

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2171913****Date: 23/11/2019****Subject Name: Metal Forming Analysis****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.

		MARKS
Q.1	(a) Explain need of metal forming processes in industries.	03
	(b) State difference between hot working and cold working process.	04
	(c) Explain electro-hydraulic forming process also write its advantages and disadvantages.	07
Q.2	(a) What constitute a state of stress at a point?	03
	(b) Sketch a cross section of a tungsten carbide wire drawing die and show its different portion and their geometry.	04
	(c) Describe the stress strain relations for rigid perfectly plastic material.	07
OR		
	(c) What do you understand by shear on punch and die? Discuss the relative advantages of providing shear on punch and die.	07
Q.3	(a) Explain Effect of hydrostatic pressure on yield strength.	03
	(b) Explain velocity discontinuities along slip lines with neat sketch.	04
	(c) What is the principle of magnetic pulse forming? Describe the types of components that may be made by this process.	07
OR		
Q.3	(a) What is strain hardening?	03
	(b) What is clearance? What is the effect of excessive and too small clearance?	04
	(c) Explain upset forging process with neat sketch	07
Q.4	(a) Why lubricants use in extrusion process?	03
	(b) What is the effect of pre-straining a component in uni-axial tension on FLD?	04
	(c) What do you understand by anisotropy of sheet metal? How do you measure it?	07
OR		
Q.4	(a) Calculate the number of passes for rolling ingots of 760 X 700 mm ² cross-section to blooms of 250 X 250 mm ² in a blooming mill of initial roll diameter of 1100 mm. Maximum machining allowance is 6% of initial diameter. Widening may be taken as 12% of reduction. Co-efficient of friction is 0.45	03
	(b) State difference between direct and indirect extrusion process.	04
	(c) What are the different methods of tube drawing? Describe the salient feature of each method.	07
Q.5	(a) What do you understand by spring back in press working?	03
	(b) How is contact length affected by elastic deformation of rolls?	04
	(c) Explain two dimensional Mohr's circle method for stress analysis	07
OR		
Q.5	(a) Define (1) Notching (2) Nibbling (3) Slitting, for pres work	03
	(b) What defects may occurs in components made by extrusion process?	04
	(c) State and prove Hencky's second theorem	07
