Seat No. _____

HB-003-1104003

M. Sc. (Sem. IV) Examination

April - 2023

Physical Chemistry : (CPM) 403

(Chemistry of Materials-I)

(New Course)

Faculty Code : 003

Subject Code : 1104003

Time : $2\frac{1}{2}$ / Total Marks : **70**

Instructions :

(1) All questions are compulsory.

(2) Each carry equal marks 14 – Total five questions.

1 Answer the following : (any seven) **14**

(a) Define : Nanomaterials, Micelles, Fuel cell, Ultrasonics.

(b) What are the advantages of fuel cells ?

(c) What is the environmental effects of solar energy ?

(d) What is the full form of QSAR ? Give the name of different physico-chemical properties of QSAR.

(e) State the factors affecting ultrasonic waves.

(f) Give an account of Gemini surfactant.

(g) What are the importances of nano technology ?

(h) Discuss advantages of Photovolatics.

(i) Discuss methyl alcohol fuel cells.

(j) What are the different components of typical surfactant describe with the structure.

2 Answer the following : (any two) **14**

(a) Explain Hydrogen-Oxygen fuel cells.

(b) What is microemulsion ? Discuss various types of properties and application of microemulsion.

(c) Discuss solar technology.

3 Answer the following : **14**

(a) What is the principle of ultrasonics? Give its applications.

(b) Explain the application of photovolatic system.

OR

(a) Discuss :

(i) Conversion of solar energy into other forms.

(ii) Advantages and disadvantages of QSAR.

(b) Discuss general chemistry of fuel cells.

4 Answer the following : **14**

(a) Give the various application of nano materials.

(b) Explain :

(i) What are the advantages and disadvantages of micro emulsion ?

(ii) Discuss carbon nanotube.

5 Answer the following : (any two) **14**

(a) Explain :

(i) **5**01-gel method

(ii) Co-precipitation method

(b) What is the critical micelle contraction ? Discuss the factors affecting critical micelle concentration (CMC).

(c) Discuss the electronic properties of QSAR.

(d) Discuss the various factors affecting size, shape and aggregation number of micelle.

———————