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Question Paper Code : 60829

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

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. What do you understand by the term operating sequence?
4. State the factors to be considered for material selection.
5. Define Under Estimate.
6. What is meant by target cost?
7. What is batch costing?
8. Define standard data.
9. Define cutting speed.
10. Define Flash Loss.

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) Explain the procedure followed in process planning. (16)

Or

- (b) (i) Write a note on selection of process parameters. (6)

(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. (10)

13. (a) Name the various elements of cost. Explain each element in detail giving suitable examples. (16)

Or

- (b) Write down the step by step procedure for estimating the direct material cost. (16)

14. (a) (i) What are the three methods used in conceptual Cost estimation? Explain any two methods briefly. (8)
- (ii) Write the data requirements and sources of information for cost estimation. (8)

Or

- (b) (i) In a manual operation observed time for a cycle of operation is 0.5 minute and the rating factor as observed by the time study engineer is 125%. All allowances put together is 15% of normal time.

Estimate the standard time. (8)

- (ii) In a manufacturing process the observed time for one cycle of operation is 0.75 minute. The rating factor is 110%. The following are the various allowances as the percentage of normal time.

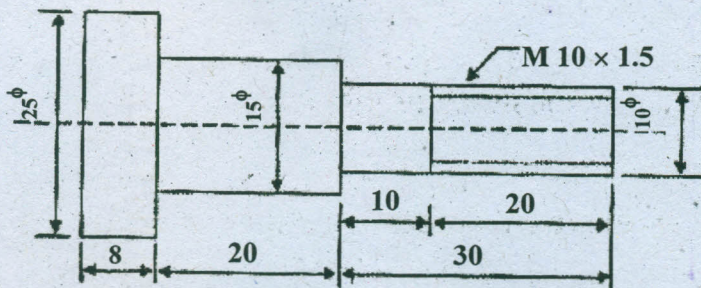
Personal allowance = 3%

Relaxation allowance = 10%

Delay allowance = 2%

Estimate the standard time. (8)

15. (a) Calculate the machining time required to produce one piece of the component shown in Fig. starting from 25 mm bar. The following data is available.



For turning :

Cutting speed = 40 m/min

Feed = 0.4 mm/rev.

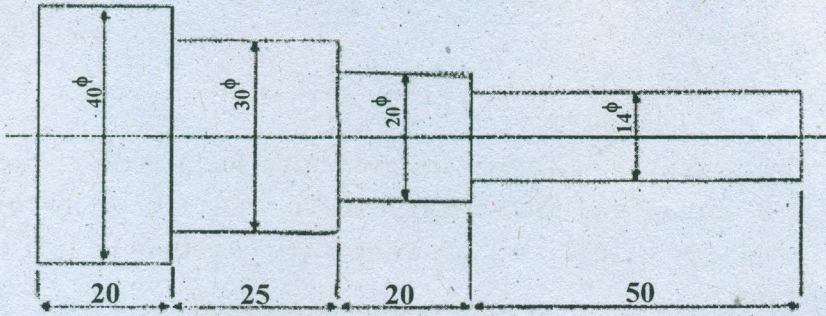
Depth of cut = 2.5 mm/per pass

For thread cutting :

Cutting speed = 8 m/min

Or

- (b) Calculate the net weight and gross weight for the component shown in the following Fig. Density of material used is 7.86 gm/cc. Also calculate.



ALL DIMENSIONS ARE IN m.m.

- (i) Length of 14mm dia bar required to forge one component.
(ii) Cost of forging/piece if:

Material cost = Rs. 80 per kg

Labour cost = Rs. 5 per piece

Overheads = 150 percent of labour cost.