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Question Paper Code : 80821

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Seventh Semester

Mechanical Engineering

ME 2027/GE 1452/10122 MEE 21/ME 701 — PROCESS PLANNING AND COST ESTIMATION

(Common to Production Engineering)

(Regulations 2008/2010)

(Also common to PTME 2027 - Process Planning and Cost Estimation for B.E. (Part-Time) Seventh Semester – Mechanical Engineering – Regulations 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the objectives of method study?
2. Define work measurement.
3. State the Parameters involved in material selection.
4. Define Break even point.
5. Give the Methods of costing.
6. Write any two objectives of cost estimation.
7. What is batch costing?
8. Define standard data.
9. Brief about the procedure to calculate material cost.
10. A production shop had its production overheads of Rs.12,000/- and the production for the period in terms of direct labour was 24000 hours. Find the over head for a job requiring 20 labour hours.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the tools and techniques of motion economy. (16)

Or

- (b) Discuss in detail the ergonomics principles and applications. (16)

12. (a) (i) Explain the basic factors affecting process design. (8)
(ii) Explain the steps involved in process planning (8)

Or

- (b) (i) What are the set of documents required for process planning. (10)
(ii) The fixed costs for a factory for the year 2009–10 are Rs. 1,50,000 and the variable cost is Rs. 10 per unit produced. The selling price per unit is Rs. 25. Calculate the break-even quantity. (6)

13. (a) (i) Write the difference between cost accounting and cost estimating. (8)
(ii) Write basic steps in cost estimation. (8)

Or

- (b) Calculate prime cost, factory cost, production cost, total cost and selling price per item from the data given below for the year 2012-13. (16)

Cost of raw material in stock as on 01.04.2012	Rs. 25,000
Raw material purchased	Rs. 40,000
Direct labour cost	Rs. 14,000
Direct expenses	Rs. 1,000
Factory/work over heads	Rs. 9,750
Administrative expenditure	Rs. 6,500
Selling and distribution expenses	Rs. 3,250
Number of items produced	650
Cost of raw material in stock as on 31.03.2013	Rs. 15,000
Net Profit of the items is 10 percent of the total cost of the product.	

14. (a) What are the types of estimates? Explain with examples. (16)

Or

- (b) Explain various allowances to be considered in estimation of direct labour cost. (16)

15. (a) (i) A manufacturer is making 100 units of an item per hour and incurs the following expenses:

Direct material cost = Rs. 35

Director labour cost = Rs .200

Direct expenses = Rs .75

Factory on cost = 150% of labour cost

Office on cost = 30% of factory cost

Find out the selling price for a profit of 15% on the selling price. (10)

- (ii) A square bar of 3 cm side and 25 cm length is to be hand forged into a hexagonal bar of side of 1.5 cm. Find length of the hexagonal bar ignoring metal losses. Density remains same. (6)

Or

- (b) (i) A 25 cm × 10 cm C.I. surface is to be faced on a milling machine with a cutter of diameter of 15 cm and 16 teeth. If the cutting speed and feed are 55 m/min and 6 cm/min. respectively, determine the rpm of the cutter, feed/tooth and the milling time. (8)
- (ii) Find the time required for finish grinding a 20 cm long steel shaft to reduce its diameter from 4.5 cm to 4.3 cm with a grinding wheel of 2.5 cm face width. Cutting speed is 16 m/min. and depth of cut is 0.2 mm. (6)
- (iii) Calculate the cutting speed on a job of 50 mm diameter rotating at 200 rpm. (2)
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