R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR

Chemistry V SEMESTER-V FLP-I

M.M=80

Sec. A: Attempt all 10 questions. Each question carries a mark weightage of 2. 10×2=20

1. Define symbiosis.
2. Write down three properties of soft bases.
3. What do you understand by paramagnetic substance?
4. What is a color enhancer?
5. Write Hooke's law.
6. Define coupling constant.
7. What is polymerization? Name any four natural polymers.
8. Define quantum gain.
9. What is the law of photochemical equivalence.
10. What is called a light sensor?

Sec.- B: Choose any 4 questions, choosing 1 question from each unit. Each question carries a mark weight of 15. 15 × 4 = 60

Unit I

1. Write a note on the following

A. Explain Pearson's concept of hard, soft acids and bases. 15

OR

1. Short note (any two)

a. Explain the applications of hard mild acid bases.

B. What are the limitations of the HSAB principle

Unit II

2. Explain the following 15

A. Recurrent displacement

b. Color agricultural displacement

c. Beer Lambert law and its limitations.

D. Chromophore and auxochrome

OR

2. Write a note on the following:

A. bethachrome shift

B. Hypochromic shift

C. hypsochromic shift

D. hypochromic shift

Unit III

3. Write a note on the following: 15

A. Fair Kite Green

Yes. Methyl Oryz.

C. Crystal Violet

D. Ziegler Natta catalyst and its utility

OR

3. Explain the following:

A. Phenolphthalein

B. Fluorescein

c. Phenol formaldehyde resin

D. Bakelite

Unit IV

4. a. Explain the laws of different types of photochemicals. 15

B. Explain what are photosensitivity reactions or photosensitivity reactions.

OR

4. a. Explain what quantum gain is. What do you mean by high quantum gain and low quantum gain?

b. Give the Jablonski diagram of light absorption and explain the phenomena of fluorescence and phosphorescence.

R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR
Chemistry V SEMESTER-V FLP-II

M.M=80

Sec. A: Attempt all 10 questions. Each question carries a mark weightage of 2. 10×2=20

1. What is Pitzer's theory?
2. Write three properties of hard aggregates.
3. State three properties of mild acids.
4. What is a pigment?
5. What is the law of absorption?
6. Write two uses of TMS.
7. What is Azo staining?
8. What is Kom Four?
9. What is spectrochemical series?
10. Define corrosion.

Sec. B: Choose any 4 questions, choosing 1 from each unit. Each question carries a mark weight of 15. 15 × 4 = 60

Unit I

1. a. What are the characteristics of hard and soft acids and bases? 15
   B. Explain the different theories of hardness and sweetness.
   C. Lilium chloride undergoes hydrolysis but LiF does not. Explain.
   d. Write a note on symbiosis

OR 2

a. Describe the factors affecting crystal field stabilization energy
   b. What is the crystal Feld stabilization energy of the complex compound?
   C. Describe the Guy method of determining magnetic susceptibility.

Unit II

3. Explain the following 15
   Explain electronic transition and tell about its different types.
   B. What is the significance of the fingerprint region in infrared spectroscopy?
   C. Describe the various applications of infrared spectroscopy and near-infrared spectroscopy.

OR 4.

a. Explain Woodward-Fieser's law for combined dinos and its utility with examples.
explain
   B. What is Hooke's law?

Unit III

5. Understand the following 15
   K Teflon
   B PVC
   G Buena S
   th nylon 6

OR

6. Write short notes on the following:
   A. Indigo
   B Congo Red
   C. Crystal Violet
   d. Epoxy resin

Unit IV

7. a. Draw a diagram of Jablonski and explain its various processes. What is radiative and non-radiative transition?
   B. Difference between thermal reaction and photochemical reaction

OR

8. Write a note on the following:
   A. coelomal electrode
   b. Applications of electrochemical series c. What is Nernst equation

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CHEMISTRY- SEMSTER -V (UNIT I & II) HLP-I

M.M=40

Sec. A Choose any 5 questions. Each question carries a mark weightage of 2. 5×2=10

1 What are mild acids?

2 Explain HgO is soluble in HCl while HgS is insoluble.

3 What is the toxicity of metal catalysts?

4. State two drawbacks of CFT.

5 What is blue heat?

6 Equivalent and Incomparable Protons

Define chemical displacement.

8. Define nuclear shielding.

9 What is the relationship between Delta and Tau Manko?

10 Write the principle of H1 NMR NMR spectroscopy.

Sec. B: Choose any 2 questions, choosing 1 question from each unit. Each question carries a mark weightage of 15.

UNIT I

1. a. Explain the different principles of hard and soft acids and bases.

B. PT catalysts are contaminated by CO 15

OR 2.

Explain the CFT splitting into octahedral and tetrahedral packings.

Unit II

3. How is UV spectroscopy useful in determining

1 Determination of the molecular weight of a compound

2 Study of the kinetics of the reaction

3 Identifying geometric isomers 15

OR

4. 1. Explain how many types of vibrations are there in organic compounds.

2.IR Explain the various uses of IR spectroscopy.

3. Chemically equivalent protons and homotropic protons

R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR
Chemistry SEMESTER- V (UNIT III & IV) HLP-II
M.M=40

Sec. A Choose any 5 questions. Each question carries a mark weightage of 2. 5×2=10

1. What is polyethylene polymer?
What is Thermosetting
3. What is Epoxy Resin
4. What is the difference between soap and detergent?
5. Write the formula for quantum efficiency.
6. Define EMF of a cell.
7. What is liquid liquid junction.
8. What is called extreme potential?
9. Write two uses of salt bridge.
10. What are drugs?

