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**END SEMESTER REGULAR EXAMINATION,
JANUARY – 2025**

Semester : 1st (New)

Branch : Common to All

Subject Code : BS-105

APPLIED CHEMISTRY

Full Marks – 60

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Instructions :

- (i) Question numbers 1 to 3 are compulsory and objective type.
- (ii) Answer any *five* questions from Question numbers 4 to 9.

1. Fill in the blanks : $1 \times 5 = 5$

(a) Gram per litre = Normality \times _____.

(b) In covalent compounds the bond is formed due to _____ of electrons.

[Turn over

(c) Inversion of cane sugar is catalysed by _____ enzyme.

(d) Chemical equilibrium is _____ in nature.

(e) Ammonium hydroxide is an example of _____ electrolyte.

2. Choose the correct answers : $1 \times 5 = 5$

(a) The colour of phenol-phthlein indicator in alkaline medium is

- (i) Yellow
- (ii) Colourless
- (iii) Pink
- (iv) Orange

(b) 0.1 mole of HCl is equal to

- (i) 3.65 gram of HCl
- (ii) 36.5 gram of HCl
- (iii) 18 gram of HCl
- (iv) 365 gram of HCl

(c) p^H of 0.001(M) H_2SO_4 solution is

- (i) 1
- (ii) 2
- (iii) 3
- (iv) 4

(d) Water can be sterilized by

- (i) Sulphur
- (ii) Ozone
- (iii) Magnesium
- (iv) Sodium

(e) German silver is an alloy of

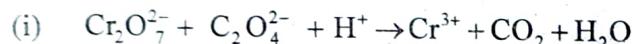
- (i) Calcium
- (ii) Silver
- (iii) Potassium
- (iv) Copper.

3. Match the following Column - A with Column - B : $1 \times 5 = 5$

Column - A	Column - B
(a) CaO	(i) Electronic configuration
(b) Sulphur	(ii) Softening of water
(c) Aufbau principle	(iii) Basic flux
(d) Gram/Coulomb	(iv) Vulcanization of Rubber
(e) Ion-exchange process	(v) Electro-chemical equivalent.

4. (a) What is a Redox reaction ? Give an example of a Redox reaction. 2

(b) Balance the following equation by ion-electron method (any one) : 3



(c) What is Alkalimetry ?

50 ml of 0.15N NaOH solution is diluted to make it 0.1N solution. Calculate the amount of water added. 1+3=4

5. (a) What do you mean by Heisenberg's uncertainty principle ? 2

(b) Write down the electron dot structure of the following compound (any three) : 1×3=3

(i) CaO (ii) MgCl₂

(iii) NH₃ (iv) N₂.

(c) What is Hydrogen bonding ? Classify the different types of hydrogen bonding with suitable examples. 1+2=3

(d) State the Law of mass action. 1

6. (a) What is Buffer solution ? Explain the different types of buffer solution with examples. 1+2=3

(b) What is a Catalyst and Catalysis ? Name the catalyst used in the synthesis of 3

(i) Ammonia by Haber's process.

(ii) Sulphuric acid by contact process.

(c) 10 ampere current is passed through a copper sulphate cell for 2 hours. Calculate the amount of copper deposited at cathode. 3

7. (a) What is Rusting of Iron ? Write the mechanism of Rusting of Iron. 1+2=3

(b) What is Portland cement ? Write the function of lime and gypsum in Portland cement. 1+2=3

(c) Differentiate between Calcination and Roasting. 3

8. (a) What is Homopolymer and Co-polymer ? Give examples. 3

(b) What is the difference between temporary hard water and permanent hard water. 3

(c) What is sterilization of water ? How water can be sterilized by using bleaching powder ? 3

9. Write short notes on any *three* : $3 \times 3 = 9$

- (a) Normal solution and Molar solution
- (b) Primary cell and Secondary cell
- (c) Quantum numbers
- (d) Classification of glass.