

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025***Fifth Semester**Mechanical Engineering***CME396 - Process Planning and Cost Estimation***Regulations - 2021***Duration : 3 Hrs****Maximum Marks: 100****PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BLT	CO	Marks
1.	List the various steps involved in Process Selection.	L1	1	2
2.	Write the information that can be obtained from a route sheet.	L2	1	2
3.	Compare and contrast between Jigs and Fixtures.	L2	2	2
4.	Mention the factors affecting the selection of cutting speed.	L1	2	2
5.	Mention the various methods of costing.	L2	3	2
6.	List the various components of cost.	L1	3	2
7.	List the different forging processes.	L1	4	2
8.	Select the various losses considered while calculating the material cost for a forged component.	L1	4	2
9.	Distinguish between feed and depth of cut.	L2	5	2
10.	Compare the purpose of chamfering and knurling.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a State the purpose of material evaluation and list the steps in process selection.	L2	1	16
	Or			
	b What do you understand by CAPP? Explain in detail about the types of CAPP and mention the benefits of CAPP.	L2	1	16
12.	a i Enumerate the set of documents required for process planning.	L2	2	8
	ii Explain the criteria for selecting operating sequences and machine selection in process planning.	L2	2	8

Or

b Describe in detail about the factors influencing the selection of jigs and fixtures. L2 2 16

13. a Estimate prime cost, factory cost, production cost, total cost and selling price per item from the data given below for the year 2015-16. Cost of raw material in stock as on 1.4.2015 - Rs 25,000, Raw material purchased - Rs 40,000, Direct labour cost -Rs 14,000, Direct expense - Rs 1,000, Factory/work overheads - Rs 9,750, Administrative expenditure - Rs 6.500, Selling and distribution expenses - Rs 3,250, No. of items produced – 650, Cost of raw material in stock as on 31.03.2016 - Rs 15,000, Net profit of the items is 10% of the total cost of the product. L5 3 16

Or

b A factory is producing 1000 bolts and nuts per hour on a machine. Its material cost is Rs.400, labour cost is Rs.350 and direct expenses are Rs.75. The factory on cost is 150% of the total labour cost and office on cost is 25% of the total factory cost. If the selling price of each bolt and nut is Rs.1.75, Calculate whether factory is going in loss or gain and by what amount. L5 3 16

14. a A small fuse box 25cm long, 17.5cm wide and 5cm deep with a lid of 2.5cm deep is to be manufactured in grey iron. It has the usual legs and ears with an average thickness of 3.9mm. The pattern supplied by the customer is of the loose type; hence, bench moulding is to be followed. Estimate the selling price per piece for the following data: L5 4 16

Cost of iron at the cupola spout = Rs. 30 per kg.

Cost of process return scrap = Rs. 7 per kg.

Administrative on-cost = Rs. 20 per hour.

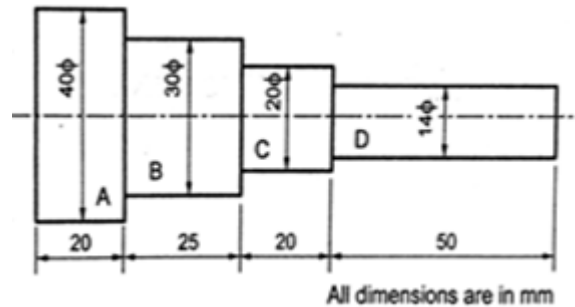
Profit Margin = 15%

Other expenditures are

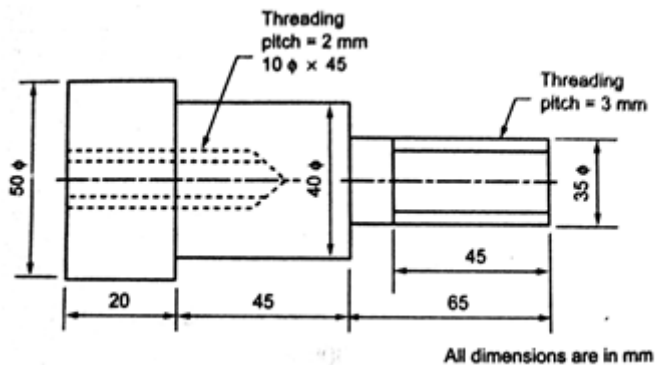
Process	Time(min) per Piece	Labour Cost (Rs.) per Hour	Work on-cost (Rs.) per hour
Moulding & Pouring	20	14	30
Shot Blasting	2	2	40
Fettling	1	1	30

Or

- b Determine the net weight and gross weight for the component shown in fig. Density of material used is 7.86 gm/cc. Also calculate
- (i) Length of 14mm bar required to forge on component,
 - (ii) Cost of forging/piece, if material cost is Rs.80/Kg, Labour cost is Rs. 15/piece, Overheads is 150 % of labour cost.



15. a Estimate the machining time required to complete the job as shown in Fig. from the basic material of 60mm diameter and 130mm length. Other data are given below:
- Cutting speed for turning = 28m/min, Feed for turning operation = 1mm/rev, Depth of cut = 3mm, Cutting speed for thread cutting = 10m/min. Cutting speed for drilling = 30m/min. Feed for drilling = 0.25mm/rev.



Or

- b Estimate the grinding time to finish a shaft from 38.5 mm to 30 mm diameter. Lengths of shaft as 300 mm. assume the following data: width of grinding wheel = 5 mm; Depth of cut in roughening operation = 0.785 mm; Depth of cut in finishing operation = 0.05 mm; Cutting speed = 12 m/min. Assume 1 mm on diameter to be finished ground and remaining rough ground.