

**Q.P. Code – 50723**

**Second Year B.Sc. Degree Examination, OCTOBER/NOVEMBER 2016**

**(Directorate of Distance Education)**

**Chemistry**

**(DSB 260) Paper II – CHEMISTRY – II**

Time : 3 Hours]

[Max. Marks : 75/85

**Instructions to Candidates :**

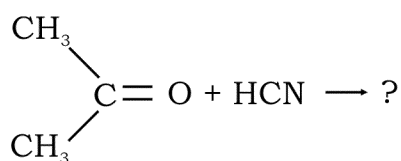
- 1) This paper consists of five sections. Answer all sections.
- 2) Write equations and neat diagrams wherever necessary.
- 3) Section-**E** is **compulsory** for **85**-marks scheme only.
- 4) Section-**A** contains one mark questions and should be answered in first two pages of main answer book. The questions of Section-**A** answered in any other part will not be valued.

**SECTION – A**

**I. Answer in a word, a phrase or a sentence :**

**10 × 1 = 10**

1. What is adiabatic process?
2. Define the term phase.
3. What is the hybridization of Xe atom in XeF<sub>6</sub>?
4. Predict the product of the following reaction :



5. What is meant by ionic bond?

6. Write the IUPAC name of  $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3 - \text{C} - \text{CH} - \text{CH}_2 - \text{OH} \\ | \quad | \\ \text{CH}_3 \quad \text{CH}_3 \end{array}$

7. What are consecutive reactions?
8. Define precision.

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9. Give the composition of dynamite.  
10. What are amines?

### SECTION – B

#### II. Answer any FIVE Questions :

5 × 3 = 15

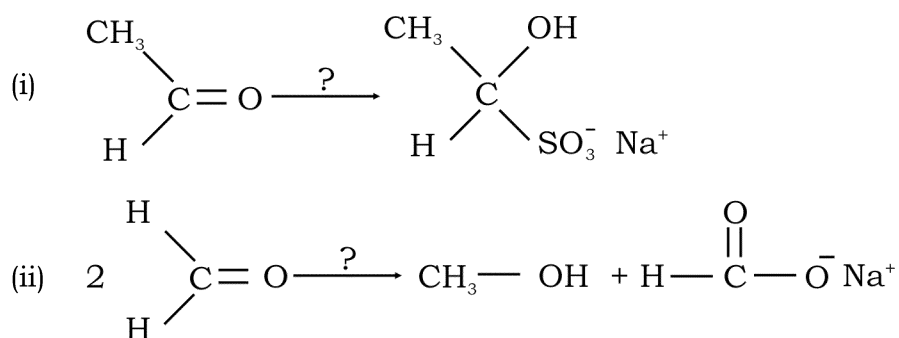
11. Explain the mechanism of Aldol condensation taking suitable example.  
12. What is the effect of heat on  $\alpha$ ,  $\beta$  and  $\gamma$  - Hydroxy acids?  
13. (a) What is artificial radio activity? Give one example. **2**  
(b) Define mass defect. **1**  
14. Explain transition state theory of reaction rates.  
15. Discuss structure and geometry of  $\text{XeF}_4$ .  
16. What are the factors which favours the formation of ionic bond?  
17. Calculate the ionic strength of 0.1 M NaCl and 0.25  $\text{MK}_2\text{SO}_4$ .

### SECTION – C

#### III. Answer any FIVE Questions :

5 × 6 = 30

18. (a) Derive an expression for work done in an reversible isothermal expansion of an ideal gas. **4**  
(b) What are condensation polymers? Give one example. **2**  
19. (a) Explain phase diagram of water system. **4**  
(b) What are freezing mixtures? Give one example. **2**  
20. (a) Explain the mechanism of Perkin's reaction. **4**  
(b) Suggest the reagents for the following reactions : **2**



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21. (a) What are phenols? How they are classified? Give one example each. **4**  
(b) Explain why O-cresol is less acidic than O-Nitrophenol. **2**
22. (a) What is meant by error? How they are classified? **3**  
(b) Mention any three uses of Helium. **3**
23. (a) How are the following properties of graphite are accounted?  
(i) softness  
(ii) conductor **4**  
(b) Write any two similarity between MOT and VBT. **2**
24. (a) Explain the preparation and uses of TEL. **4**  
(b) What are organometallic compound? Give one example. **2**

### SECTION – D

#### IV. Answer any TWO Questions :

**2 × 10 = 20**

25. (a) Derive rate constant equation of second order reaction in which initial concentration of reactants are same. **5**  
(b) Derive the relation between  $K_h$ ,  $K_w$  and  $K_b$  for the salt of weak base and strong acid. **5**
26. (a) How primary, secondary and tertiary amines are distinguished by nitrous acid method? **3**  
(b) Write the rules of resonance. **3**  
(c) Explain the manufacture of glycerol from spent lye. **4**
27. (a) Draw molecular orbital diagram for  $O_2$  molecule and predict bond order, magnetic property. **5**  
(b) On the basis of band theory of metals, explain insulator, conductor and semiconductor properties of metals. **5**

### SECTION – E

#### V. Answer any ONE of the following questions :

**1 × 10 = 10**

(Compulsory Question for 85 marks scheme only)

28. (a) Explain the determination of molecular weight of a polymer by viscosity method. **5**  
(b) Derive Kirchoff's equations. **5**

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29. (a) Write the mechanism for the esterification of Acetic acid with Ethyl alcohol. **4**
- (b) On the basis of VSEPR theory discuss the geometry of water molecule. **4**
- (c) Predict the products of the following reactions : **2**

