Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2182307 **Date: 02/05/2017**

Subject Name: Advanced Plastic Mould Design

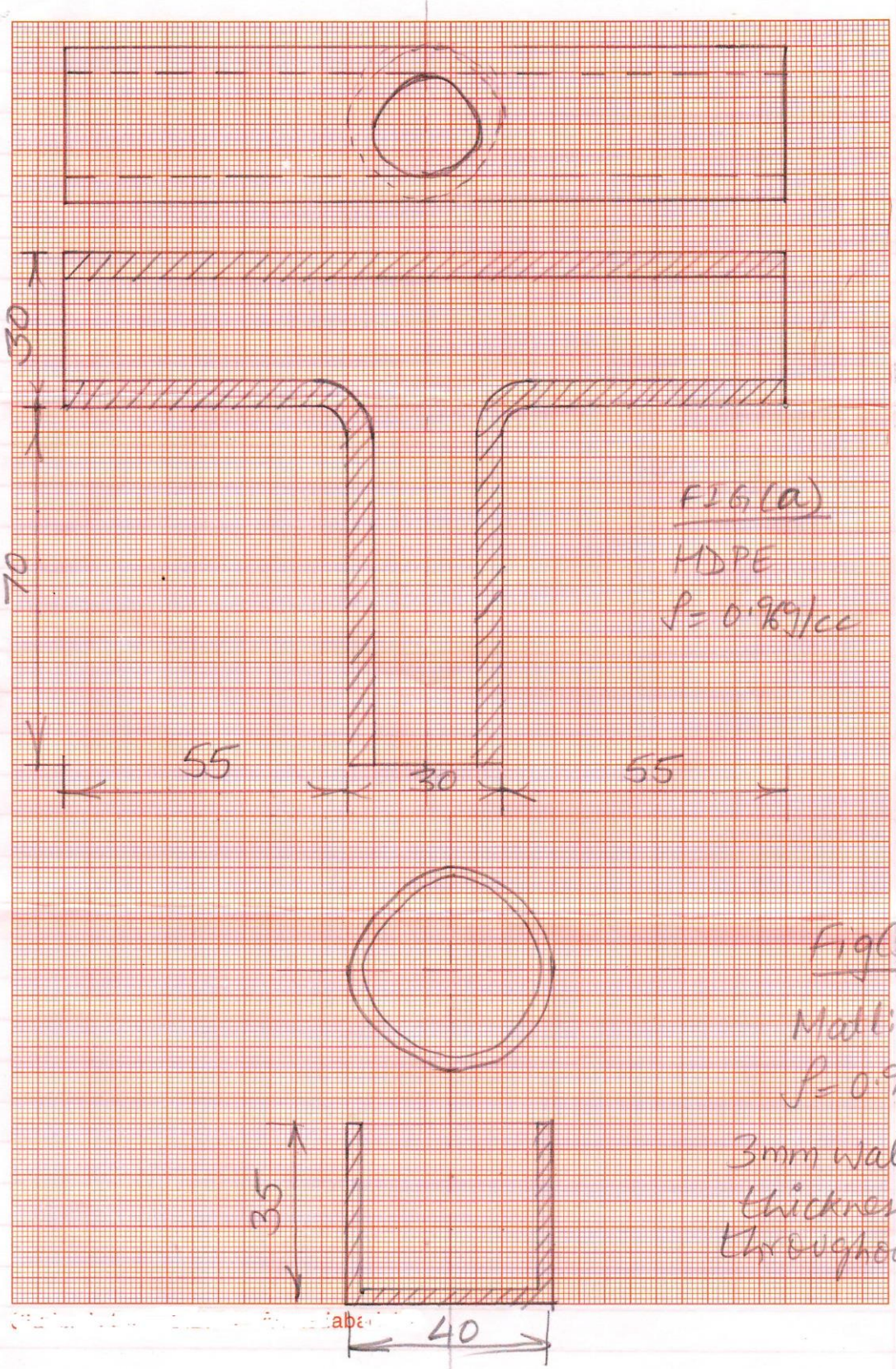
Time: 10:30 AM to 01:30 PM **Total Marks: 70**

Instructions:

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

			MARKS
Q.1		**Short Questions**	**14**
	1	Define Split mould	
	2	What is a Collapsible core?	
	3	For cooling of deep cores, _____method is used.	
	4	What are Waterways?	
	5	Define Undercut. List various types	
	6	What is a Manifold block?	
	7	Function of locking heel is _____	
	8	Material of construction of a Split cavity is _____	
	9	Define Register ring	
	10	What is the material of O-ring? Define O-ring	
	11	Side Core is defined as _____	
	12	What is a wear plate? What is its material of construction?	
	13	Define transmission plate	
	14	Draw Z type cooling for cavity	
Q.2	**(a)**	Draw cooling channel layout for product shown in fig.[a].show cavity cooling	**03**
	(b)	A product of weight 15 gms is to be moulded in PP in an injection moulding machine. If a 10 impression mould is desired, work out the shot capacity of the injection machine. Consider: Bulk factor of PS = 1.4 Bulk factor of PP = 1.9 Specific gravity of PS= 1.04 Specific gravity of PP = 0.9	**04**
	(c)	Design a fully automatic injection mould for the product shown in fig[a]	**07**
		OR	
	(c)	Discuss in detail Collapsible cores	**07**
Q.3	**(a)**	Where do we use a angled lift split mould?	**03**
	(b)	Discuss cooling of shallow inserts	**04**
	(c)	Discuss Core withdrawal system using Rack & Pinion	**07**
		OR	
Q.3	**(a)**	Discuss stripping of internal threads design	**03**
	(b)	Determine the pitch and the pitch circle diameter for the interconnecting groove design , given the following information: Diameter of insert : 25mm ; Gap between inlet and outlet grooves : 4mm ; number of impressions : 16 ; depth of groove : 5mm.	**04**

	(c)	Discuss in detail about Heat Pipes	**07**
Q.4	**(a)**	For the product shown in fig[b], draw cooling for cores	**03**
	(b)	Write a C program for Plasticizing Capacity	**04**
	(c)	List various methods of actuation of Split mould and discuss any one in detail	**07**
		OR	
Q.4	**(a)**	What is shrinkage? Why should mould be designed considering shrinkage?	**03**
	(b)	Write a C Program for Shot Capacity	**04**
	(c)	For the product shown in fig[a], draw a fully automatic injection machine mould. Use graph paper	**07**
Q.5	**(a)**	Core withdrawal systems using hydraulics	**03**
	(b)	Write a C program for cooling period of Cycle	**04**
	(c)	Discuss in detail about cooling of DEEP cores	**07**
		OR	
Q.5	**(a)**	Discuss Heat Rods	**03**
	(b)	Discuss multilevel cooling for integer cavities	**04**
	(c)	Discuss various transmission systems for unscrewing moulds with sketches	**07**


30
70
55
30
55
Fig(a)
HDPE
ρ = 0.96g/cc
Fig(b)
Mod: PP
ρ = 0.99g/cc
3mm wall
thickness
throughout
40