

Exam. Code : 209004
Subject Code : 4827

M.Sc. Physics 4th Sem. (Batch 2020-22)
NANO TECHNOLOGY
Paper : Phy-566

Time Allowed—3 Hours] [Maximum Marks—100

Note :— Attempt *five* questions in all, selecting at least **one** question from each section. The **fifth** question may be attempted from any section. All questions carry equal marks.

SECTION—A

1. What are different techniques of fabrication of nanoparticles ? Give brief discussion of any two techniques. 20
2. How AFM is used for nanolithography ? Give its detail. 20

SECTION—B

3. (a) Write the difference between SEM and TEM. 10
(b) Explain the principle and working of FTIR spectroscopy. 10
4. What do you understand about scanning electron microscopy and scanning probe microscopy ? 20

SECTION—C

5. (a) What are fuel cells ? Explain. 10
- (b) Give preparation and characterisation of fullerene and explain its properties. 10
6. Explain preparation of carbon nanotubes. Also discuss its mechanical and vibrational properties. 20

SECTION—D

7. Define MEMS and NEMS. Explain packaging and characterisation of sensors. 20
8. Define carrier injection and polymer nanoparticles. Also write the applications of semiconductor nanoparticles. 20