

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022  
(Fifth Semester)

Branch – CHEMISTRY

**DISCIPLINE SPECIFIC ELECTIVE – I : POLYMER CHEMISTRY**

Time: Three Hours

Maximum: 75 Marks

**SECTION-A (10 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks

(10 x 1 = 10)

- 1 Which of the following act as an initiator in free-radical polymerization?  
(i) Grignard reagent (ii) Lewis's acids  
(iii) Benzoyl peroxide (iv) Potassium amide
- 2 What term the Ziegler Natta catalyst is formed between -----  
(i) Triethyl aluminium and titanium halide (ii) Triethyl aluminium and silver halide  
(iii) Triethyl aluminium and platinum halide (iv) Triethyl aluminium and carbon halide
- 3 Which of the following polymerization is also known as pearl polymerization?  
(i) Bulk polymerization (ii) Solution polymerization  
(iii) Emulsion polymerization (iv) Suspension polymerization
- 4 Which will indirectly measure vapor pressures of polymer solutions?  
(i) Symmetry (ii) Isentropic  
(iii) Osmometry (iv) Adiabatic
- 5 The polymer in which steric placements of the substituent are arranged in such a way to give alternate d and l configurations, is known as -----  
(i) isotactic polymer (ii) atactic polymer  
(iii) syndio-tactic polymer (iv) none of these
- 6 Which of the following kind of polymers are known for their high crystallinity?  
(i) isotactic (ii) syndiotactic  
(iii) atactic (iv) none of the these
- 7 Which of the following is a natural polymer?  
(i) Glyptal (ii) Polyester  
(iii) Starch (iv) Nylon - 6
- 8 Which of the following is a thermosetting polymer?  
(i) polystyrene (ii) polyolefins  
(iii) nylons (iv) phenolic resins
- 9 Which of the following is used by compression moulding ?  
(i) Thermoplastics (ii) Thermosetting  
(iii) both (i) and (ii) (iv) None of these
- 10 Wood flour and silica flour are examples of -----  
(i) Fillers (ii) Plasticizers  
(iii) Stabilizers (iv) Lubricants

Cont...

**SECTION - B (25 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 5 = 25)

- 11 a How will you classify the polymers?  
OR  
b Bring out the basic principles of condensation polymerisation.
- 12 a Brief about the bulk and solution polymerisation techniques.  
OR  
b Describe the weight average molecular weights of polymers.
- 13 a State the terms 'isotactic', 'syndiotactic' and 'atactic' configuration of stereopolymers.  
OR  
b Describe the electrical conductivity of polymers.
- 14 a How will you prepare the polyesters? State its applications.  
OR  
b Outline the preparation and uses of polypropylene and PVC.
- 15 a State Extrusion and compressive moulding process.  
OR  
b Explain recycling of polymers.

**SECTION - C (40 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 8 = 40)

- 16 a Discuss the step reaction and chain reaction polymerization  
OR  
b Examine the coordination polymerization
- 17 a Highlight the Light scattering method for the determination of molecular weight of polymers.  
OR  
b Outline the advantages and disadvantages of emulsion and suspension polymerisation.
- 18 a Highlight the glass transition temperature. Identify the factors affecting the glass transition temperature.  
OR  
b Infer the thermal stability of polymers
- 19 a Outline the preparation, properties and uses of polyamides and polymethyl methacrylate (PMMA).  
OR  
b Discuss the preparation and uses of Teflon and Phenol-formaldehyde resin.
- 20 a Enumerate the following moulding technique.  
(i) Blow moulding (ii) Injection moulding process  
OR  
b Discuss the degradation methods of polymers.

Z-Z-Z

END