Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII • EXAMINATION – SUMMER 2014

Subject Code: 182301 Date: 05-06-2014

Subject Name: Plastics Mould & Die Design II

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)** For the product shown in the fig.[a], workout the feed system dimensions . **07**

(b) Draw a suitable fully automatic injection mould showing ejection and cooling in graph paper for the product shown in fig.[a]. **07**

Q.2 **(a)** Discuss helical channel Cooling for deep cores **07**

(b) Write C program for Shot Capacity. **07**

OR

(b) Discuss Stripper plate Ejection in detail. **07**

Q.3 **(a)** Define : Layout; Heat Rods, Baffle cooling; Collapsible cores; undercut; fingercam; O-ring **07**

(b) Fill in the blanks: **07**

a. Material of a O ring is _____
b. For tall and hollow products, _____ cooling sytem is used.
c. Dog Leg Cam is used for _____ products.
d. _____ calculations are must due to crystalline nature of plastic materials.
e. Difference between Heat Rods and Heat Pipes is _____
f. Collapsible cores are used for products having _____
g. Material of construction of wear plate used in Split mould is _____

OR

Q.3 **(a)** Calculate the projected area of the product shown in the figure[a]. **07**

(b) For the product shown in fig. [b], design atleast 2 layouts for cavity and show cooling channels. **07**

Q.4 **(a)** Discuss Heat pipes in detail. **07**

(b) Write C program for cooling period of cycle. **07**

OR

Q.4 **(a)** Determine the pitch and the pitch circle diameter for the interconnecting groove design, given the following information: Diameter of insert : 30mm ; Gap between inlet and outlet grooves : 4.5mm ; number of impressions : 12 ; depth of groove : 5mm. **07**

Q.4 **(b)** Write C program for plasticizing capacity. **07**

Q.5 **(a)** Design a Dog Leg Cam for the product shown in fig.[c] **07**

(b) [I] Tick the correct one:

1. The cooling channels for shallow core inserts are done by (a) Lathe (b) shaping (c) milling (d) drilling
2. Stripping of threads in HDPE can be done upto depth of (a) 3mm (b) 2mm (c) 1mm (d) 2.5 mm
3. Circlip is made up of (a) mild steel (b) spring steel (c) EN8 (d) none of these
4. Tall hollow products in multi impression moulds require (a) rectangular edge gate (b) diaphragm gate (c) ring gate (d) wrinkle gate
5. To prevent leakage in cooling circuits , we use (a) metal rings (b) circlips (c) O rings (d) insulating rings

[II] Write about pipe dies.

Q.5	**(a)**	What are collapsible cores? Discuss	**07**
	(b)	Discuss various mould designs of compression mould.	**07**

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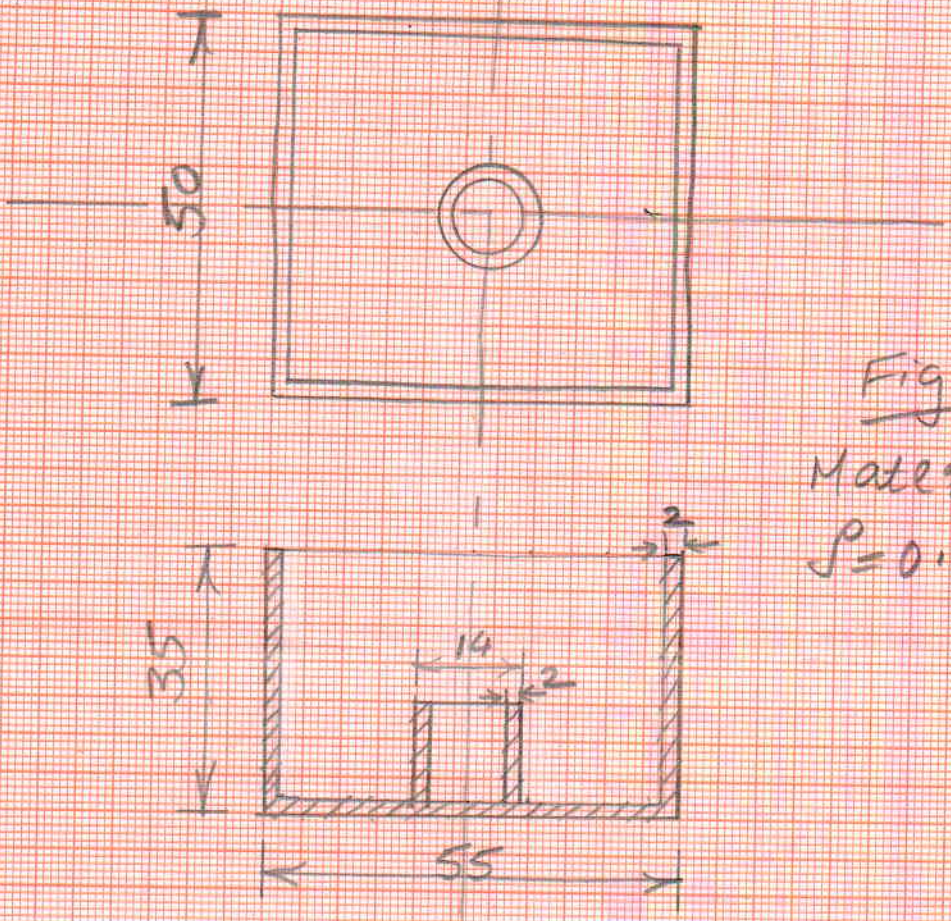

