

SARDAR PATEL UNIVERSITY

M.Sc. (Polymer Science & Technology) Semester-II Examination-2016

Saturday, 9th April – 2016

10.30 A.M. to 01.30 P.M.

PS02CPST12: Polymer Processing Technology

Total Marks: 70

- Note:** (1) Attempt all questions.
(2) Figures to the right indicate marks.

Q.1 Write an appropriate choice for the following. (08)

1. _____ ensures true alignment of mould halves.
(i) Socket head cap screw (ii) guide pin (iii) Adapter plate (iv) All of these
2. Preforming reduces _____.
(i) bulk factor (ii) contamination (iii) waste (iv) All of these
3. Material is compressed by the pushing action of injection _____.
(i) ram (ii) plunger (iii) piston (iv) All of above.
4. Calendaring process uniquely applied to _____.
(i) rubbery material (ii) plasticized PVC (iii) both of above (iv) none of above.
5. The extruder barrel can be heated with _____.
(i) resistance heating bands (ii) induction heating (iii) thermal fluid (iv) All of above
6. Compression ratio = _____.
(i) $\frac{H_F}{H_M}$ (ii) $\frac{H_F}{H_M} D$ (iii) $\frac{H_M}{H_F}$ (iv) $\frac{H_F}{H_M}$
7. Blow moulding processes are divided in _____ basic types.
(i) three (ii) four (iii) two (iv) none of above.
8. _____ gate is used for top, side or bottom part.
(i) Edge (ii) Fan (iii) Ring (iv) Tab

Q.2 Attempt any **seven** of the following. (14)

1. Define runner. Draw neat labelled diagram of balance and imbalance runner system.
2. Explain various roll configuration used in calendaring process.
3. Draw neat labelled diagram of two plate mould used for injection moulding machine.
4. Explain different equipments used for the preforming.
5. What do you mean by hydraulics? Explain.
6. Explain extrusion dies.
7. Draw neat labelled schematic diagram of different steps involved in blow moulding process.

8. Explain the significance of vented barrel.
9. Differentiate between plunger type and screw type injection moulding process.
- Q.3 (a)** Explain following. (06)
- (1) Hygroscopic behaviour
 - (2) Granular characteristics
 - (3) Thermal Stability
- (b)** What do you mean by blending? Explain high speed and Z – blade mixer in detail. (06)
- OR**
- (b)** Discuss following. (06)
- (1) Twin – drum tumbler.
 - (2) Dip mixer.
 - (3) Ribbon blender.
- Q.4 (a)** Draw neat labelled diagram of mould used for compression moulding machine and explain all parts with their functions. (06)
- (b)** Give an account on rotational moulding process. (06)
- OR**
- (b)** Give an account on extrusion moulding machine used for thermoplastics polymers. (06)
- Q.5 (a)** Define gate. Enlist main functions of gate. Explain any three gates with suitable diagram. (06)
- (b)** Define nozzle. Explain alignment of nozzle with suitable diagram. Discuss any two types of nozzle used in injection moulding machine. (06)
- OR**
- (b)** Discuss inline reciprocating screw type injection moulding machine. (06)
- Q.6 (a)** Write a note on material stress and orientation in thermoforming process. (06)
- (b)** Describe PVC calendering plant with neat labelled diagram. (06)
- OR**
- (b)** Explain principle of thermoforming process. Discuss in detail about vacuum forming technique. (06)
