

Roll No.

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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2013

MANUFACTURING ENGINEERING

Sixth Semester

19

MF 9026 PROCESS PLANNING AND COST ESTIMATION

(Regulation 2008)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. List the various activities related with process planning.
2. Why documentation is essential for process planning?
3. Fill in the blanks
 - (i). labour generally constitutes _____ percent of the total cost to produce an article.
 - (ii). Miscellaneous allowances contribute to _____ percentage of total time.
4. A manufacturing concern produces a certain work in batches of 100. The direct material cost, direct labour cost and direct expenses per batch of products are Rs.210, Rs. 250 and Rs.240 respectively. Determine the prime cost of 100 products and of each product.
5. List some examples of factory overheads and administrative overheads
6. What is depreciation? and its causes
7. Define effective budget and its important requirements
8. What is make or buy decision?
9. A previously drilled hole 16 mm in diameter and 10 cm in length is to be reamed to 17 mm in diameter. Find the time required for reaming in two cuts. Assume cutting speed and feed as 10 m/min and 0.3 mm/rev respectively.
10. List the various losses in forging operation

PART – B (5 x 16 = 80 Marks)

11. Discuss the two approaches commonly used in CAPP system. What are its advantages and limitations? (16)
12. (a).(i). Explain the various principal elements taken into account during the estimation of a mechanical product. (12)
 - (ii). A manufacturing concern produces a certain product in batches of 100. The direct material cost, direct labour cost and direct expenses per batch of products are Rs.210,

Rs.250 and Rs.240 respectively. If 80% of direct labour cost is charged to cover factory overheads, determine the 'factory cost' of each product. (4)

(OR)

(b). (i). Define costing and its aims, list the advantages of efficient costing. (10)

(ii). Worker A receives Rs.2 per hour. He produces 80 units per hour of which 2 % are rejected. Worker B produces 90 items per hour of which 4 % are rejected. The hourly cost of machines used by both is Rs.2.50 and each rejected item results in a loss of 10 paise. What hourly wage should B receive if his cost per acceptable piece is to be equal to that of A? (6)

13. (a).(i). Explain the various methods of cost allocation (6)

(ii). The expenditure involved in the manufacture and sale of a centre-less grinding machine as follows

| | |
|--------------------------------------|----------|
| Cost of material | Rs.35000 |
| Indirect factory wages | Rs.6000 |
| Director's fee | Rs.3500 |
| Advertisement | Rs.5000 |
| Profit | Rs.8000 |
| Depreciation on sales department van | Rs.1200 |
| Depreciation on plant | Rs.4000 |
| Printing and stationery | Rs.400 |
| Direct wages | Rs.50000 |
| Factory rent | Rs.5000 |
| Administrative office rent | Rs.1000 |
| Show-room rent | Rs.1600 |
| Telephone and postage | Rs.120 |
| Electricity (factory) | Rs.400 |
| Electricity (office) | Rs.80 |
| Administrative office salaries | Rs.3000 |
| Sales department van expenditure | Rs.1200 |
| Salesman commission | Rs.1000 |
| General expenses | Rs.200 |

Determine 1.Direct cost 2. Factory cost 3. Production cost 4. Selling cost and 5. Selling price of the grinder. (10)

(OR)

(b). (i). The cost of a machine is Rs.10000 and the assumed scrap value is Rs.2000 after 10 years of expected useful life. Compare the book values of the machine after a period of 3 years according to straight line and reducing balance methods of depreciation. (8)

(ii). The dimensional **fig.1** below shows a lathe centre. Estimate the weight and cost of the material for the same if the material weights 7.787 g/cm^3 and the material cost is Rs.3.50 per kg. (8)

