VCD 7/10/19 CHEMISTRY P-II S.Y.B.Sc SEM-IV ATKT Oct 2019
MARKS:100 TIME : 3 Hrs

NOTE: i) All the questions are compulsory.
ii) Figures to right indicate full marks.
iii) Use of non –programmable calculator / log table is allowed.

Q1. A. Fill in the blanks with suitable option (any 12) (12)

i. Inhibitor _____ catalytic activity.
a. increases b. decreases c. doesn't alter.

ii. A catalyst _____ the energy of activation.
a. enhances b. lowers c. maintains

iii. For FCC, number of atoms belonging to unit cell are _____
a. 4 b. 2 c. 3

iv. There are _____ _____ Bravais lattices
a. 15 b. 14 c. 13

v. The total number of effective atoms in _____ is 4
a. Simple cubic b. FCC c. BCC

vi. In heterogeneous catalysis catalyst is in _____ phase as reactants
a. same b. different c. none of these

vii. Acid rain contains_____.
a. HNO_3 b. H_2SO_4 c. both a and b

viii. _____ is called king of chemicals.
a. HNO_3 b. H_2SO_4 c. HCl.

ix. _____ produces laughter.
a. N_2O b. NO_2 c. N_2O_2

x. As hydration energy of anions increases basicity of its aqueous solution _____
a. increases b. decreases c. remains same

xi. As per Bronsted – Lowry concept, acid is a _____ donor
a. Proton b. electron c. nuetron

xii. Hydrolysis of hydrated cation makes solution_____
a. basic b. neutral c. acidic

xiii. The pKa values are greater than 14 for _____ cation.
a. Non acidic b. weakly acidic c. feebly acidic

xiv. Pyrrole is a _____membered ring .
a. 4 b. 5 c. 6

xv. Thiophene is _____ .
a. Aromatic b. non aromatic c. aliphatic

xvi. Diazotization occurs in presence of ____
a. HNO_2 b. HNO_3 c. H_2SO_4

xvii. Amines are _____basic than hydroxides.
a. more b. less c. equally

xviii. _____amine undergoes carbylamines reacton.
a. Methyl b. dimethyl c. trimethyl

Q1. B. State true or false (any three) (03)

i. Catalyst increases the rate of reaction
ii. Sodium chloride crystallizes in BCC form
iii. Pyrrole undergoes electrophilic substitution reaction
iv. Pyridine is basic
v. Degree of hydrolysis decreases with increase in charge to radius ratio.
vi. PAN causes Smog

Q1. C. Match the columns (any five) (05)

Column A	Column B
i. Promoters	a. Colorless gas
ii. Catalyst	b. Brown gas
iii. NO_3	c. Diazonium salt
iv. PAN	d. Lowers activation energy
v. Gattermann reaction	e. Raises activation energy
vi. Pyridine synthesis	f. Water treatment
	g. Hantzsch synthesis
	h. Smog

Q.2. Attempt the following (any four) (20)

A. Write a note on activity of nanoparticles as catalyst.
B. What are the characteristics of catalyst?
C. Define crystallography. Write a note on law of constancy of interfacial angle.
D. Explain: i. centre of symmetry and ii. Plane of symmetry
E. Derive Michalis- Menten equation for enzyme catalysis
F. Define : unit cell, crystal lattice, axis of symmetry, center of symmetry and lattice planes

Q.3. Attempt the following (any four) (20)

A. What are the factors affecting hydration of anions?
B. List the classification of anions based on pKb values with suitable example.
C. With the help of predominance diagram explain the weakly basic anion and moderately basic anion with suitable examples.
D. Write a note on acid rain.
E. What is photochemical smog? What are its harmful effects ?