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Question Paper Code : 51062

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Eighth Semester

Mechanical Engineering

080120074 — PRODUCTION PLANNING COST ESTIMATION

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the activities comes within the scope of production planning.
2. Kumar can sort a bin of 100 letters in 10 minutes. He typically receives 600 letters an hour. A truck arrives with more bins every 30 minutes. The office uses a safety factor of 10%. How many kanbans are needed for the letter sorting process?
3. Differentiate between costing and estimation.
4. What do you understand by a realistic estimate?
5. A machine is purchased for Rs. 10000 and its scrap value is estimated as Rs. 2000 after six years of useful service. Determine the depreciation fund, in reserve, at the end of the fourth year basing on the sum of years' digits method.
6. Define fixed, variable and semi-variable overheads with examples.
7. Mention the commonly encountered losses in forging process and mention one reason for each loss.
8. Write the procedure of estimating the cost of a wooden pattern for sand moulding.

9. Estimate the time required for cutting 3 mm pitch threads on a mild steel bar of 28 mm diameter and 80 mm long. Let the cutting speed as 15 m/min.
10. Estimate the time required for doing rough grinding of a 16 cm long steel shaft to reduce its diameter from 4.2 to 4 cm in a grinding wheel of 2 cm face width. Assume cutting speed=16.5 m/min and depth of cut = 0.25 mm.

PART B — (5 × 16 = 80 marks)

11. (a) What is meant by demand forecasting? Explain any four demand forecasting methods that rely on qualitative assessment.

Or

- (b) Write short notes on (i) Just-in-time production systems (ii) Material Requirements Planning.
12. (a) Explain the cost estimating procedure and list the qualities of good estimator.

Or

- (b) Explain the various costing methods.
13. (a) The dimensioned figure given in Fig. 1 shows a lathe centre. Estimate the weight and cost of the material for the same if the material weighs 7.8 g/cm³ and the material cost is Rs 10/kg. All the dimensions are in mm.

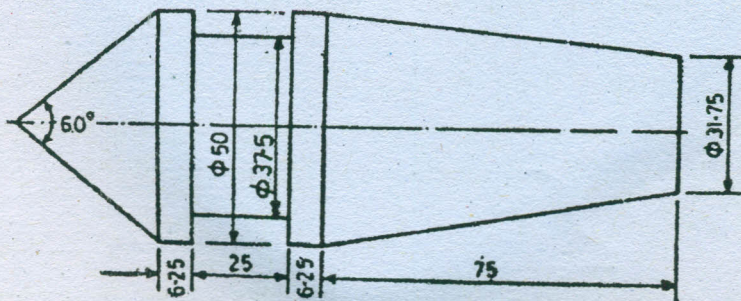


Fig. 1

Or

- (b) For manufacturing a Centre-less grinding machine, the following expenditure incurred. Determine (i) Direct cost (ii) Factory cost (iii) Production cost (iv) Selling cost (v) Selling price of the centre-less grinder.

Sl. No.	Description	Rs.	Sl. No.	Description	Rs.
1	Cost of material	55,000	10	Factory rent	6,000
2	Indirect factory wages	8,000	11	Telephone and postage	150
3	Director's fees	3,000	12	Gas and electricity	500
4	Advertisement	10,000	13	Office salaries	2,100
5	Profit	12,000	14	Office rent	5,000
6	Printing and stationary	250	15	Show-room rent	1,500
7	Depreciation of plant	4,500	16	Sale's man commission	2,650
8	Direct wages	65,000	17	Sales dept's car expense	1,500
9	Depreciation of sales dept car	1,100			

14. (a) 200 pieces of component, as shown in Fig. 2 are to be drop forged from a 4 cm diameter stock bar. Calculate the cost of manufacture, if (i) material cost is Rs. 100 per metre (ii) forging charges at Rs. 4 per cm^2 surface area to be forged (iii) on-cost is 10% of material cost. Consider all possible losses during operations.