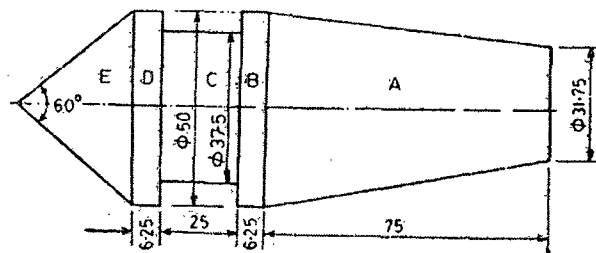


Fig.1

14. (a). (i). What are budgetary control and its objectives, advantages and limitations? (12)
 (ii). Prepare budget chart of production department (4)

(OR)

- (b). (i). Explain the various frequently used functional budgets with suitable examples. (12)
 (ii). Define cost economics (4)

15. (a). (i). calculate the time required to turn the component as shown in **fig.2** assume cutting speed of 30 m/min, hand feed by compound rest 0.5 mm/rev, depth of cut 2.5 mm, and feed for turning 0.75 mm/rev. (8)

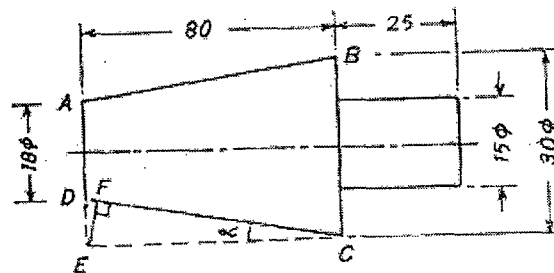


Fig.2

(ii). Calculate the welding materials cost for making rectangular frame(**Fig.3**) for a gate 2m x1m from angle iron of size 35 x 35 x 6 (mm). Welding is to be done on both sides. Use the following data.

| | |
|----------------------------------|-----------------|
| Rate of oxygen consumption | 0.66 cu m/hr |
| Cost of oxygen gas | Rs. 10 /cu m |
| Rate of acetylene consumption | 0.6 cu m/hr |
| Cost of acetylene gas | Rs.55/ cu m |
| Welding speed | 3.33 m /hr |
| Filler rod diameter | 3.0 mm |
| Length of filler rod consumption | 3.4 m/m of weld |
| Cost of filler rod | Rs.20 / kg |
| Density of filler rod material | 8 gm/cc |

(8)

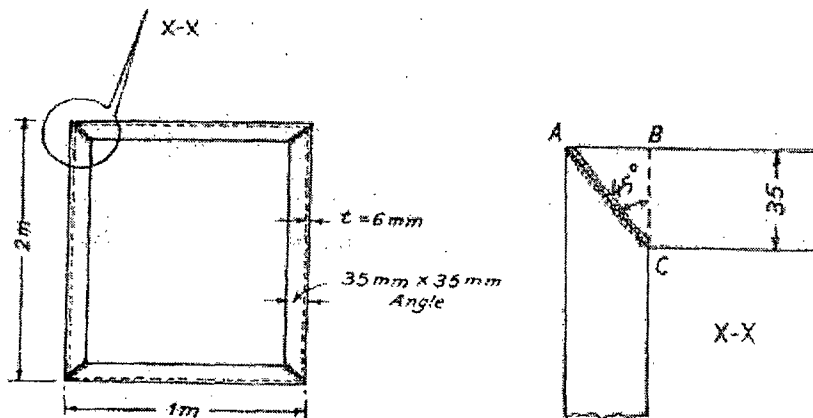


Fig.3

(OR)

(b). (i). Calculate the cost of drop forging 100 components from a 5 cm diameter bar. Take material cost of Rs.200 per metre, forging rates Rs.0.10 per cm² of the surface area and on- cost as 10% of material cost.(Fig.4) (12)

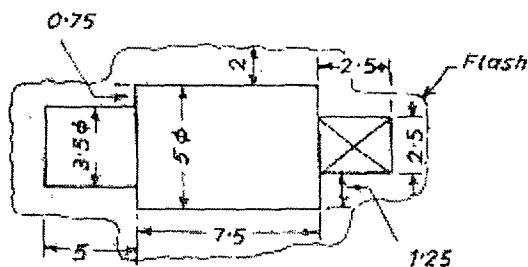


Fig.4

(ii). What are the factors considered for selection of pattern materials. (4)