

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VII Examination-Nov/Dec.-2011

Subject code: 172302

Date: 22/11/2011

Subject Name: Plastic Mould and Die Design-I

Time: 10.30 am-01.00 pm

Total marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Design a suitable feed system for the product shown in fig[a]. **07**
(b) Draw a hand injection mould for the product shown in fig[a]. use graph paper for the drawing. **07**

- Q.2** (a) The shot capacity of an injection moulding machine is 250 gms. We want to mould a product in PP with dimensions 45mm[width]x50mm[height] and circular crosssection.wall thickness 2mm. work out the no.of impressions that can be moulded on this machine. **07**

Assume: Bulk factor of PS = 1.9

Bulk factor of PP = 1.92

Specific gravity of PS = 1.04

Specific gravity of PP= 0.9

- (b) Fill in the blanks: **07**
1. Machine used for facing is _____
 2. Shaping machine is used for _____
 3. To cut complex contours in a mould plate, _____ machine is used.
 4. Milling machine is used for _____
 5. Internal polishing of the barrel of an injection moulding machine is done by _____
 6. The process of making threads in a mould part is called _____
 7. To polish a guide pin, _____ machine is used.

OR

- (b) Discuss Pin Ejection. **07**

- Q.3** (a) Differentiate between Ring gate and Diaphragm gate **07**
(b) Define : Mould; Runner, Gate ; Insert ; Bolster; Ejection ; guide pin **07**

OR

- Q.3** (a) Calculate the efficiency of Round; Half Round; Rectangular; Trapezoidal; hexagonal runners. **07**

- (b) Calculate the shot capacity of the injection moulding machine if a product of weight 30 gms is to be moulded in ABS and a 10 impression mould is desired. Assume:
Bulk factor of PS = 1.9
Bulk factor of ABS = 1.8
Specific gravity of PS = 1.04
Specific gravity of ABS = 1.0 **07**
- Q.4 (a)** For the product drawing shown in fig[b], pen down the step by step machining techniques. **07**
- (b)** Design a rectangular edge gate for a PE box whose dimensions are : length = 100 mm ; width = 70mm ; depth = 40mm; wall thickness = 1/5 mm. take $n = 0.6$ **07**
- OR**
- Q.4 (a)** Differentiate between integer and insert bolster type of moulds. **07**
- (b)** Differentiate between shaping and planning. **07**
- Q.5 (a)** [I] Tick the correct one: **07**
1. Material of insert is (a) OHNS (b) EN-24 (c) EN-8 (d) EN 48B (e) none of these
 2. Function of push back pin is [a] To eject the product. [b] to protect the core/cavity while mould opening.[c] to protect the core/cavity while mould closing [d] none of these.
 3. Drilling operation removes metal in (a) Millimeters (b) Cms Microns (d) None of these
 4. For removal of metal burrs from the holes , the operation done is [a] grinding [b] honing [c] reaming [d] polishing
- [II] Discuss fan gate.
- (b)** 1. Applications of tab gate **07**
2. Applications of overlap gate **07**
- OR**
- Q.5 (a)** Discuss applications of sleeve and stripper plate ejection. **07**
- (b)** Discuss requirements of a runner **07**
