GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2172302   **Date: 15/11/2018**

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 : Mould ; Insert ; Guide pin	03
	(b)	Fill in the blanks:	04
		1. Material of guide pin is _____	
		2. Rectangular edge gate cannot be used for _____	
		3. Minimum diameter of a runner is _____	
		4. Ring gate is used for _____	
	(c)	For the product shown in fig[a], design a hand injection mould . Show all calculations	07
Q.2	(a)	Discuss the importance of Lathe machine in a plastics mould making shop.	03
	(b)	For the product shown in fig[b], write down step by step machining	04
	(c)	For the mould designed above, draw both plan and elevation in graph paper.	07

OR

	(c)	Discuss Pin Ejection in detail	07
Q.3	(a)	For the product shown in fig[c],suggest and design suitable gate	03
	(b)	Calculate the efficiency of full round, half round, trapezoidal and hexagonal runners.	04
	(c)	The shot capacity of an Injection moulding machine is 300 gms. It is desired to mould the product shown in fig.[a] on this machine. Work out the no.of impressions that can be moulded on this machine. Bulk factor of PS = 1.4 Bulk factor of PP = 1.9 Specific gravity of PS= 1.04 Specific gravity of PP = 0.9	07

OR

Q.3	(a)	Classify Extrusion Dies	03
	(b)	Discuss the requirements of Runner and Gate	04
	(c)	Discuss advantages, disadvantages and applications of Pin Gate; Submarine Gate ; Overlap gate ; rectangular edge gate; tab gate ; ring gate and diaphragm gate.	07
Q.4	(a)	Discuss the functions of grinding machine in Mould making shops	03
	(b)	Discuss difference between integer and insert bolster type of moulds.	04
	(c)	Calculate the shot capacity of the injection moulding machine if a product of weight 25 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)**	Write about functions of Milling machine	**03**
	(b)	Differentiate between shaping and planning.	**04**
	(c)	A rectangular box molded in LDPE 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**
Q.5	**(a)**	Discuss applications of ring gate	**03**
	(b)	Discuss about submarine gates.	**04**
	(c)	Tick the correct answer:	**07**

1. Material of bolster is [a] EN-8 [b] M.S. [c] OHNS
2. Material of guide pin is [a] M.S. [b] EN-24 [c] EN-8 [d] OHNS
3. For PVC , Gate preferred in multi impression moulds is [a] Ring gate [b] Rectangular edge gate [c] Round Edge gate [d] Fan Gate
4. 4. Function of Shaping machine is [a] make holes in plate [b] make concave shapes [c] level the plate from all sides [d] facing
5. Pin gate is used for [a] multi impression moulds [b] PVC materials [c] tall hollow products [d] none of these
6. Sleeve ejection is used for [a] solid products [b] hollow products [c] long products [d] products with intricate shapes
7. For polishing of big holes process used is [a] reaming [b] honing[c]grinding[d]none of these

**OR**

| **Q.5** | **(a)** | Write about EDM | **03** |
| | **(b)** | Discuss stripper plate ejection | **04** |
| | **(c)** | A product in HDPE weighing 5 gms is to be molded on an injection moulding machine having shot capacity of 150 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** |

Fig(a)

Material: PP

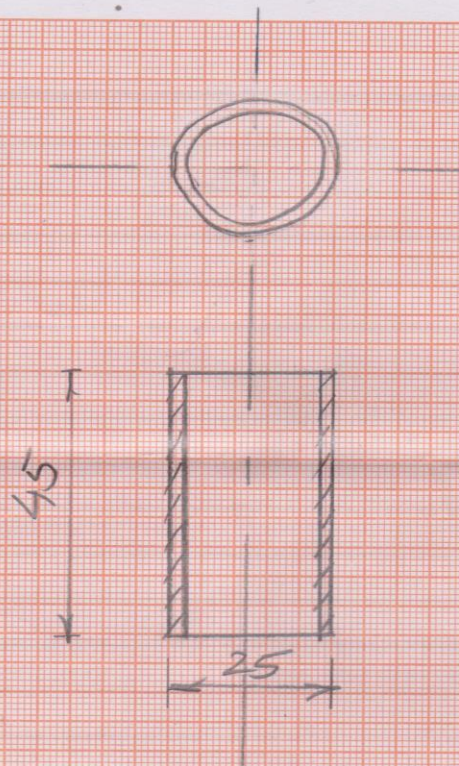ρ = 0.99/cc

Fig(b)

