Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2722807 **Date: 27/05/2016**

Subject Name: Tool & Die Design

Time:10:30 am to 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)**	Explain the design consideration of Advance Cutting tool.	**07**
	(b)	Discuss the following Design features of milling cutter. (i) Power required for milling. (ii) Number of teeth. (iii) Size of Cutter.	**07**
Q.2	**(a)**	Explain the design Principles common to jigs and fixtures.	**07**
	(b)	Explain grinding fixtures with relevant sketches.	**07**
		OR	
	(b)	Describe the fixture design application in case of Welding Processes.	**07**
Q.3	**(a)**	Define the terms. i) Back up plate ii) Bolster plate iii) Knock out iv) Pitman with neat sketches.	**07**
	(b)	How Press Tools are selected?	**07**
		OR	
Q.3	**(a)**	Write down different types of dies. Sketch and explain compound die and progressive dies.	**07**
	(b)	Calculate the forging loads at the start and the completion of hot forging of a steel billet, for the following data: Length of billet = 2m, width = 0.9m, thickness = 0.2m, tool bit = 0.3m, $\mathring{u}_o$ = 50 MPa at start and $\mathring{u}_o$ = 150 MPa at completion of the forging, reduction in forging = 50%.	**07**
Q.4	**(a)**	What do you understand by the term Limiting Draw Ratio (LDR)? Explain Why Such a limit exists, and give the principles underlying the estimation of LDR in a given situation.	**07**
	(b)	Determine the maximum force of a hydraulic press required to upset a low carbon steel blank of diameter 250 mm and height 250 mm at a reduction of 100 mm at 1000°C ,Take $\mathring{u}_o$ = 55 N/mm^2.	**07**
		OR	
Q.4	**(a)**	Short note on Mold Flow Analysis.	**07**
	(b)	How to control temperature in Injection molding process?	**07**
Q.5	**(a)**	Discuss the phenomenon of heat transfer consideration in Designing of forging dies.	**07**
	(b)	How to calculate the mold opening and ejecting force in Injection Molding process?	**07**
		OR	
Q.5	**(a)**	Discuss the various aspects of Designing of Die Casting Dies.	**07**
	(b)	Discuss the various defects in Die Casting with neat sketch.	**07**