

Roll No.

--	--	--	--	--	--	--	--	--	--

**B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATION, APRIL / MAY 2014**

**MANUFACTURING ENGINEERING**

Fourth Semester

**MF 8451 – PROCESS PLANNING AND COST ESTIMATION**

(Regulation 2012)

(Tables Permitted)

Time: 3 Hours

Answer ALL Questions

Max. Marks: 100

**PART – A (10 X 2 = 20 Marks)**

1. What is a manufacturing system?
2. Define hybrid layout and its advantages
3. What is surface cutting speed?
4. What are the three basic principles of pin location?
5. What do you understand by reliable estimate?
6. Differentiate standard cost and estimating
7. (i). Drifting is an operation carried on by a special tool known as a drift to enlarge the \_\_\_\_\_.
- (ii). The portion of metal between the length held in the tongs and the material in the die is called \_\_\_\_\_.
8. Why shrinkage allowance is kept in a pattern?
9. What machining time will be required to drill a 15 mm hole through a 50 mm thick sheet plate? The feed for a 15 mm drill should be 0.2 mm per revolution and the rpm=1480.
10. Differentiate plain milling cutter and face milling cutter

**PART- B (5 x 16 = 80 Marks)**

11. (i). What is manufacturing strategy? Explain its six basic decision categories and functions of manufacturing organization. (12)
- (ii) Describe the process of document preparation in process planning (4)
12. (a) (i). Explain the various types of jigs used in drilling and boring operation with simple sketch (12)
- (ii) List some standard parts used in the design and construction of jigs and fixtures (4)

(OR)

(b). What is quality assurance? and how to control the quality in manufacturing industries.

Explain with closed loop control system

(16)

13. (a).(i) Name the various elements which contribute towards total cost of the product.

Explain any two of them

(6)

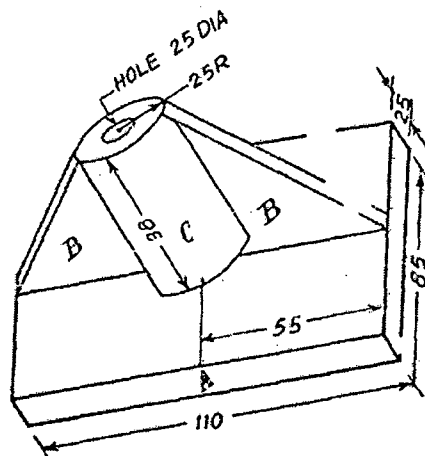
(ii) A concern manufacturing air coolers proposes to put up an improved model in the market and you are required to suggest a selling price which will cover the on cost and ensure the portion of profits on sales as before. The material in the new model will cost Rs. 400 and direct wages would be Rs. 200. The following expenditures relate to the previous year

Stock of material on 1 <sup>st</sup> April 1975	Rs. 20,000
Stock of material on 31 <sup>st</sup> March 1976	Rs. 22,000
Purchase of raw material in this period	Rs. 52,000
Manufacturing wages	Rs. 16,000
Works on-cost	Rs. 8,000
Administrative and sales on-cost	Rs. 8,000
Sales during the year	Rs. 90,200

(10)

(OR)

(b) (i). Find the material cost for the finished component shown in fig.1. The density of brass is 8 gm/ cubic cm and cost of brass is Rs. 24 per kg. (8)



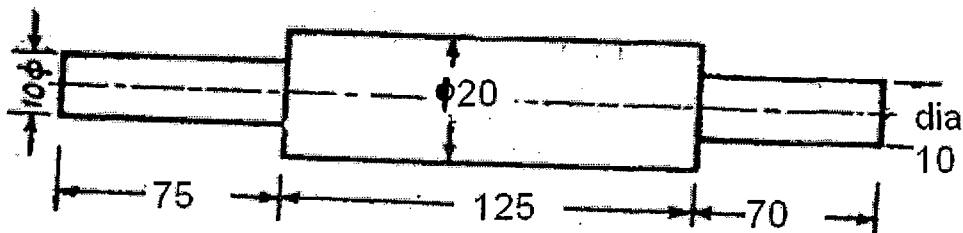
- (ii). Determine the depreciation fund which stands in the company's books, based on reducing balance method, as on 1 st January 1983.

Cost of machine	Rs. 14000
Cost of erection and installation	Rs. 2000
Residual value of the machine after 10 years	Rs. 2000
Date of commission of the machine	1 st July 1980
Company's financial year	From 1 st January to 31 st December

(8)

14. (a). (i) Define pattern and what are the important allowances should be considered for making it. (6)

- (ii). 150 pieces of shaft as shown in fig.2. are to be drop forged from the raw stock of 2 cm diameter. Estimate the cost incurred assuming that, material cost = Rs.5.20 per meter, cost of forging = Rs.120.50 per sq. meter of surface area to be forged, over head expenses to be 100% of the cost of forging.



(10)

(OR)

- (b). (i) What are the factors that affect the welding cost. (4).

- (ii) Two plates of each 100 cm. long, 25 cm wide and 5 mm thick are to be welded. A 60° vee is prepared by gas cutting prior to welding. The overall cost of oxygen is 70 paise per cu. metre, cost of acetylene Rs.7.0 per cu. metre and the cost of filler rod material is Rs.3.0 per kg. Using leftward technique, find the cost of cutting and welding. Take density of filler material as 11.28 gm/cu.cm. (12)



15. (a).(i) Write short notes on the following terms

1. Set-up time
2. Operation time
3. Handling time
4. Tear-down time
5. Servicing time
6. Personal and rest allowances

(6)

(ii) Estimate the time taken to prepare a job as shown in fig.4 from mild steel stock bar 4.00 cm in diameter and 7.5 cm long. Assume the following data:

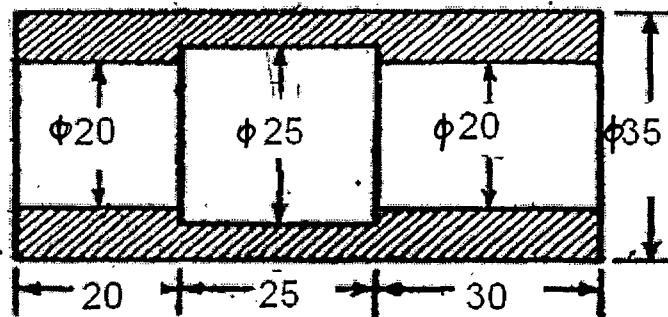
Cutting speed for turning and boring operation = 20 m/ min

Cutting speed for drilling operation = 30 m/min

Feed for turning and boring operation = 0.2 mm/ rev

Feed for 20 mm drill = 0.23 mm/rev

Depth of cut not to exceed 3 mm in any operation.



(10)

(OR)

(b).(i) A 20 x 5 cm cast iron surface is to be faced on a milling machine with a cutter having a diameter of 10 cm and 16 teeth. If the cutting speed and feed are 50 m/min and 5 cm/ min respectively, determine the milling time, RPM of the cutter and feed per tooth.

(8)

(ii). What are the parameters need for calculating planer machining time and milling time

(8)