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SARDAR PATEL UNIVERSITY
B.Sc. EXAMINATION Fourth Semester (CBCS)
US04CCHE02 Applied Chemistry

Date: 09-04-16, Saturday

Time: 10.30 to 1.30pm

Maximum Marks: 70

Q-1 Multiple Choice Questions.

10

- 1 According to Wood-Ward Fischer rule for the UV spectra of 1,3-butadiene each alkyl substituted causes the λ_{\max} to shifted by _____.
(a)+10 m μ (b)+5m μ (c) -5m μ (d)-10m μ
- 2 Most common solvent used in ultra-violet region is/are _____.
(a)cyclohexene (b) 1,4dioxane (c) 95% ethanol (d) all of these
- 3 Which of the following molecules may show absorption in infrared?
(a)H₂ (b)CH₃CH₃ (c)N₂ (d)Cl₂
- 4prevents the oxidation of vitamin A and carotenes
(a)Vitamin (b) vitamin D (c) vitamin E (d) vitamin C
- 5 Vitamers of vitamin A is/are _____.
(a) Retinol (b) Retinal (c) Retinoic acid (d) all of these
- 6 Cynocobalmin is a vitamin....
(a)B₃ (b)B₇ (c)B₉ (d)B₁₂
- 7 _____ is used to reduce the soil acidity.
(a)calcium carbonate (b) calcium sulphate (c)calcium nitrate (d)calcium phosphate
- 8 A deficiency of _____ decreases the plant growth accompanied by extensive yellowing of green leaves.
(a) sulphur (b) carbon (c) phosphorous (d) nitrogen
- 9 The rotary kiln is set at an angle from the _____.
(a)horizontal (b)vertical (c)dihedral (d) linear
- 10 Which of the following has high compressive strength and relatively low tensile strength?
(a)plaster of paris (b)reinforced concrete (c)gypsum (d)cement

Q-2 Answer the following in short. (ANY TEN)

20

- 1 What is the essential requirement for a solvent to be used in UV spectrum?
- 2 Define the term Red shift and Blue shift.
- 3 Why methanol is good solvent for UV but not for IR determination?
- 4 What are required for Bone formation?
- 5 What are the deficiency symptoms of vitamin E?
- 6 What is Retinol?
- 7 Discuss the importance of fertilizer.
- 8 Explain the action of CaCN₂ as a fertilizer.
- 9 Discuss the importance of nitrogen as a plant nutrient.
- 10 Discuss the uses of lime.
- 11 What are cement and clinker?
- 12 Write the basic raw material for the manufacturing of cement.

- Q-3** 05
- (a) Discuss Witt's theory. 05
- (b) Describe various characteristics absorption band in the IR spectra of Benzoic acid and Cynobenzene. 05

OR

- Q-3** 05
- (a) Give the wood-ward fisher rules for α, β unsaturated Ketone & calculate λ_{\max} for Vitamin A1. 05
- (b) Discuss various types of transitions occurring in UV spectroscopy and arrange them in order of decreasing energy? 05

- Q-4** 05
- (a) Give the detail biochemical function of vitamin C. 05
- (b) Draw the cycle for absorption transport and biochemical function of vitamin A. 05

OR

- Q-4** 05
- (a) Define vitamin and give its classification. 05
- (b) What are the deficiency symptoms of vitamin D, E and C? 05

- Q-5** 05
- (a) Write a note on urea manufacturing. 05
- (b) Discuss on: Calcium Super Phosphate. 05

OR

- Q-5** 05
- (a) Discuss manufacturing of Ammonium Nitrate. 05
- (b) Write a note on: Mixed Fertilizer. 05

- Q-6** 10
- (a) Discuss manufacturing of cement by wet process. 10

OR

- Q-6** 10
- (a) Write short note on: Plaster of Paris. 10

ALL THE BEST

Given data for examples :

❖ Absorption values:

(A) α, β - Unsaturated ketone		(λ_{max}) nm
a) Basic value of parent system		215 nm
b) Increment for C-Substituent of α - Carbon		10 nm
c) Increment for C-Substituent of β - Carbon		12 nm
d) Increment for C-Substituent of γ - Carbon		18 nm
e) Increment for exocyclic double bond		05 nm
(B) Basic value α, β - Unsaturated aldehyde		207 nm
a) Increment for β - carbon substituent		12 nm
b) Increment for γ - carbon substituent		18 nm
(C) a) Parent acyclic diene with conjugation		217 nm
b) Ring residue		05 nm
(D) Polyene		
a) Basic value of heteroannular / acyclic diene		214 nm
b) Basic value of hetero annular diene		253 nm
c) Increment for each C - Substituent		05 nm
(E) Parent Values		
a) Acyclic conjugated diene and heteroannular conjugated diene		215 nm
b) Homoannular conjugated diene		253 nm
c) Acyclic triene		245 nm
(F) Increments		
a) Each alkyl substituent or ring residue		05 nm
b) Exocyclic double bond		05 nm
c) Double bond extending conjugation		30 nm