

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023
(Fourth Semester)

Branch – PHYSICS

CRYSTAL GROWTH, THIN FILMS & PLASMA PHYSICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 The main cause of crystal growth is
(i) Vapor (ii) solute
(iii) melt (iv) vapor, solution and melt
- 2 Sol gel method is chemical process.
(i) Dry (ii) Wet
(iii) semi liquid (iv) semi solid
- 3 Thickness range of the film used in thin film technology is
(i) 0.5 - 2.5 mils (ii) 0.02 - 8 mils
(iii) 10-20 mils (iv) 0.05 - 0.07 mils
- 4 The mechanical properties of thin films are different from those of bulk materials because of their uniquestructure.
(i) Macro (ii) micro
(iii) both (i) and (ii) (iv) none of the above
- 5 Plasma is discovered by which English scientist?
(i) William Crookes (ii) Wilson
(iii) Watson (iv) none of the above

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a) What are poly crystals?
OR
b) What is meant by growth from solution?
- 7 a) What are silica Gel?
OR
b) Discuss about Gelation time.
- 8 a) Define Thin film and write short notes on its characteristics.
OR
b) Explain evaporation processes.
- 9 a) Explain the mechanical strength of films.
OR
b) Explain the texture and micro structure control in films.
- 10 a) Write a briefly note a plasma temperatures.
OR
b) Write short note a thermal plasma sources.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a) Compare and contrast different types of Nucleation.
OR
b) Explain the basic steps for growing single crystals and their application.
- 12 a) Write short note a Gel density ~~PH~~.
OR
b) Explain Mier's solubility curve, and super saturation ratio.
- 13 a) Explain CVD Thermal processes and write short notes on their safety.
OR
b) Discuss about the Film Growth kinetics.
- 14 a) Explain structural characterization of films and surfaces.
OR
b) Write short note a chemical characterisation of surfaces and films.
- 15 a) Explain Different types of plasma.
OR
b) Discuss about the man-made plasmas and their basic concepts.

Z-Z-Z

END