DPP-1616
M. Sc. (Sem. II) (Chemistry) (S.F.) Examination
April / May - 2016
Physical Chemistry : Paper - III

Time : 3 Hours] [Total Marks : 70

Instructions :
(1) Fill up strictly the details of signs on your answer book.
Name of the Examination: M. SC. (SEM. II) (CHEMISTRY) (S.F.)
Name of the Subject: PHYSICAL CHEMISTRY : P. - 3
Subject Code No.: 1 6 1 6 Section No. (1, 2,.....): NII

(2) Attempt all four questions.
(3) Figures to the right indicate full marks.

1 Answer any three from the following : 18
   (a) Write a note on nuclear reactors.
   (b) Give an account on scintillation counters.
   (c) Write a note on tracer techniques.
   (d) Describe nuclear fission and fusion reactions.

2 Answer any three from the following : 18
   (a) Describe different types of surfactants. Explain their micelle formation.
   (b) What are catalysts and describe their characteristics. Explain heterogeneous catalysts giving suitable example.
   (c) Describe a method for the determination of CMC.
   (d) Give a detailed account of nanotechnology.

3 Answer any three from the following : 18
   (a) Derive expression between thermodynamic dissociation constant and dissociation function.

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(b) Explain relation between activity and concentration for electrolytic solutions. Calculate ionic strength of 1 M Zinc chloride.

(c) What is meant by corrosion? Explain the corrosion of metals as surface and electrochemical phenomena.

(d) Write a note on fuel cells.

4 Clearly distinguish in (any four) the following:

(a) Cloud point and Kraft point
(b) Write short note on micelles and their applications.
(c) Activity and Activity coefficient.
(d) Nuclear fusion and Nuclear fission
(e) Emulsions and Microemulsions.
(f) Write a note on radioisotopes and their applications.
(g) Micelles and Reverse micelles.