Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80641

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Seventh Semester

Mechanical Engineering

ME 6005 — PROCESS PLANNING AND COST ESTIMATION

(Common to Mechanical and Automation and Sixth Semester – Robotics and Automation Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define process planning.
2. What are the factors to be considered during the selection of a process?
3. List the factors to be considered while selecting process parameters.
4. Classify the three basic functions of Jigs and fixtures.
5. What do you mean by cost accounting?
6. Define over head cost.
7. Name the various losses in forging process.
8. Differentiate leftward and rightward welding.
9. Define cutting speed. List various factors affecting cutting speed.
10. What is machining time?

PART B — (5 × 16 = 80 marks)

11. (a) Explain with neat sketch various methods of process planning. (16)

Or

(b) (i) What are the constraints in tool selection. (6)

(ii) Write down the procedure to be followed during material selection? Discuss the factors that are taken into account in process selection and equipment selection. (10)

12. (a) (i) Explain the process planning procedure. (8)

(ii) List the information required for process planning. (8)

Or

(b) (i) What are the procedures to be followed for selecting Jigs and fixtures? Discuss in detail. (8)

(ii) What are the different types of inspection methods? Write briefly about them. (8)

13. (a) (i) Discuss various methods of costing in detail. (8)

(ii) Explain the procedure followed for estimating the cost of an individual product. (8)

Or

(b) (i) Explain any one method of calculating depreciation cost with an example. (8)

(ii) Discuss the various methods used for allocation of overheads. (8)

14. (a) (i) Generalize the meaning of tonghold loss in forging. (6)

(ii) 200 pieces of a component as shown in Figure. 1 are to be drop forged from a bar stock of diameter 4 cm. Calculate the cost of manufacturing if (1) Material cost is Rs. 1000/metre, (2) Forging charges are Rs. 10 per cm^2 of surface area to be forged, (3) On-cost is 10% of material cost. Consider all possible losses. (10)

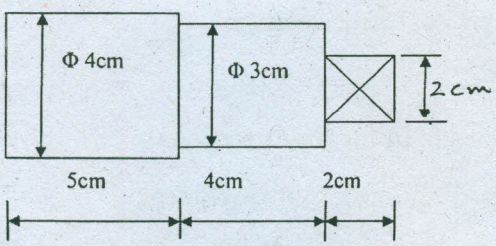


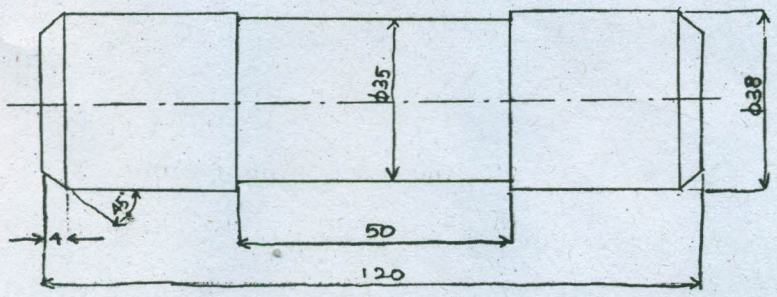
Figure 1

Or

(b) (i) State and explain various losses which are to be considered in a foundry shop. (8)

(ii) List the various elements which are to be considered while calculating the cost of a welded joint. (8)

15. (a) A mild steel bar 120 mm long and 40 mm in diameter is turned to 38 mm diameter and was again turned to a diameter of 35 mm over a length of 50 mm as shown in the figure 2. The bar was chamfered at both the ends to give a chamfer of 45° × 4 mm after facing. Calculate the machining time. Assume cutting speed of 50 m/min and feed 0.3 mm/rev. The depth of cut is not to exceed 3 mm in any operation. (16)



ALL DIMENSIONS ARE IN MM

Figure 2

Or

(b) (i) Find the time required to drill 4 holes in a CI flange each of 2 cm depth, if the hole diameter is 2 cm. Assume cutting speed as 21.9 m/min and feed as 0.02 cm/rev. (8)

(ii) A keyway has to be cut in a spindle whose dimensions are 46 cm length, 5 cm diameter and 1 cm width. The cutter diameter is 13.25 cm. If the cutter revolves at 120 rpm, what is the time required to cut a 1 cm deep key way at a feed of 0.05 cm/rev of cutter? (8)