Sec. B: Choose any 2 questions, choosing 1 question from each unit. Each question carries a mark weightage of 15

Unit III

1. Write a comment on the following 15
1. Sulfenimide and Sulfanixazole
2 Sulfa guanidine and sulfacetam
3 Indigo Blue

OR

2 a. Write the mechanism of sulphonation of benzene.
b Explain how chondrocytes are classified on the basis of their usefulness.

Unit IV

3. Derive a Beer-Labert law and state its limitations. 15
b What do you understand by quantum doctor, how do you determine it experimentally, what is its significance?

OR

4. a. Explain what is called extreme potential. Explain what do you understand by hydrogen initial voltage.
What is standard electrode potential and how is it measured?
cWhat is meant by electrochemical cell? What are the rules for representing an electrochemical cell? Explain with examples.

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Chemistry SEMESTER-V (UNIT I) QLP-I

M.M=20

Sec. A Choose any 3 questions. Each question carries 2 marks. **3×2=6**

1. What is the toxicity of metal catalysts?
2. State the relative strength of halogens.
3. What is Curie temperature?
4. Write three points of VBT theory.
5. What do you understand by singlet and triplet states?
6. Explain reverse iron magnetism.
7. Define CFSE.

8. Write three properties of hard bases.
9. Write two limits for HSA B.
10. What are hard acids?

Sec. B Choose any 1 question. Each question carries 14 marks.

Unit I

1. a.CH. Why is CH3I more stable than CH3F?
   b. Explain the stabilities of complexes
   Why is cco +2 a limiting acid while (CO (CN))-3 is a maleic acid?
2. a. Write the main points of CFT
   b. Differentiate between CFT and VBT
   c Explain the main points of VBT theory.
3. Explain what a charge transfer spectrum is.
   b Explain how the 3F terms are split by L_S coupling.
   Explain the absorption spectrum of aqueous solution of TiCl3 on the basis of CFT.
4. a Explain the magnetic tendency of substances
   b Explain which of the two, singlet and triplet, has lower energy.
   Explain what cooperative magnetism is.

R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR
Chemistry SEMESTER-V (UNIT II) QLP-II
M.M=20

Sec. A Choose any 3 questions. Each question carries 2 marks. 3×2=6

1 What is absorption spectroscopy?
2. Define absorption spectra
3. What is Absorption Point
What is Molar Extinction Coefficient
5. Define permeability
6. What is Molar Absorbance
7. What is nuclear test 8.
What is spin-spin coupling constant
9. Define NMRspectroscopy.
10. What is Coupling Constant

Sec.B Choose any 1 question. Each question carries 14 marks.

Unit II

1. Write a comment on the following
a Types of vibration
b rules of selection
C fingerprint area
d characterizing the coupling constant

2 Write a comment on the following
Explain chemical displacement in detail.
b dysterotropic proton

Explain nuclear shielding and deshielding.
What is the importance of tetramethylsilane in NMR spectroscopy and its uses?
4 explain the following
a Explain the principle of H1 NMR spectroscopy.
b What is meant by spin-spin coupling constant? Explain ethyl bromide keysplitting with an example.
C. Interpret the H1 NMR spectra of acetaldehyde, acetone and toluene.

R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR
Chemistry SEMESTER-V (UNIT III) QLP-III
M.M=20

Sec. A Choose any 3 questions. Each question carries 2 marks. 3×2=6

What are Theroplastics

2. Write three uses of Novolac polymer.

3. Give the structure of bakelite polymer

4. Give three uses of Bakelite polymer.

5. Give two differences between soap and detergent.

6. What are soap detergents

7.2 Describe the characteristics of sulpha drugs.

8. Write the uses of two sulpha drugs.

9. What is an analgesic drug

10. What is Antipiracy

Sec. B Choose any 1 question. Each question carries 14 marks.

Unit IIII

1. a Write the mechanism of sulfonation in benzene

b. Explain free radical polymerization by giving two examples.

Explain these colors

2. a Prepare the uncoupled acid from benzene sulphonic acid

What is antimalarial Ig?

What is C Mercaptan

3. Explain the following

a alizarin

b Collagen condensation and its mechanism

C keto enol operon

How will you obtain the following from ethyl acetate?

acetal acetone

b antipyrine

C succinic acid

ɗ Organization pluralization process

R.K. VIGYAN PG MAHAVIDYALAYA KALWAR JAIPUR
Chemistry SEMESTER-V (UNIT IV) QLP-IV
M.M=20

Sec. A Choose any 3 questions. Each question carries 2 marks. **3×2=6**

1. Define photochemistry
What is the Biggest Dropper Rule
What is Phosphorescence Phenomenon

4. Give two reasons for high quantum efficiency
5. What is internal change
6. What is a heat reaction
7. What is Beer's Law
8. Give two reasons for low quantum efficiency.
9. Define pH
10. What is a concentration cell?

Sec. B Choose any 1 question. Each question carries 14 marks.

Unit IV

1. What is quantum efficiency? Explain in detail the instruments, methods used to determine it and the factors affecting it.

2. a. Define pH and pKa
b Define activity and activity coefficient.
Explain reference electrode with an example.

3 a. What is a quinohydrone electrode and describe its use for measuring the pH of a solution.
b. Write the difference between electrode concentration cell and electrochemical concentration cell.
Describe the glass electrode.

4 a What is meant by an electrochemical cell? What are the rules for representing an electrochemical cell? Explain with examples.
b. Suggest measures to prevent corrosion of metals.
draw a daniel cell