

Roll No. ....

(01/22-II)

5234

B. Sc. EXAMINATION

(Fifth Semester)

CHEMISTRY

CH-303

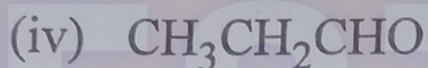
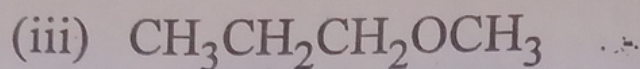
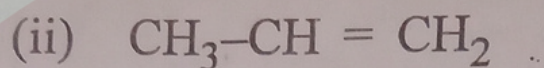
Organic Chemistry

*Time : Three Hours*

*Maximum Marks : 27*

**Note :** Attempt *Five* questions in all, selecting *two* questions from each Section. Q. No. 1 is compulsory.

1. (a) What is the principle of NMR spectroscopy ?
- (b) What do you understand by peak area ?
- (c) How many kinds of equivalent protons are there in the following :
  - (i)  $C_6H_5 - CH_3$



(d) Write a note on shielding and de-shielding of protons.

(e) How will you distinguish between glucose and fructose ?

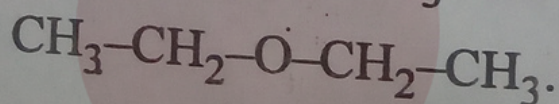
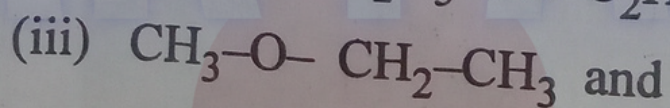
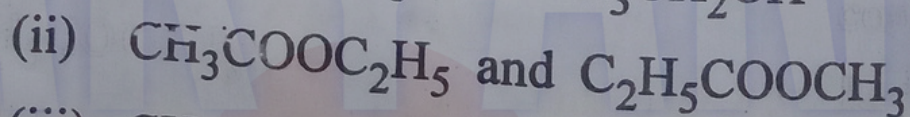
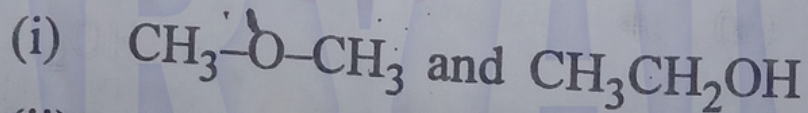
(f) What do you understand by the symbols (+), (-), D- and L- used before the names of carbohydrates ?

(g) What are Grignard's reagents ? How are they prepared ?

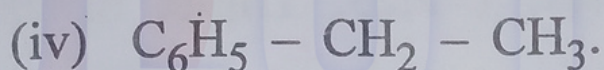
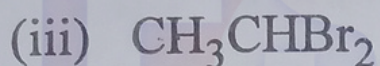
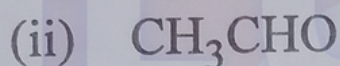
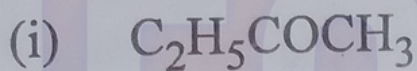
7×1=7

### Section A

2. (a) Distinguish between the following pairs on the basis of NMR data : 3



(b) How many signals would be expected in PMR spectrum of each of the following : 2



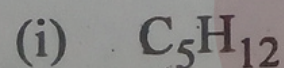
3. (a) An organic compound with molecular formula  $C_3H_3Cl_5$  gave the following NMR data : 3

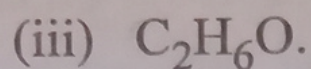
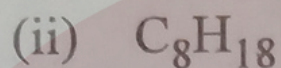
A triplet ( $\delta$  4.52, 1H) and A doublet ( $\delta$  6.07, 2H)

Assign the structure.

(b) What is chemical shift ? Give the scales of measurement and relation between them. 2

4. (a) Give suitable structures for the compounds with the following structural formula which will give only one PMR signals : 3





- (b) A compound having molecular formula  $C_9H_{11}Br$  gave the following PMR data :  
Complex multiple of 2H,  $\tau$  7.85, Triplet of 2H,  $\tau$  7.25, Triplet of 2H,  $\tau$  6.62, singlet of 5H,  $\tau$  2.78. Assign structure to the compound. 2

### Section B

5. (a) Differentiate between starch and cellulose. 2
- (b) What is Osazone ? Give mechanism of formation of osazone from fructose. 3
6. (a) Why does glucose show that phenomenon of mutarotation ? Give its mechanism. 3
- (b) Give evidence to prove that D(+) Glucose has cyclic structure. 2

7. (a) What are the products of the reaction of methyl magnesium iodide with each of the following compounds that contain active hydrogen : 3

- (i) Water
- (ii) Alcohol
- (iii) Ammonia.

(b) What happens when : 2

- (i) n-butyl lithium is treated with bromobenzene
- (ii) phenyl lithium reacts with ethyl bromide ?