Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2024

Subject Code:3154108 Date:25-11-2024

Subject Name:Process Planning and Cost Estimation

Time:10:30 AM TO 01:00 PM Total Marks:70

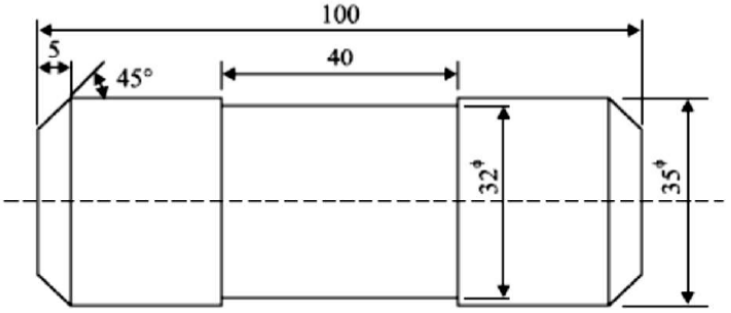
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1	**(a)**	What is the rationale for learning the subject process planning and cost estimation?	**03**
	(b)	Define Process Planning. How process planning affects product design and manufacturing.	**04**
	(c)	What are the methods of process planning? Explain CAPP in detail.	**07**
Q.2	**(a)**	Enlist the process parameters considered for selecting the production process.	**03**
	(b)	Differentiate between Jigs and Fixtures.	**04**
	(c)	With the help of break-even analysis explain economies of process planning.	**07**
		OR	
	(c)	Which set of documents are required for process planning?	**07**
Q.3	**(a)**	State three differences between costing and estimating.	**03**
	(b)	With the example explain direct material cost and indirect material cost.	**04**
	(c)	Explain the ladder of Cost.	**07**
		OR	
Q.3	**(a)**	Write any three factors that are used for machine tool selection for process planning.	**03**
	(b)	Give different types of estimates.	**04**
	(c)	Elaborate on any one method of calculating depreciation.	**07**
Q.4	**(a)**	Explain the net weight and gross weight of forging while estimating the forging cost.	**03**
	(b)	How to estimate material cost of material required for casting?	**04**
	(c)	Explain the following estimation of cost in welding (i) Direct Material cost (ii) Direct labor cost (iii) Overheads	**07**
		OR	
Q.4	**(a)**	Write the importance of machine time calculation.	**03**
	(b)	Define Tool Approach and Tool Travel with the help of neat sketch.	**04**

(c) A mild steel bar 100 mm long and 38 mm in diameter was turned to 35 mm dia. and was again turned to a diameter of 32 mm over a length of 40 mm as shown in Fig.1. The bar was machined at both ends to give a chamfer of 45° × 5 mm after facing. Calculate the machining time. Assume a cutting speed of 60 m/min and feed 0.4 mm/rev. The depth of cut is not to exceed 3 mm in any operation **07**

Figure 1.



Q.5 **(a)** Enlist different types of lathe operations. **03**

(b) Deduce an expression for machining time in the planning machine. **04**

(c) Find the time required to drill 4 holes in a cast iron flange each of 2 cm depth, if the hole diameter is 2 cm. Assume the cutting speed as 21.9 m/min. and feed as 0.02 cm/rev. **07**

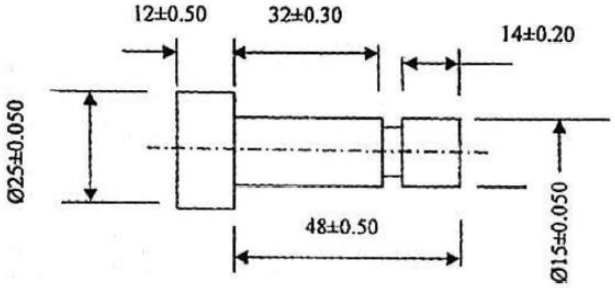
OR

Q.5 **(a)** Highlight the importance of costing and estimating. **03**

(b) What is the difference between the operation sheet and the route sheet? **04**

(c) Discuss the production equipment and tool selection for the component shown in Figure 2. Consider undercut diameter is 12 mm. **07**

Figure 2.



****