SEAT No._____

No of printed pages:03

[A-21(B)]

SARDAR PATEL UNIVERSITY
B.Sc. (Semester-IV) Examination, CBCS
Saturday 24th September,2022
12:30 p.m. to 02:30 p.m.
US04CCHE02: - Applied Chemistry/Applied Aspects of Chemistry
Total Marks:70

Q.1 **Choose the correct option for the following:** 10

1 How many fundamental vibrations are there in CO_2?
a) 4 b) 2 c) 3 d)1

2 The region of the ultraviolet-visible spectroscopy is _____.
a) 180 -800 nm b) 400 -800 nm c) 180- and 200 nm d)180-400nm

3 Beriberi is a disease caused by a vitamin ____deficiency.
a) B_{12} b) B_7 c) B_1 d) B_9

4 Vitamin ____is/are known as an antioxidant.
a) C b) E c) beta-carotene d) Above all

5 _____Vitamin is/are fat-soluble.
a) A b) D c) E d) Above all

6 The primary nutrients are ____for promote the plant growth.
a) N, P & K b) Zn, B & Cu c) Ca, Mg & S d) Mn, Mo & Cl

7 Calcium cyanamide contains approximately _____% calcium
a) 40 b) 20 c) 60 d) 80

8 Calcium cyanamide contains approximately _____% nitrogen
a) 10 b) 20 c) 50 d) 25

9 How much percentage of lime is present in Portland cement?
a) 70-79 b) 80-89 c) 75-85 d) 60-69

10 Dolomite also known as...
a) Dolomite rock b) Dolostone c) Dolomitic rock d) Above all

Q.2 **Answer the following in form of True OR False** 8

1 The Principle of UV-Visible Spectroscopy is based on the absorption of ultraviolet light
2 Basically spectroscopy is related to the interaction of light with matter.
3 Vitamin E is not found in the Vegetables.
4 Folic acid is Vitamin C.
5 Urea contains 15 Percentage of nitrogen:
6 Plants make carbohydrates from photosynthesis.
7 The calcinated gypsum is known as Plaster of Paris.
8 $CaSO_4\ 2H_2O$ is the chemical formula for gypsum.

(P.T.O.)

Q.3 **Answer the following in short (Attempt any Ten).** 20

1. Define the term Red shift.
2. Write application of U.V. Spectroscopy .
3. Define the term Chromophore with two examples.
4. Define the term Vitamer
5. What is Retinol?
6. Give the name of vitamin B_1,B_2
7. Give the chief requisites of fertilizer.
8. Explain, Urea act as a fertilizer.
9. Write the importance of fertilizer.
10. Explain the term White Cement.
11. What are cement and clinker?
12. Write the uses of lime.

Q.4 **Answer the following (Any Four)** 32

1. Write Woodward-Fieser Rule and Calculate the λmax for the following molecules. (i)2,4-Hexadiene (ii) Carvone (iii)Vitamin A_1.
2. Write analytical uses of IR spectroscopy and Discuss the Witt's theory.
3. Give the classification of vitamin and discuss the Vitamin C in detail.
4. Define the term Vitamin and Write biochemical functions of Vitamin E.
5. Discuss the classification of fertilizer and write note on manufacturing process of Ammonium Nitrate.
6. Write note on :(I) Urea manufacturing (ii) Mixed fertilizer.
7. Write note on: Plaster of Paris.
8. Discuss the manufacturing of cement by wet process.

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GIVEN DATA FOR EXAMPLE

Absorption Values :

	λmax. nm
[A] α,β-Unsaturated ketone:	
(a) Basic system 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 for heteroannular / acyclic diene	217 nm
(b) Basic value for hetero annular	253 nm
(c) Increment for each C-Substituent	05 nm
[D] Parent values	
(a) Acyclic conjugated diene and heteroannular conjugated diene	215 nm
(b) Homo annular conjugated diene	253 nm
(c) Acyclic triene	245 nm
[E] Increments	
(a) Each alkyl substituent or ring residue	05 nm
(b) Exocyclic double bond	05 nm
(c) Double bond extending conjugation	30 nm