Reg. No. ☐☐☐☐☐☐☐☐☐

VI Semester B.Sc. Degree Examination, July/August- 2024
CHEMISTRY
Inorganic Chemistry - IV and Physical Chemistry - IV
(NEP CBCS Scheme 2023-24 Onwards)
Paper : VII

Time : 2 ½ Hours   Maximum Marks : 60

Instructions to Candidates:
1. Question paper consists of **Three** parts. Answer **All** the parts.
2. Write chemical equations and diagrams wherever necessary.

PART - A

Answer any **Five** of the following questions. Each question carries **Two** marks.(5×2=10)

1. Give any two characteristics of Propellants.

2. Differentiate between direct and indirect fertilizers.

3. What are conducting Polymers? Give an example.

4. Define half wave potential and write its significance.

5. Explain the principle of Potentiometry.

6. State Nernst heat theorem.

7. Give any two applications of atomic absorption spectroscopy.

PART - B

Answer any **Four** of the following questions. Each question carries **Five** marks.(4×5=20)

8. a) What is Gypsum? Explain the role of gypsum in setting of cement.

   b) Write a note on glazing of ceramic ware.   (3+2)

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9. a) How are explosives classified? Give an example for each.
    b) What is LPG? Give its composition. (3+2)

10. a) Describe the process of manufacture of urea.
    b) Give two examples for phosphatic fertilizers. (3+2)

11. a) How nanomaterials are produced by Sol - gel method?
    b) Write any two engineering applications of Conducting Polymers. (3+2)

12. a) Write the applications of Polarography.
    b) Define diffusion co-efficient in voltametry. (3+2)

13. Derive Gibb's - Duhem equation. (5)

PART - C

Answer any **Three** of the following questions. Each question carries **Ten** marks.(3×10=30)

14. a) Describe the manufacture of soda glass by tank furnace method.
    b) Give the role of the following constituents in a point;
       i) Pigment
       ii) Medium
       iii) Thinner
       iv) Anti skinning agent.
    c) What are Fullerenes? Give an example. (4+4+2)

15. a) Discuss in brief type - I and type - II super conductors.
    b) What are nanomaterials? Give the classification of nanomaterials based on dimension with example.
    c) How is polyaniline prepared? (4+4+2)

16. a) Describe the conductometric titration of strong acid with strong base.
    b) Draw the current - potential curve in Polarography. Explain the different types of currents observed in polarogram.
    c) Give the principle of pH metry. (4+4+2)

17. a)   Derive Clausius - Clapeyron equation.

b)   Write the differences between Flame emission and atomic absorption spectroscopy.

c)   The boiling point of water at 1 atm pressure is $100^{\circ}C$. Its vapour pressure at $80^{\circ}C$ is 0.4672 atm. Calculate the heat of vapourisation of water. Given, $R = 8.314\ Jk^{-1}mol^{-1}$. **(4+4+2)**

18. a)   Define dipole moment and explain why Ccl_4 has a zero dipole moment and $CHCl_3$ has a positive dipole moment.

b)   Explain

i)   Peltier effect.

ii)   Seebeck effect.

c)   Write Clausius - Mossotti equation. Indicate the terms involved. **(4+4+2)**

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