This question paper contains **8** printed pages]

Code No. : 05(II) *Roll No. .....*

0(CCEM)9

CHEMISTRY

Paper : II

Time Allowed : 3 hours] *[Maximum Marks : 300*

Note : (i) Answers must be written in ***English****.*

(ii) Number of marks carried by each question are indicated at the end of the question.

(iii) Part/Parts of the same question must be answered together and should not be interposed between answers to other questions.

(iv) ***The answer to each question or part thereof should begin on a fresh page.***

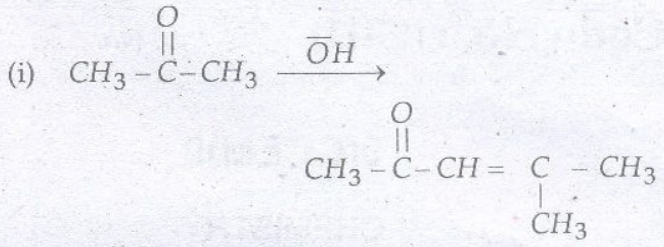
(v) ***Your answers should be precise and coherent.***

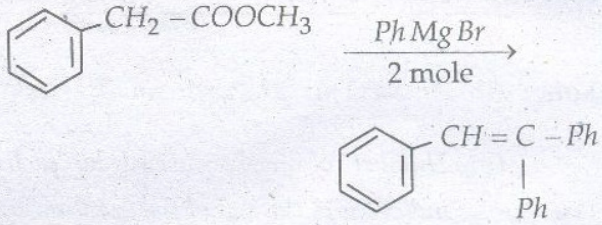
(vi) Answer ***all*** *questions.*

1. (a) Discuss formation and sources of carbanions. 10

P. T. O.

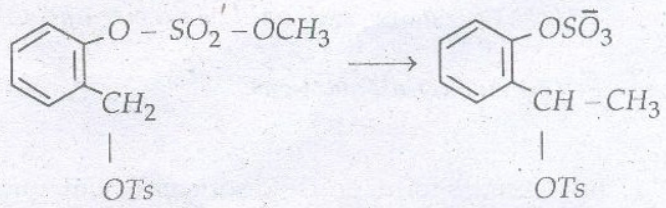
(b) Write mechanism for the following conversions : 5 + 5 = 10

(i) 

(ii) 

(c) Answer any *two* of the following :

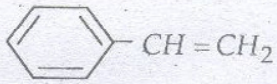
(i) Write mechanism and conditions for the reaction : 15



(ii) Which of the following alkenes is most reactive for addition reactions ? Give reasons for your answer : 15

(a) $CH_3 - CH = CH - CH_3$

(b) $CH_3 - CH_2 - CH = CH_2$

(c)  $CH = CH_2$

(iii) With one suitable example discuss Michael addition reaction. 15

2. (a) Explain the following terms used in pericyclic reactions : 10

Symmetry allowed and symmetry disallowed reactions.

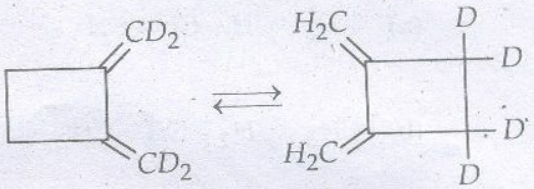
OR

Conrotatory and disrotatory motions.

(b) Explain Claisen and Cope rearrangement. 10

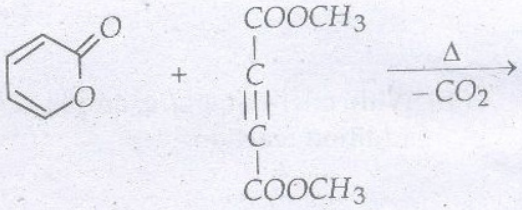
(c) The following reactions take place in two steps. Identify the reactions and show how they occurr ?

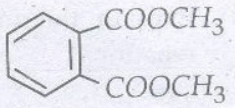
(i)



15

(ii)





15

3. (a) Write an account of phenol-urea condensation polymerisation. 20

(b) Answer any *two* of the following :

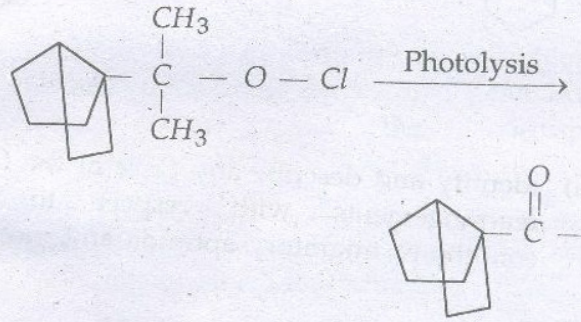
(i) Write an account of addition polymerization and give significance and composition of Ziegler Natta catalyst. 15

