



DO-003-1104003

Seat No. _____

M. Sc. (Sem. IV) Examination

March / April - 2022

Physical Chemistry

(Chemistry of Materials) (New Course)

Faculty Code : 003

Subject Code : 1104003

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) All questions carry equal marks.

- 1** Answer the following : (any seven) **14**
- (1) Define : Nano materials, surfactant, fuel cells, micelles.
 - (2) What are the advantages of fuel cells ?
 - (3) Give an account of quantum dots.
 - (4) Discuss efficiency of fuel cells.
 - (5) State the principle of ultrasonics.
 - (6) Briefly discuss Gemini surfactant.
 - (7) Write full form of QSAR and state different physio-chemical properties of QSAR.
 - (8) What are the advantages of solar cells ?
 - (9) State the importance of nano technology.
 - (10) State the factors affecting ultrasonic waves.
- 2** Answer the following : (any two) **14**
- (1) What is micro emulsion ? Discuss various types of properties and application of microemulsion.
 - (2) Discuss the solar technology.
 - (3) Give the advantages and disadvantages of QSAR.

- 3** Answer the following : **14**
- (1) Define critical micelle concentration ? What are factor affecting critical micelle explain in detail.
 - (2) Explain :
 - (i) Environmental implication of solar energy.
 - (ii) Sol-gel method with examples.

OR

- 3** Answer the following :
- (1) Explain solar photo volatic cell.
 - (2) Explain :
 - (i) Hydrogen oxygen fuel cells.
 - (ii) Application of ultrasonics.
- 4** Answer the following : **14**
- (1) Discuss applications of nano materials.
 - (2) Explain :
 - (i) Carbon nano tube
 - (ii) Packing parameters in micelle.
- 5** Answer the following : (any two) **14**
- (1) Discuss general chemistry of fuel cells.
 - (2) Explain all the applications of photovolatic system in detail.
 - (3) What are the various parameters determined by ultrasonic techniques ?
 - (4) Explain :
 - (i) Coprecipitation method
 - (ii) Methyl-alcohol fuel cell and Hydrocarbon-oxygen fuel cell.
