

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– V (New) EXAMINATION – WINTER 2019****Subject Code: 2152507****Date: 02/12/2019****Subject Name: Tool Engineering****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 tool signature as per ASA system.	03
	(b) Define the following terms: (a) Chip breaker, (b) Nibbling, (c) Tool life, (d) Centre of pressure	04
	(c) What is tool design? How it can be used in process planning to increase the productivity in industrial scenario?	07
Q.2	(a) Explain the characteristics of cutting fluids.	03
	(b) Explain the different sources and areas of heat generation during metal cutting.	04
	(c) List out the materials which are used for manufacturing of cutting tool. Explain contents of various tool materials with their effects.	07
OR		
	(c) Explain mechanisms of chip formation and discuss the types of chips with neat sketch.	07
Q.3	(a) Explain cutting ratio.	03
	(b) Draw the Merchant circle diagram with nomenclature and state its assumptions.	04
	(c) Explain nomenclature of twist drill with neat sketch.	07
OR		
Q.3	(a) What is meaning of form tool. Explain it in brief.	03
	(b) Discuss the following design features of a broach: (i) Rake angle, (ii) Depth of cut per tooth, (iii) Width of land, (iv) Depth of cutting tooth.	04
	(c) State and Explain the various angles of single point cutting tool and its significance with neat sketch.	07
Q.4	(a) Explain stages of cutting operation in press tool design.	03
	(b) What is clearance and how it is applied in punch and die.	04
	(c) Explain different methods of mounting punches and dies with neat sketches.	07
OR		
Q.4	(a) Explain strip layout with neat sketch.	03
	(b) Give the difference between compound and combination die.	04
	(c) Explain methods of reducing cutting forces in press operation.	07
Q.5	(a) Write the essential requirement of jigs and fixtures.	03
	(b) Explain different types of drill jig bushes.	04
	(c) Name various types of jigs and explain any three with the help of figure.	07
OR		
Q.5	(a) Explain fool proofing with neat sketch.	03
	(b) Explain six point location principle.	04
	(c) Give the classification for various types of clamping devices and locating devices.	07