(ii) What are silicones ? Explain their formation. 15

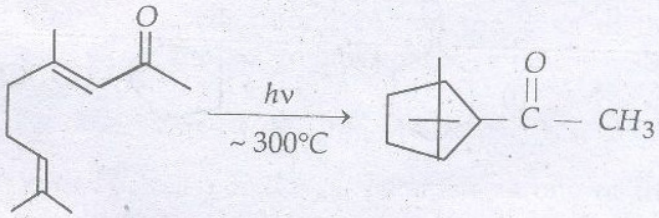
(iii) With suitable example/s, explain end group analysis. 15

4. Provide suitable explanations for the following reactions : 10 each

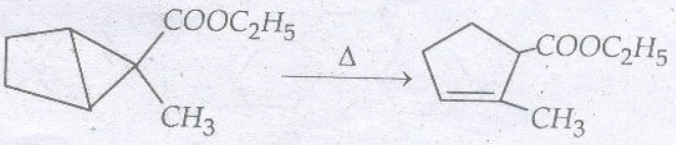
(a)

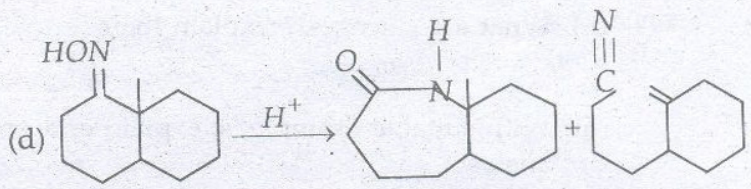


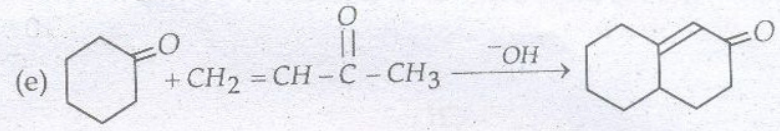
(b)



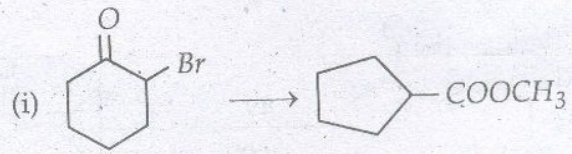
(c)

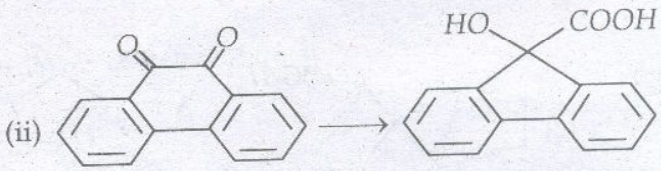


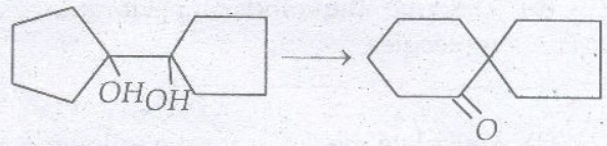
(d) 

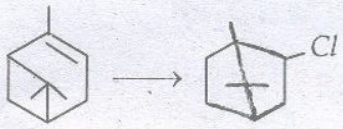
(e) 

5. (a) Identify and describe any ***three*** of the following rearrangements with respect to reaction conditions, migratory aptitude and mechanism : 10 each

(i) 

(ii) 

(iii) 

(iv) 

(b) Explain why 4β-tertiary butyl-β-chlorocyclohexane undergoes dehydrohalogenation much faster than in the corresponding α-chloroderivative. 10

(c) With suitable example explain the action of *Na*-liquid ammonia for reduction. 10

6. (a) Identify the compound "A" on the basis of the data given and assign the spectral values. 30

"A" Molecular wt. M^+ 136, m/z 135, 121, 59 :

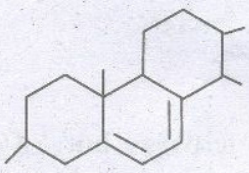
with HI, ethyl iodide is obtained as one of the products.

I. R. ν_{max} cm^{-1} 2900 – 3150, 1510, 1456, 1100, 736 & 696;

^{1}H NMR δ 1.3 t, 3.4 q, 4.45 s, and δ 7.2 – 7.4 in the ratio of 1.5 : 1 : 1 : 2.5

(b) Describe the modes of vibrations of triatomic molecules. 10

(c) Calculate the λ_{max} for the following compounds : 10

(i) 

(ii)