2018

M.Sc. 2nd Semester Examination

CHEMISTRY

PAPER—CEM-202

Subject Code—24

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

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

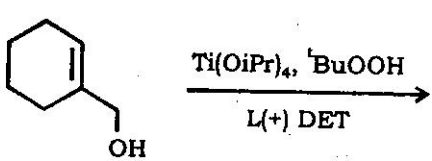
Illustrate the answers wherever necessary.

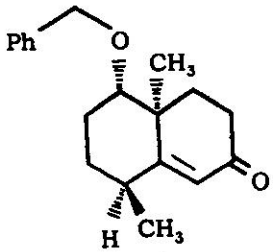
(*Organic*)

Group—A

Answer any *four* questions.

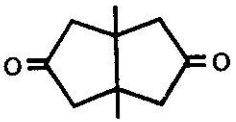
Predict the product(s) (with plausible mechanism) : 2×4

1. 

2. 

a. $ArSO_2NHNH_2$

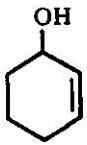
b. ^nBuLi, c. H^+

3. 

1. $LiN(SiMe_3)_2$, THF, –30°C

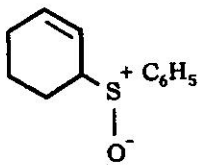
2. $(EtO)_2POCl$

[A] $\xrightarrow{H_2 / Pd\text{-}C}$ [B]

4. 

1. nBuLi

2. C_6H_5SCl

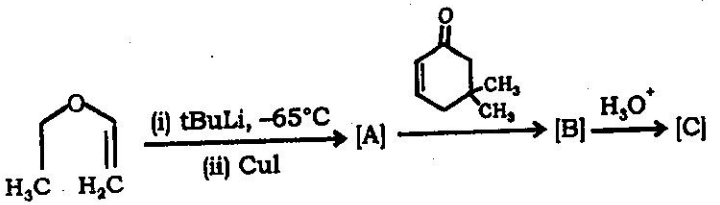
[A] $\xrightarrow{heat}$ 

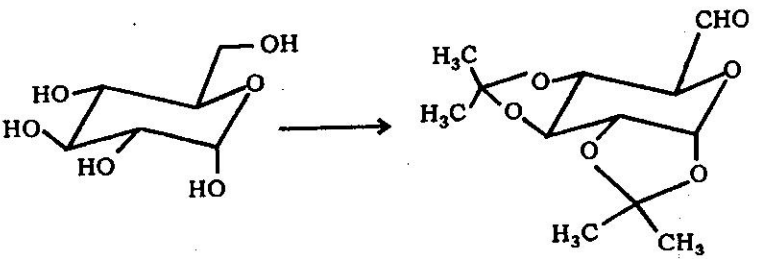
1. LDA, THF / –60°C

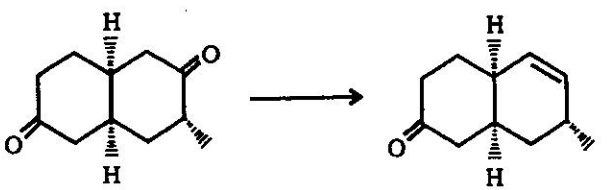
2. CH_3I

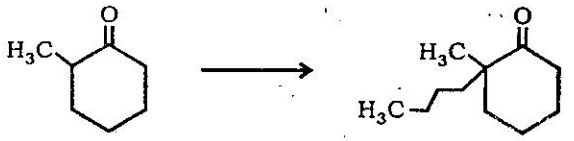
[B] $\xrightarrow[MeOH]{P(OCH_3)_3 \text{ (thioiphile)}}$ [C]

(Continued)

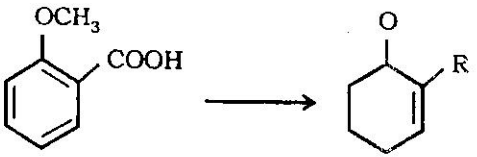
5. 
O
H3C
H2C
(i) tBuLi, –65°C
(ii) CuI
[A]
O
CH3
CH3
[B]
H3O+
[C]

6. 
OH
HO
HO
HO
O
HO
CHO
H3C
H3C
O
O
O
O
O
H3C
CH3

7. 
H
O
O
H
H
O
H

8. 

Or



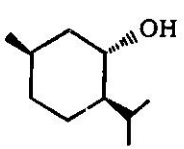
Group—B

Answer any *four* questions. 4×4

9. Draw the 3d structures of most stable conformers for the given molecules.

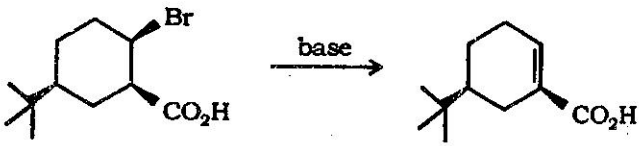
(a) Meso-2, 3-butane-diol ;

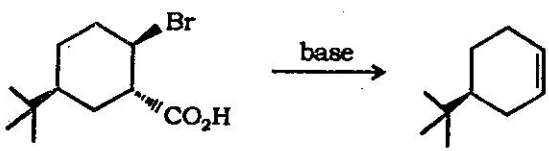
(b) cyclohexane-1, 4-dione ;

(c) 

(d) *cis*-1-tertbutyl-2-methyl cyclohexane.

