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Reg. No.

S.NO:139 BATCH: 2017, 2018

END OF SEMESTER EXAMINATIONS, NOVEMBER - 2018
PHYSICAL CHEMISTRY - I
SUBJECT CODE: 15P3CH03

MAJOR : M.Sc (CHEMISTRY) SEMESTER : I
TIME : 3 HOURS MAX. MARKS :70

SECTION – A (10 X 1 = 10)

Answer ALL questions:

1. Define eigen function
2. What is an Operator?
3. What is approximate method?
4. State delocalisation energy.
5. What is symmetry element?
6. Define Point group
7. State third law of Thermodynamics.
8. Define entropy
9. State Lewis – Randall rule.
10. Define activity.

SECTION – B (5 X 4 = 20)

Answer ALL questions.

11. a) Write the postulates of quantum mechanics.

(OR)

b) Explain the time – dependent schrodinger wave equation.

12. a) Discuss the perturbation method for ground state of the atom.

(OR)

b) Explain Born – Oppenheimer approximation.

13. a) Explain Great Orthogonality theorem.

(OR)

b) Construct the group multiplication table of C_2V point group.

14. a) Derive Gibb's Helmholtz equation.

(OR)

b) Write a note on Nernst heat theorem.

15. a) How fugacity of a real gas is determined?

(OR)

b) What is partial molar heat content and how is it determined?

SECTION – C (5 X 8 = 40)

Answer ALL questions.

16. a) Deduce the solution of Schrodinger wave equation for a particle in one dimensional box.

(OR)

b) Write a complete solution of one dimensional harmonic oscillator.

17. a) How is ground state energy of H_2 molecule determined by variation method?

(OR)

b) Apply HMO treatment to ethylene system.

18. a) Discuss on electronic spectra of ethylene using group theory.

(OR)

b) Explain reducible and irreducible representation.

19. a) Derive Clapeyron clausius equation.

(OR)

b) Explain Boltzmann expression of Probability and its significance.

20. a)
    (i) Explain excess thermo dynamic functions.
    (ii) Derive Duhem Margulus equation.

(OR)

b) How is activity and activity co-efficient determined by freezing point method.

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