

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2172302****Date: 23/11/2019****Subject Name: Plastics Mold & Die Design****Time: 10:30 AM TO 01:30 PM****Total Marks: 70****Instructions:**

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

		MARKS
Q.1	(a) Define : Insert , Bolster , Guide pin	03
	(b) Discuss the requirements of a gate	04
	(c) Design a Hand Injection mould for the product shown in fig [a]	07
Q.2	(a) Calculate efficiency of round runner , trapezoidal runner and hexagonal runner	03
	(b) Differentiate between integer and insert type of mould	04
	(c) Tick the correct one:	07
	1. Material of Bolster is (a) MS (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. Shaping operation removes metal in (a) Millimeters (b) Cms (c) 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	
	5. Gate has a minimum cross sectional area due to : (a) To increase pressure drop (b) to offer resistance so that impression fills completely.(c) to decrease pressure drop (d) none of these.	
	6. Sleeve ejection is preferred for (a) short hollow products (b) tall hollow products (c) solid tall products (d) solid short products.	
	7. Function of Ejector retainer plate is (a) to hold the ejector element (b) to hold the ejector plate (c) to protect the ejector plate (d) none of these.	
	OR	
	(c) Draw the hand injection mould for product shown in fig.[a]. Use Graph paper.	07
Q.3	(a) Draw a Pipe Die and explain its parts	03
	(b) Calculate the shot capacity of the injection moulding machine if a product of weight 15 gms is to be moulded in ABS and a 16 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	04
	(c) Discuss Sleeve Ejection in Detail.	07
	OR	
Q.3	(a) Discuss the importance of approach section in a Die	03

- (b) Discuss about Design of Film Die. **04**
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- (c) Discuss advantages, disadvantages and applications of Pin Gate; Submarine Gate ; Overlap gate ; rectangular edge gate; tab gate ; ring gate and diaphragm gate. **07**
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- Q.4** (a) For the product shown in fig[b], discuss the gate that is most suitable. Justify. **03**
- (b) What is the manufacturing process of Guide Pin.? Discuss **04**
- (c) A rectangular box molded in PP has dimensions of 185x125x40mm. Top open, this box has wall thickness of 2mm throughout. If a 2 impression mould is desired , do the feed system calculations **07**
- OR**
- Q.4** (a) Rectangular Edge Gate cannot be used for PVC. Why? **03**
- (b) Calculate the shot capacity of injection machine for the product shown in fig.[a]. **04**
 Given Data : Bulk factor of PS = 1.4
 Bulk factor of PP = 1.9
 Specific gravity of PS= 1.04
 Specific gravity of PP = 0.9
- (c) Write the function of : Lathe ; Shaping machine ; Drilling machine ; Grinding machine ; wire EDM ; milling machine ; honing machine. **07**
- Q.5** (a) What is WIRE EDM? **03**
- (b) Draw a Monofilament die and discuss its parts **04**
- (c) Discuss Pin Ejection in Detail **07**
- OR**
- Q.5** (a) What is the role of a push back pin? Discuss. **03**
- (b) Fill in the blanks: **04**
- Material of ejector rod is _____
 - For hollow products , _____gate is used.
 - Rectangular edge gate cannot be used for _____materials.
 - _____is the disadvantage of a pin gate.
- (c) A product in HDPE weighing 5 gms is to be molded on an injection moulding machine having shot capacity of 250 gms. Work out how many impressions can be moulded on this machine .Assume bulk factor of HDPE = 1.8 ; Specific gravity of HDPE = 0.96. Bulk factor of PS= 1.4; sp.gr.of PS=1.04 **07**


