

[A-12]

**SARDAR PATEL UNIVERSITY**  
**B.Sc.( Semester IV ) Examination**  
**Tuesday, 10<sup>th</sup> April, 2018**  
**10:00 a.m. to 01:00 p.m.**

**US04CCHE02 : APPLIED ASPECTS OF CHEMISTRY**

Total Marks : 70

Note: (i) All questions are to be attempted.

(ii) Figures to the right indicate marks.

**Q.1 Choose the correct option and rewrite for the following: (10)**

- (i) Anionic polymerization is also known as \_\_\_\_\_ polymerization.  
 (a) Dying (b) Coordination (c) Living (d) Non Living
- (ii) Explosives mixture of RDX, TNT and aluminum is known as \_\_\_\_\_.  
 (a) PETN (b) Cyclonite (c) Torpex (d) None of these
- (iii) Which of the following soften on heating and regain original properties on cooling ?  
 (a) Thermoplastics (b) Thermosetting resins (c) Fibres (d) None of these
- (iv) Why is gypsum used in manufacture of Portland cement ?  
 (a) To increase the setting time (b) To decrease the setting time (c) To give colour to cement (d) To reduce the cost of cement
- (v) Which isomer of Benzene hexachloride shows insecticidal properties ?  
 (a)  $\alpha$  - isomer (b)  $\beta$  - isomer (c)  $\gamma$  - isomer (d)  $\rho$  - isomer
- (vi) What is the calorific value of peat ?  
 (a) 12000 BTU/lb (b) 1200 BTU/lb (c) 120 BTU/lb (d) 12 BTU/lb
- (vii) What is the nitrogen content in urea ?  
 (a) 12 % (b) 25 % (c) 45 % (d) 100 %
- (viii) 'Beri-beri' is caused by deficiency of \_\_\_\_\_.  
 (a) Vitamin A<sub>1</sub> (b) Vitamin H (c) Vitamin K (d) Vitamin B<sub>1</sub>
- (ix) The calorific value of a coal sample is higher, if its :  
 (a) Moisture content is high (b) Ash content is high (c) Volatile matter is high (d) Fixed carbon is high
- (x) Which transition metal is used in Zeigler-Natta catalysis ?  
 (a) Aluminum (b) Cobalt (c) Titanium (d) Tin

**Q.2 Answer the following : ( ANY SIX ) (12)**

- (i) Write the characteristics of a good vehicle.  
 (ii) Give the synthesis of vulcanized rubber.  
 (iii) Give the action of CaCN<sub>2</sub> as fertilizer.  
 (iv) What are the sources of natural organic fertilizers ?  
 (v) Why a good fuel must have low ash content ?  
 (vi) Melting point of natural rubber is lower than synthetic rubber. Explain it.  
 (vii) Explain isotacticity and syndiotacticity in polymers.  
 (viii) List the disease caused due to the deficiency of Vitamin E.

[ P.T.O. ]

**Q.3 Answer the following :**

- (A) Give a brief account on ionic polymerization. (04)  
(B) Define free radical polymerization. Give reaction mechanism of free radical polymerization of acrylo nitrile. (04)

OR

**Q.3 Answer the following :**

- (A) Give the reaction mechanism for electrophilic addition reaction of 2,4 -hexadiene with HBr. (04)  
(B) Write a note on coordination polymerization. (04)

**Q.4 Answer the following :**

- (A) Define the term explosive and give the synthesis of PETN. (04)  
(B) Give the synthesis and uses of DDT. (04)

OR

**Q.4 Answer the following :**

- (A) Classify the Insecticides. (04)  
(B) Give the synthesis and uses of Vanillin. (04)

**Q.5 Answer the following :**

- (A) Give a brief account on biological function of Vitamins. (04)  
(B) Give the occurrence, properties and synthesis of Vitamin B<sub>2</sub>. (04)

OR

**Q.5 Answer the following :**

- (A) Classify the Vitamins. (04)  
(B) Discuss the occurrence, physiological functions and preparation of Vitamin A<sub>1</sub>. (04)

**Q.6 Answer the following :**

- (A) Discuss the classification of fertilizers. (04)  
(B) Define micronutrients and discuss the role of micronutrients as a fertilizer. (04)

OR

**Q.6 Answer the following :**

- (A) Discuss the manufacturing process of urea. (04)  
(B) Explain the manufacturing process of normal super phosphate. (04)

**Q.7 Answer the following :**

- Give a detailed account of wet process for manufacture of cement. (08)

OR

**Q.7 Answer the following :**

- Write manufacturing processes of lime. (08)

**Q. 8 Answer the following :**

- (A) Discuss the proximate analysis of coal. (04)  
(B) Describe the measurement of calorific value of coal using bomb calorimeter. (04)

OR

**Q.8 Answer the following :**

- (A) Discuss the estimation of carbon and hydrogen in coal by ultimate analysis. (04)  
(B) Give the formation of coal in different stages. (04)

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