Fig (a)

Mat'l: HDPE

$\rho = 0.969$ g/cc

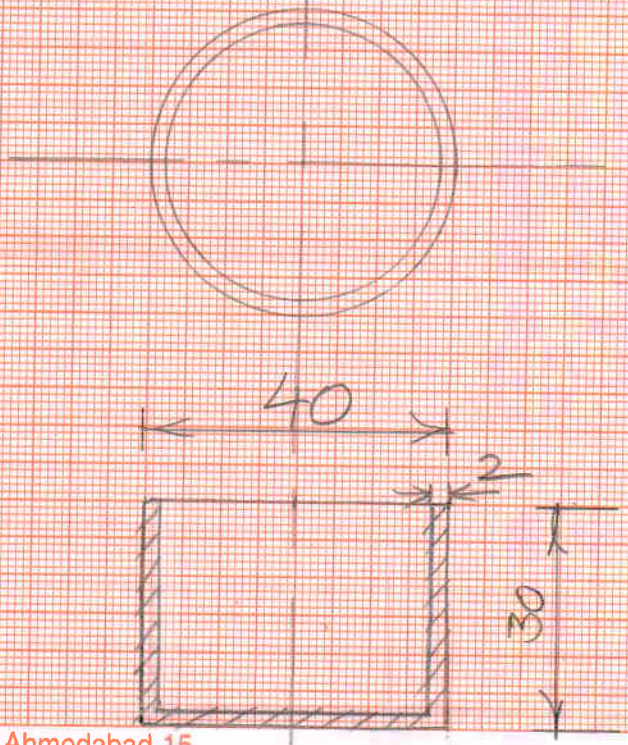

Fig (b)

Mat'l: LDPE

$\rho = 0.929$ g/cc

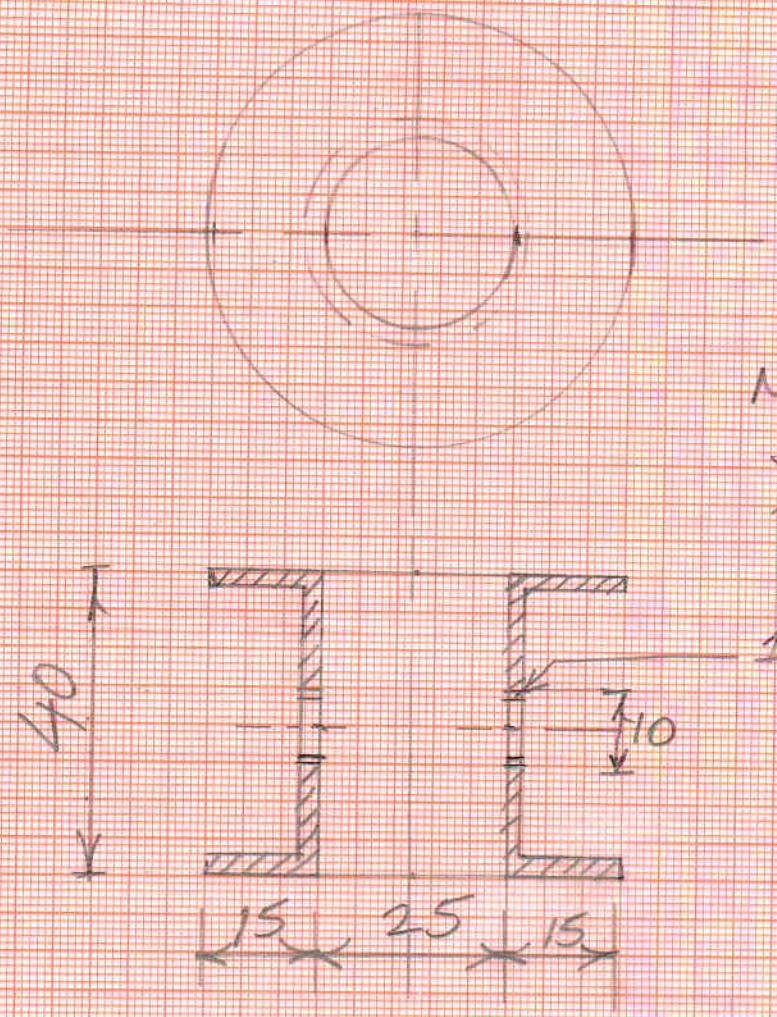

Fig (c)

Matl: PP

$\rho = 0.99$ / cc

2 mm wall thickness throughout

1 mm thread depth.