1MM
THREAD
DEPTH
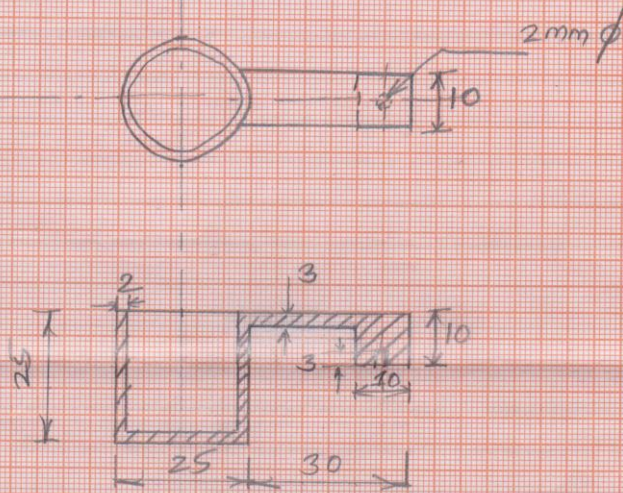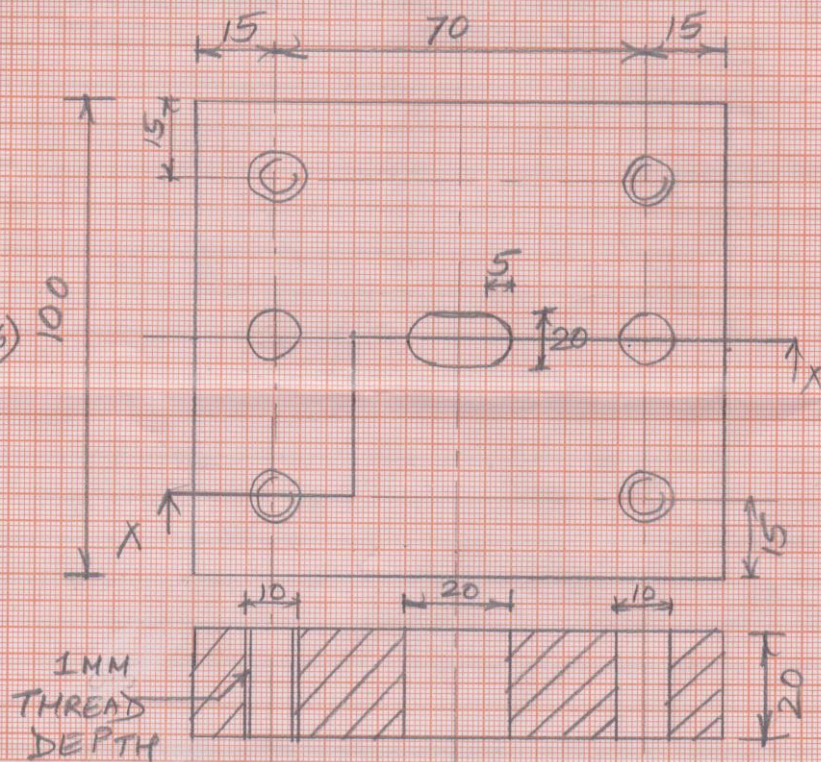
Fig (c)

Material: PP
$\rho = 0.99 \, g/cc$
2mm wall thickness throughout

45

25