate marks.

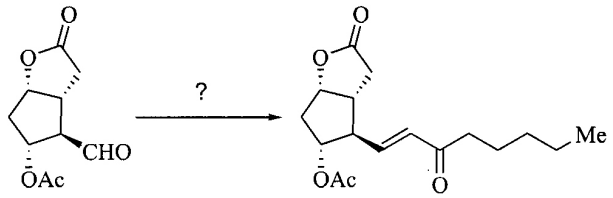
Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** of the following questions: 2×5=10

a) What do you mean by LC_{50}?

b) Imidazole is stronger base than pyridine—why?

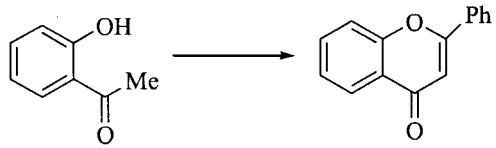
c) Write down the missing reagents required in the following transformation:



d) How does the liquid rise through the filter paper in paper chromatography?

e) Pyridazine (207°C) has higher boiling point than pyrimidine (123°C) and pyrazine (118°C) — Explain.

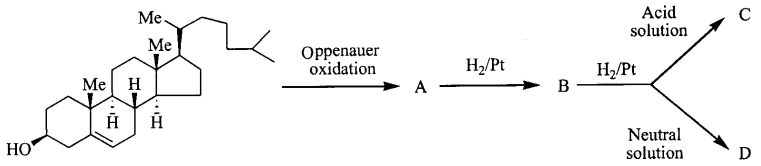
f) Carry out the following transformation.



g) What types of solvents are generally employed in chromatography?

2. Answer any **four** of the following questions: 5×4=20

a) i) Identify the missing products formed in the following reaction sequence: 2+3=5



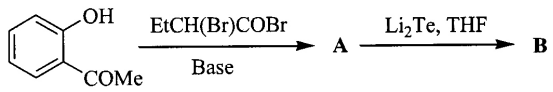
ii) Synthesize: Testosterone from Cholesterol.

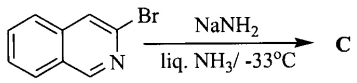
b) Explain the biochemical role of vitamin A. 5

c) What is meant by the term R_f value? On what factors does the R_f value of a compound depend? Give two uses of column chromatography.

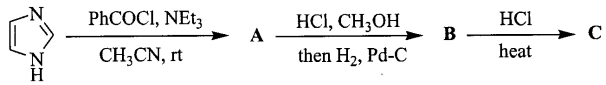
$(1\frac{1}{2}+1\frac{1}{2})+2=5$

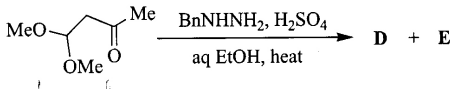
d) Predict the products A and B formed in the following sequence of reactions with viable mechanism: 3+2=5

I 

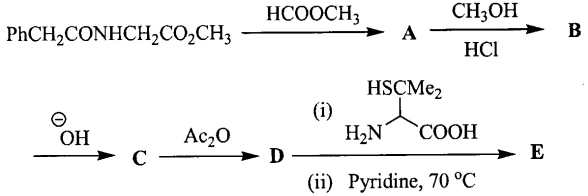
II 

e) Complete the following reactions and identify the products A-D: 3+2=5

I 

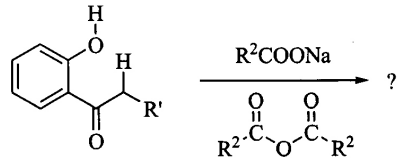
II 

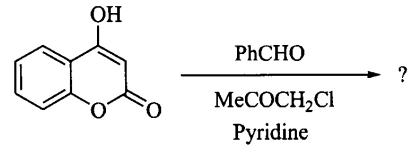
f) Show the structure of the products A-E formed in the following reaction sequence: 5



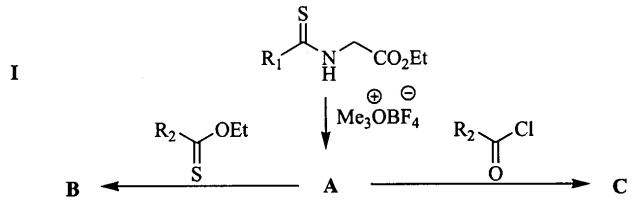
3. Answer any **one** of the following questions: 10×1=10

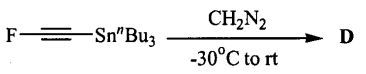
a) (i) Identify the products formed in each of the following reactions and provide the plausible mechanism: (4+2)+4=10

I 

II 

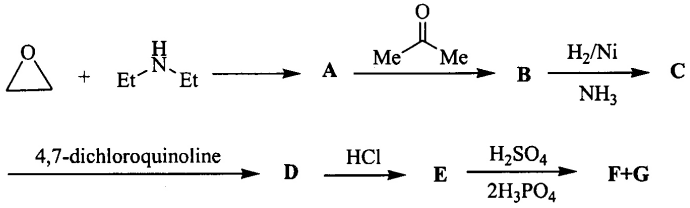
(ii) Write down the products formed in the following reactions:

I 

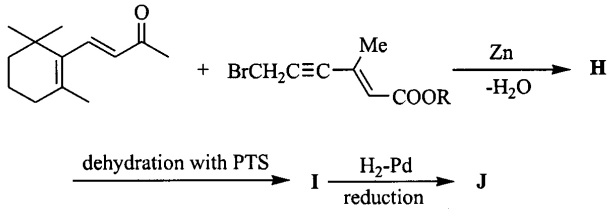
II 

b) Write the structure of the products A-J formed in the following reaction sequence: 10

I



II



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