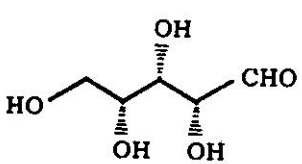
10. Account for the contrasting results in these two reactions (explain in terms of conformational analysis) ?





11. How many chiral centers are there in 9, 10-dimethyl decalins ? Write 3d structures of those conformers and show in them the *gauche-butane* interactions.

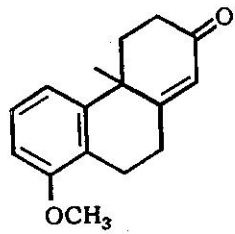
12. How many chiral centers are there in the following compound ? How many stereo isomers are possible ? Assign the stereogenic centers as R or S ?



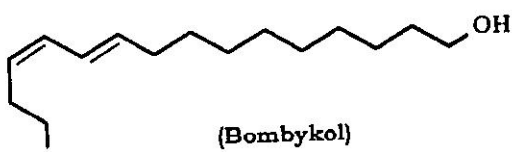
(Turn Over)

13. What is AD-mix? Give an example of asymmetric transformation using AD-mix.

14. Synthesize

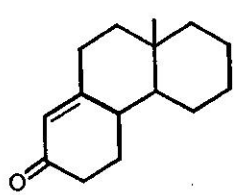


15. Synthesize



(Bombykol)

16. Synthesize



(Continued)

Group—C

Answer any *two* questions. 8×2

17. (a) Explain with one example of your choice the famous Sharpless Epoxidation with mechanism. 4

(b) Explain the term "Prochirality" with example of "pro R" and "Pro S" terminologies. 4

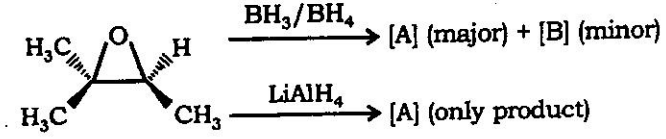
18. Explain with example in each case : 4×2

(a) Felkin Modek,

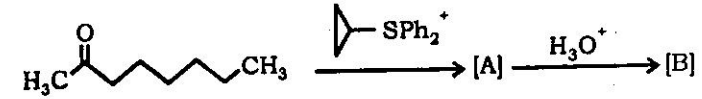
(b) Cram's Rule.

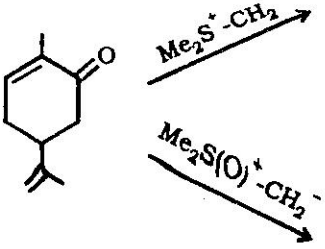
19. Carry out the following transformation (any *two*) : 2×4

(i)

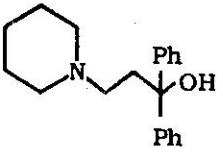


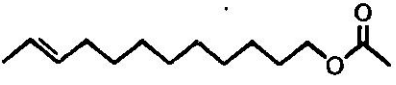
(ii)

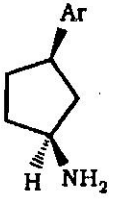


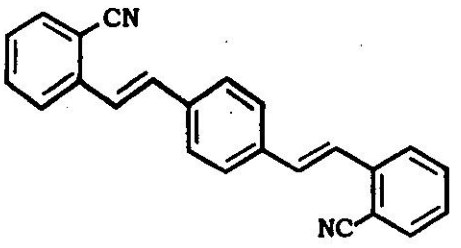
(iii) 

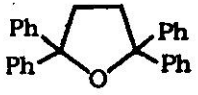
20. Describe the following synthesis of the compounds with proper retrosynthetic analysis and find out the simple starting materials (Attempt any *four*) : 4×2

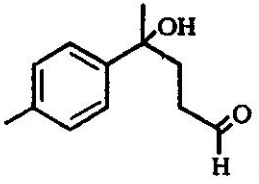
(a) 

(b) 

(c) 

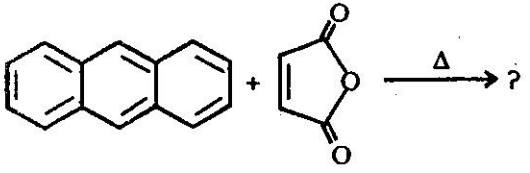
(d) 

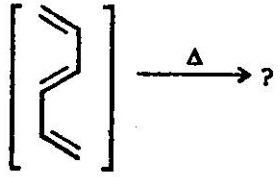
(e) 

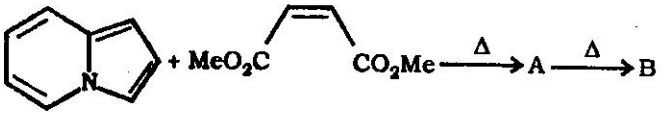
(f) 

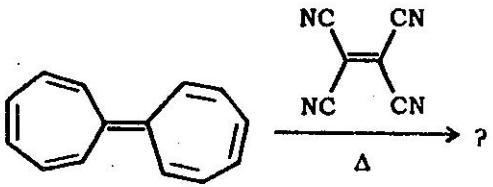
Or

Predict the products of the following indicating proper orbital interaction in each case (any *four*) : 4×2

(a) 

(b) 

(c) 

(d) 

(e)