

S.No. 248 BATCH: 81 - 2018

Reg.No.

END OF SEMESTER EXAMINATIONS, APRIL / MAY - 2019  
GENERAL CHEMISTRY - I  
SUBJECT CODE: 11UACH01

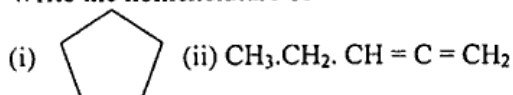
MAJOR : B.Sc., (Chemistry)  
TIME : 3 HOURS

SEMESTER : I  
MAX.MARKS : 75

SECTION - A (10 X 1 = 10)

Answer ALL the Questions:

1. What are insulators, conductors and semiconductors? Give any two examples for each case.
2. What is the structure of EDTA?
3. Define: "Hyper conjugative effect".
4. Write any two differences between intermediate and transition state.
5. Write down the Diel's Alder reaction.
6. Write the nomenclature of



7. What is mean by binding energy?
8. Define: "Dipolemoment" mention its unit.
9. State and explain Zeroth law of thermodynamics.
10. What do you know about integral and differential heats of solution?

SECTION - B (5 X 4 = 20)

Answer ALL the Questions:

11. a) What is hybridization? Discuss the geometry of the following molecules on the basis of hybridization.  $\text{BeCl}_2$ ,  $\text{CH}_4$ ,  $\text{IF}_7$   
(OR)  
b) Discuss about redox titrations by using internal and external indicators.
12. a) Describe the inductive effect, electrometric effect and mesomeric effect with illustration.  
(OR)  
b) What are electrophiles, nucleophiles and free radicals? Give suitable examples.
13. a) What are dienes? How are they classified? Give suitable examples.  
(OR)  
b) Explain the hydration, hydroboration and ozonolysis reactions of alkenes with suitable examples.
14. a) How can you determine the dipolemoment of polar gases, liquids and solids?  
(OR)  
b) What is mean by (i) Mass defect (ii)  $\frac{n}{p}$  ratio?
15. a) Derive Kirchoff's equation.  
(OR)  
b) Define the term heat and work. Explain about work of expansion and compression with a suitable sketch.

..2.,

SECTION - C (5 X 2 = 10)Answer ALL the Questions:

16. a) (i) Give a brief account on band theory of solids. (5)  
 (ii) Draw and explain the M.O. diagram of oxygen molecule. What is the bond order of  $H_2$  and CO. (4)  
 (OR)  
 b) (i) How will you determine the hardness of water by complexometric titration Method? (5)  
 (ii) Compare 1/BT and MOT. (4)
17. a) (i) Describe the hybridization and geometry of Methane. (5)  
 (ii) What are Carbocations, carbanions and free radicals. Give examples. Explain its stability. (4)  
 (OR)  
 b) (i) Explain the effect of mesomeric effect of bond length, basicity of aniline and acidity of phenol. (5)  
 (ii) What is meant by homolytic fission and heterolytic fission? Explain with suitable examples. (4)
18. a) (i) Give the main features of Baeyer's strain theory? Why does this theory fail to account for the stability of cyclohexane? (5)  
 (OR)  
 (ii) State and explain Markovnikov's and anti-Markovnikov's rule. (4)  
 b) (i) What are cycloalkanes? Give any four examples. How cycloalkanes are prepared by Dieckmann's ring closure method? (6)  
 (ii) Explain the 1,2 and 1,4 addition reactions in dienes. (3)
19. a) (i) Discuss about synthesis of artificial radio isotopes and elements. (5)  
 (ii) What do you know about  $C^{14}$  dating? (4)  
 (OR)  
 b) (i) Write any four applications of dipole moment. (6)  
 (ii) Write a short note on artificial radio activity. (3)
20. a) (i) Derive the relationship between  $c_p$  and  $c_v$ . (5)  
 (ii) State and explain first law of thermodynamics. Give its applications. (4)  
 (OR)  
 b) (i) What are exact and inexact differentials? (3)  
 (ii) Explain the Joule-Thomson experiment. With a neat sketch. (6)

\*\*\*\*\*