Reg. No.															

Question Paper Code	12898

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Fifth Semester

Mechanical Engineering

20MEEL514 - PROCESS PLANNING AND COST ESTIMATION

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	List the various activities of process planning.	2	K1	CO1
2.	Write the output of process planning activity.	2	K1	CO1
3.	What are the main processes parameters influencing the machining process?	2	K1	CO2
4.	Define feed rate.	2	K1	CO2
5.	What is prime cost?	2	K1	CO3
6.	Distinguish estimation and costing.	2	K1	CO3
7.	Estimate the direct material cost involved in gas welding process.	2	K2	CO
8.	Write the material cost in arc welding process.	2	K1	CO4
9.	What is machine timing?	2	K1	CO5
10.	Define tear down time.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Discuss the objectives of process planning and explain the various approaches to process planning.	13	K2	CO1
		OR			
	b)	Discover the understanding of CAPP and explain its types and benefits of CAPP.	13	K2	CO1
12.	a)	Classify the main process parameters that can influence the machining process with an example.	13	K2	CO2
		OR			
	b)	Explain the types of jigs and fixtures with neat diagram and the clamping effectiveness.	13	K2	CO2
13.	a)	Explain in detail on estimation procedure with example.	13	K2	CO3
		OR			

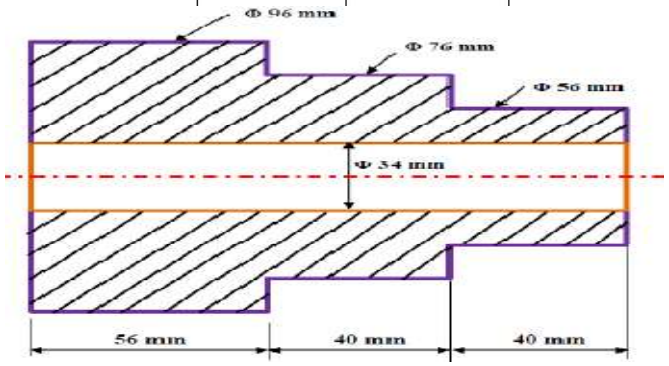
b) Extend the understanding in depreciation and discuss the various causes and methods of depreciation. *13 K2 CO3*

14. a) Discuss the estimation of operation cost procedure in forging operation. *13 K2 CO4*

OR

b) Find the selling price of CI pulley as shown in figure. Its surfaces are to be machined after casting. The pattern is supplied by the customer. The pattern which costs Rs. 5000 can produce1000 units before being scraped. The following data can be used:-(i) Density of the material 8g/cc; (ii) Cost of molten metal at cupola spout Rs.30/kg; (iii) Process scrap is 20% of net weight;(iv) Scrap return value Rs. 7/kg; (v) Administrative overheads Rs. 20/hour; (vi) Sales overhead 20% of factory cost; (vii) Profit is 20 % of factory cost. *13 K2 CO4*

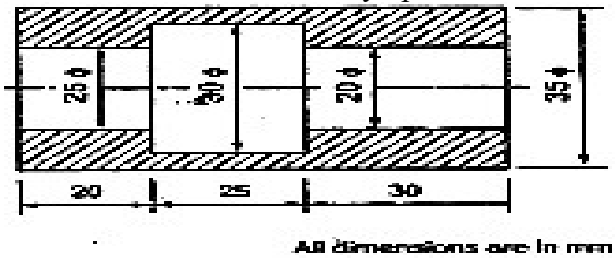
Operation	Time (min)	Labor Cost / hour	Shop Overhead / Hour
Moulding & Pouring	15	Rs. 40	Rs. 35
Shot Blasting	5	Rs. 35	Rs. 30
Fettling	6	Rs. 30	Rs. 30



15. a) Explain the various components and the allowance used in calculating the machining time for machining operation. *13 K2 CO5*

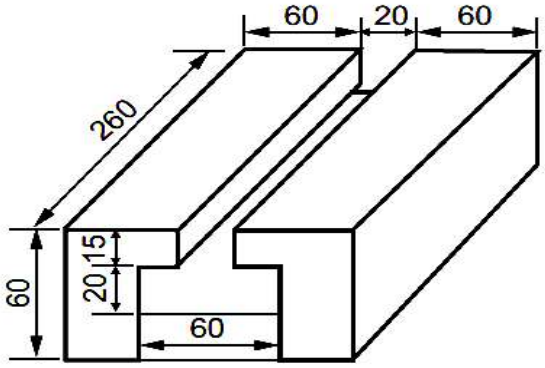
OR

b) Estimate the machining time taken to prepare a job as shown from M.S bar of 4 cm in dia. and 7.5 cm long. Take cutting speed of turning and boring operation 20 m/min and drilling operation 30 m/min. Feed of turning and boring operation 0.2 mm/rev, for drilling 0.23 mm/rev. Depth of cut not to exceed 3 mm for any operations. *13 K2 CO5*



PART - C (1 × 15 = 15 Marks)

16. a) A T-Slot is to be cut in a C.I slab shown in Fig. Estimate the machining time. Take cutting speed 25 m/min, feed is 0.25 mm/rev. Diameter of cutter for channel milling is 80 mm. *15 K3 CO6*



All dimensions are in mm

OR

b) Find the time required on a shaper to machine a plate 1100 x 500 mm, if the cutting speed is 16 m/min. The ratio of return stroke time to cutting time is 2:3. The clearance at each end is 20 mm along the length and 15 mm on width. Two cuts are required, one roughing cut with cross feed of 2 mm per stroke and one finishing cut with feed of 1.25 mm per stroke. *15 K3 CO6*