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Question Paper Code : 21829

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Seventh Semester

Mechanical Engineering

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

(Common to Production Engineering)

(Regulations 2008/2010)

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

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the objectives of method study.
2. What is standard time?
3. Define process planning.
4. Enumerate the documents required for process planning.
5. Define cost accounting.
6. Distinguish between cost estimation and cost accounting.
7. List the types of estimates.
8. What are the sources for cost estimation?
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 24,000 hours. Find the over head for a job requiring 20 labour hours.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the principles of motion economy with suitable illustrations. (16)

Or

- (b) Discuss various tools and techniques of work measurement. (16)

12. (a) Describe various approaches to process planning. (16)

Or

- (b) (i) Explain how to develop manufacturing logic and knowledge. (8)

(ii) Following are the informations on two machines:

S.No.	Item	Capstan Lathe	Automatic (Single Spindle)
1.	Tooling cost	Rs.300	Rs. 300
2.	Cost of cams	—	Rs. 1,500
3.	Material cost per piece	Rs. 2.50	Rs.2.50
4.	Operation labour cost	Rs.5 per hour	Rs.2 per hour
5.	Cycle time per piece	5 min.	1 min.
6.	Setting up labour cost	Rs. 20/hour	Rs. 20/hour
7.	Setting up time	1 hour	8 hour
8.	Machine over heads (Setting and operation)	300% of (4)	100% of (4)

Find the break even quantity for a job which can be produced on either of the machines. Also comment about the choice of machine based on the break even quantity. (8)

13. (a) (i) Discuss the objectives of cost estimation (10)

- (ii) Explain the advantages of cost accounting (6)

Or

- (b) Describe the classification and elements of cost. (16)

14. (a) (i) Discuss various types of estimates (10)

- (ii) Explain the data requirements for cost estimation and their sources. (6)

Or

- (b) (i) Describe different methods of estimates (10)

- (ii) Explain the allowances in estimation. (6)

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)