Question Paper Code : 31062

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2013.

Eighth Semester

20.5.13. AN

Mechanical Engineering

080120074 – PRODUCTION PLANNING AND COST ESTIMATION

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   Mention any two methods of demand forecasting.

2.   What is Kanban PULL systems?

3.   Why estimates are made?

4.   Mention the importance of costing.

5.   What do you mean by 'overhead expenses'?

6.   Define depreciation.

7.   Mention any two losses in forging shop.

8.   Write any two pattern allowances.

9.   What are the factors to be considered while estimating operation time?

10. Why is machining time calculation important?

11. (a) Describe clearly the function of routing, scheduling, material requirement planning and dispatching.

Or

(b) Explain about the objectives and functions of production planning and control.

12. (a) (i) Mention the function of estimation. (8)

(ii) Differentiate costing and estimation. (8)

Or

(b) (i) State the importance of realistic estimates. (8)

(ii) Describe about the estimation procedure. (8)

13. (a) (i) Explain the terms material cost and labour cost. (8)

(ii) From the following data, calculate the

(1) Total cost (2) Selling price for an electric motor.

Material cost of motor = Rs.6000

Manufacturing wages = Rs.4000

Factory over head, to the manufacturing wages = 100%

Non manufacturing overheads = 15%

Profit on the total cost = 13% (8)

Or

(b) (i) A machine costing Rs.24,000 was purchased on 1.12.2012. The installation and erection charges were Rs.1,000 and its useful life is expected to be 10 years. The scrap value of the machine at the end of the useful life is Rs.5,000. Calculate the yearly depreciation by straight line method. (8)

(ii) A factory has 15 lathes of some make and capacity and 5 shapers of same make and capacity. Lathes 30 m² area while shapers occupy 15 m². During one calendar year, factory expenses for this section area are as follows:

(1) Building rent and depreciation = Rs.5000

(2) Indirect labour and material = Rs.15,000

(3) Insurance = Rs.2000

(4) Depreciation charges of lathes = Rs.5000

(5) Depreciation chares of shapers = Rs.3000

(6) Power consumption for lathes = Rs.2000

(7) Power consumption for shapes = Rs.1000

Find out the machine hour rate for lathes and shapes which work for 25000 hours and 8000 hours respectively. (8)

14. (a) (i) A square bar 3cm side and 25cm length is to be converted by hand forging into a bar of hexagonal section having each side equal to 1.5 cm. Calculate the length of the hexagonal bar produced, considering a scale loss of 6% of total volume. What would have been the length of a rod with diameter of 3cm if the same hexagonal bar was to be forged from the rod? (8)

(ii) A lap joint is to be prepared from 9.5 mm ms using flat welding position and 6 mm electrode. Current used is 250 amps and voltage 40 volts, welding speed is 14m/hr. and 0.4 kg of metal is deposited/metre length of joints. Labour cost Rs.3.5/hr. Power Re.0.4/kwh and electrode Rs.45/kg. Efficiency of machine 60% and operation factor is 70%. Calculate cost of labour, power and electrode per meter of weld. (8)

Or

(b) (i) Explain about the various steps for calculating casting costs. (8)

(ii) Figure Q 14 b(ii) shows a finished gear blank. 2 mm machining allowance in the pattern is to be added on each side. Find selling price with the help of following data.

Cost of CI = Rs.5/kg

Melting charges = 15% of material cost

Administrative overheads = 15% of material cost

Profit = 20% of total cost

Moulding charges = Rs.2/mould. (8)

Figure – Q 14 b(ii)

15. (a) (i) Calculate the time required for threading a steel bar of ∅ 35 mm for a length of 100 mm by a single point tool on lathe. Take that 3 threads per cm are to be cut at a cutting speed of 10 m/min. Assume tool approach and tool overtake as 5 mm each. (8)

(ii) Find the time required to drill 4 holes in a cast iron flange each of 2cm depth, if the hole diameter is 2 cm. Assume cutting speeds as 21.9 m/min, and feed as 0.02 cm/rev. (8)

Or

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(b) (i) A 3 cm deep slot is to be milled with a 8 cm diameter cutter. The length of the slot is 30 cm. What will be the total table travel to complete the cut? If the cutting speed is 20 m/min and feed per tooth is 0.2 mm, estimate the milling time. The cutters has 24 teeth and one cut is sufficient for the slot. (8)

(ii) Find the time required on the shaper to complete one cut on a plate 600x900 mm, if the cutting speed is 6m/min. the return time to cutting time ratio is 1:4 and the feed is 2mm/stroke. The clearance at each end is 25 mm. (8)

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