

SEAT No. \_\_\_\_\_

No. of printed pages: 2

## SARDAR PATEL UNIVERSITY

M.Sc. (Polymer Science & Technology) Semester-II Examination-2018

Thursday, 12<sup>th</sup> April-2018

10:00 A.M. to 1:00 P.M.

PS02CPST22: POLYMER PROCESSING TECHNOLOGY

Total Marks: 70

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

**Q. 1** Answer the following multiple choice questions. (08)

- (1) \_\_\_\_\_ ensures true alignment of mould halves.  
(i) Socket head cap screw (ii) Guide pin (iii) Adapter plate (iv) All of above.
- (2) The amount of initial orientation is \_\_\_\_\_  
(i) function of time (ii) function of temperature (iii) function of shear rate  
(iv) none of above.
- (3) Preforming reduces \_\_\_\_\_  
(i) bulk factor (ii) contamination (iii) waste (iv) all of above.
- (4) The role of screen pack in extrusion process is \_\_\_\_\_.  
(i) to carry product away from the die (ii) to prevent heat loss during processing (iii) to prevent foreign matter (iv) none of above.
- (5) In calendaring process rubber sheet thickness is slightly \_\_\_\_\_ than fine roll gap.  
(i) lower (ii) greater (iii) similar (iv) none of above
- (6) Dip mixer is also known as \_\_\_\_\_  
(i) cowles dissolver (ii) henschel mixer (iii) i & ii both (iv) none of above
- (7) Photographic films are produce by \_\_\_\_\_.  
(i) slush casting (ii) dip casting (iii) die casting (iv) none of above.
- (8) Compression ratio = \_\_\_\_\_  
(i)  $\frac{H_F}{H_M}$  (ii)  $\frac{H_F}{H_M} D$  (iii)  $\frac{H_M}{H_F}$  (iv)  $\frac{HF}{HM}$

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

- (1) Explain crystallisation of polymer during melt processing.
- (2) Enlist various parts of extrusion moulding machine.
- (3) Define runner. Draw neat labelled diagram of balance and imbalance runner system.
- (4) Explain take off in extrusion moulding machine.
- (5) Explain various roll configuration used in calendaring process.
- (6) Write a note on moulding cycle.
- (7) Define nozzle. Explain its correct and incorrect alignment with diagram.

- (8) Explain significance of vented barrel in injection moulding process.
- (9) Explain ring type non return valve.

- Q. 3** (a) Discuss in detail about melt processing of thermosetting plastics. (06)
- (b) Explain following melt processing of thermoplastics. (06)
- 1. Thermal stability
  - 2. Orientation and shrinkage.

**OR**

- (b) Explain the significance of mixing in polymer processing. Discuss in detail about ribbon blender and twin drum tumbler. (06)
- Q. 4** (a) Draw neat labelled diagram of mould used in compression moulding machine. Enlist various mould parts with their function. (06)
- (b) Explain the steps involved in blow-moulding process with suitable diagram. (06)

**OR**

- (b) Explain the principle of rotational moulding process. Enlist its various advantages and limitations in polymer processing. (06)
- Q. 5** (a) Define gate. Explain role of gate in injection moulding machine. Discuss various types of gate used in injection moulding machine. (06)
- (b) Describe in detail about reciprocating screw used in injection moulding machine with neat labelled diagram. (06)

**OR**

- (b) Differentiate between plunger and screw type injection molding machine. (06)
- Q. 6** (a) Explain principle of thermoforming. Discuss in detail about vacuum forming and its processing parameters with neat labeled diagram. (06)
- (b) Write a note on following. (06)
- 1. Dip casting.
  - 2. Film casting.

**OR**

- (b) Answer the following. (06)
- 1.- Define casting. Enlist advantages of casting process.
  - 2. Draw neat labelled diagram of PVC calendering plant.

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