S.No. 418

17POC06

(For the candidates admitted from 2017–2018 onwards)

M.Sc. DEGREE EXAMINATION, APRIL/MAY 2018.

Second Semester

Organic Chemistry

PHYSICAL CHEMISTRY – II

Time : Three hours Maximum : 75 marks

PART A — ($5 \times 5 = 25$ marks)

Answer ALL the questions.

1. (a) Write short note on Planck's quantum theory.

Or

(b) Explain the 'Heisenberg uncertainity principle'.

2. (a) How will you apply the variation method to helium atom in the ground state?

Or

(b) Write the application of quantum mechanics.

3. (a) Explain the sp^2 hybridisation with suitable example.

Or

(b) Discuss the idea of self consistent fields.

4. (a) Write a short note on solid-liquid interfaces.

Or

(b) Define solubilization. Explain with suitable example.

5. (a) Discuss the Lindemann theory of unimolecular reactions.

Or

(b) Define catalysis. Discuss the classifications with suitable example.

PART B — ($5 \times 10 = 50$ marks)

Answer ALL the questions.

6. (a) Define operators. Discuss the classification of operators with suitable example.

Or

(b) Explain the postulates of quantum mechanics.

7. (a) Explain in detail about the harmonic oscillator in quantum mechanics.

Or

(b) Describe the rigid rotator for diatomic molecular with suitable example.

8. (a) Explain :

(i) Born-oppenheimer approximation.

(ii) MO for polyatomic molecules.

Or

(b) Describe Huckel pi electron theory and its applications to butadiene molecule.

9. (a) Write short notes on : (5 + 5)

(i) Surface tension.

(ii) Solid-gas interface.

Or

(b) Derive BET adsorption isotherm.

10. (a) Explain the comparision of collision theory and absolute reaction rate theory (ARRT).

Or

(b) Derive Michaelis-Menton equation for enzyme catalysed reactions.

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