April 2019

Time – Three hours
(Maximum Marks: 75)

[N.B: (1) Q.No. 8 in PART – A and Q.No. 16 in PART – B are compulsory.
Answer any FOUR questions from the remaining in each PART – A
and PART – B

(2) Answer division (a) or division (b) of each question in PART – C.

(3) Each question carries 2 marks in PART – A, 3 marks in Part – B
and 10 marks in PART – C.]

PART – A

1. Define process planning.

2. What are the informations needed for the value analysis?

3. State the choices involved in process selection.

4. Define the term selection of material.

5. Write down the basic procedure followed for conducting method study.

6. How direct labour cost is estimated?

7. Define the terms cutting speed and feed.

8. What is SIMO chart? What is the time unit used in the construction of a SIMO chart?

PART – B

9. Explain why line balancing is necessary.

10. Explain the method of determination of materials requirements with an example.

11. Explain the concept of work content.

12. State the applications of micro motion study.

13. What is the purpose of cost accounting?

14. Briefly explain the procedure for assigning cutting variables.

[Turn over.....

15. A cast iron flange of 300mm outer diameter has a bore of 100mm. This is to be faced on a lathe. Calculate the machining time to face the part, if the feed and cutting speed are 0.8mm/rev. and 30 m/min. respectively.

16. The monthly requirement of a company is 4000 components. The cost of each part is ₹ 12 and the cost of each set up is ₹ 60 per lot. If the carrying charge factor is 20%, determine (i)Economic lot size and (ii)Set up time for each lot.

PART – C

17. (a) The following data refers to a manufacturing unit.

    Fixed cost   – ₹ 1,00,000
    Variable cost   – ₹ 100 per unit
    Selling price   – ₹ 200 per unit

    (i) Calculate the breakeven point.
    (ii) If the fixed cost increases to ₹ 1,25,000 and variable cost reduces to ₹ 90 per unit, obtain the new break-even point.
    (iii) Also calculate the number of components needed to be produced to get a profit of ₹ 20,000.

    (Or)

    (b) Compare cost control with cost reduction.

18. (a) A component can be produced on either a capstan lathe or an automatic lathe. The different cost factors for the two machines are given below.

For capstan lathe	₹.	For automatic lathe	₹.
Fixed cost	400	Fixed cost	1600
Variable cost	2 per piece	Variable cost	0.50 per piece

Assume that the cycle time for production of the component is same for both machines. Which machine will you select for producing (i)900 (ii)700 components? What is the break even quantity?

(Or)

(b) How will you prepare an operation planning sheet for a given component?

19. (a) What are therbligs? Give the name, explanation, abbreviation, symbol and colour of any 10 important therbligs.

    (Or)

    (b) A job was broken down into 8 elements. The observations are given below.

Element	1	2	3	4	5	6	7	8
Observed time in minute	1.1	0.9	0.5	1.8	0.8	0.7	1.2	1.0
RF in %	100	120	130	90	90	110	80	110

Calculate the standard time. Assume fatigue allowance, contingency allowance, special allowance and policy allowance each 10%.

20. (a) Explain the basic steps in making a cost estimate.

    (Or)

    (b) A certain piece of work is produced by a firm in batches of 100. The direct materials cost for that 100 piece work is ₹ 160 and the direct labour costs is ₹ 200. Factory on cost is 35% of the total material and labour cost. Over head charges are 20% of the factory cost. Calculate prime cost and factory cost. If the management wants to make a profit of 10% on the gross cost, determine the selling price of each article.

21. (a) A machine bed is to be planed in two cuts on a planing machine. It takes 10 seconds in forward stroke and 4 seconds in return stroke. Find out the time required to plane the bed of width 600mm. Assume the feed as 2 mm/stroke.

    (Or)

    (b) A flat is to be cut across of a round brass bar 50mm in diameter. The depth of cut is 19mm. The diameter of cutter is 100mm. Cutting speed is 50m/min with a feed of 0.2mm tooth. Find the milling time, if the cutter has 8 teeth.

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