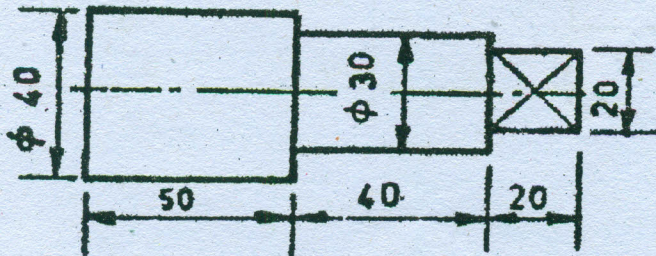


Fig. 2

Or

- (b) A cylindrical boiler drum 2.5 m \times 1 m diameter is to be made from 15 mm thick plates. Both the ends are closed by welding circular plates to the drum. Cylindrical portion is welded along the longitudinal seam. Welding is done both on inner and outer sides. Calculate the electric arc welding cost using the following data: (i) rate of welding = 2 m/hr on inner side and 2.5 m/hr on outer side (ii) length of electrode required = 1.5 m/m of welding (iii) cost of electrode = Rs. 26/m (iv) power consumption = 4 units/m of welding (v) power charges = Rs. 2.5/unit (vi) labour charges = Rs. 40/hr (vii) overhead = 100% of prime cost (viii) discarded electrodes = 5% (ix) fatigue and setting-up time = 5% of welding time.

15. (a) (i) A 20×5 cm CI surface is to be faced on a milling machine with a cutter having a diameter of 10 cm and 16 teeth. If the cutting speed and feed are 50 m/min and 5 cm/mm respectively, determine the milling time, RPM of the cutter and feed per tooth. (8)
- (ii) A cast iron block of size $20 \text{ cm} \times 7.5 \text{ cm}$ is required to be shaped to reduce the thickness from 2 cm to 1.8 cm in one cut. Determine the time required for shaping, if cutting speed is 20 m/min and feed is 0.2 mm per stroke and the cutting time ratio is $3/5$. (8)

Or

- (b) Calculate the machining time to complete the job as shown in Fig. 3 (All dimensions are in mm) from the raw material of 50 mm diameter and 100 mm length. Let the cutting speed for turning 30 m/min; feed = 1 mm/rev; depth of cut = 2.5 mm; For drilling, cutting speed = 30 m/min and feed = 0.2 mm/rev; consider the cutting speed for thread cutting = 9 m/min.

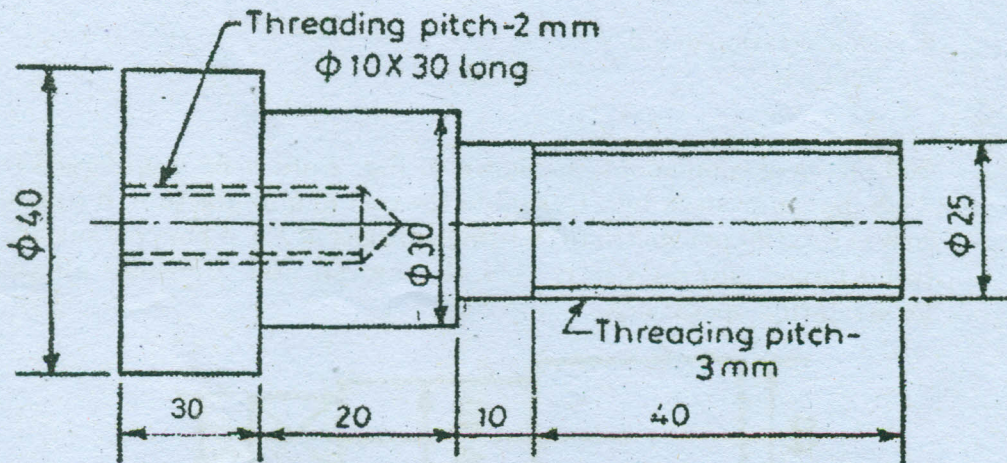


Fig. 3