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B.E. / B.Tech. DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2012
MANUFACTURING ENGINEERING BRANCH
VI SEMESTER (REGULATIONS 2008)

MF 9026 PROCESS PLANNING AND COST ESTIMATION

Time: 3 Hours

Maximum: 100 Marks

Answer ALL questions

PART A - (10 X 2 = 20 marks)

1. Name the type of production activity for the following:
Bolts& nuts, cars, boilers, machine tools.
2. What are the factors that influence process planning?
3. What shall be the effects of the following on an enterprise?
Over estimating , Underestimating.
4. What are the aims of cost estimation?
5. State various causes of depreciation.
6. A milling machine is costing Rs.5,00,000. It is expected to run for 10 years after which its scrap value is assumed to be Rs.40,000. The milling machine is expected to run 2,000 hrs per year on the average. Estimate the depreciation / hr of the machine.
7. What is meant by budgetary control?
8. State any four benefits of budgetary control.
9. What do you understand by the terms, 'Approach length' and 'over travel'?
10. Determine the time required for shaping a block of 30cm X 15 cm size in two cuts. Assume feed as 0.6mm/ stroke and cutting speed as 15 m / min.

PART B – (5X16=80 Marks)

- 11 i) Enumerate various types of budgetary control. (8)
- ii) The following information is available for the two machines in a workshop.

Item of expenditure	Machine 1	Machine 2
	(Capstan Lathe)	(Automatic Lathe)
	Rs	Rs
Tooling cost	500	4000
Operating labor cost/hr	12	3
Cycle time per piece	7 min	2 min
Setting up cost	50	500
Overheads	60	1000
Maintenance /hr	9	50
Power charges /hr	6	12

Draw break even chart for the two machines and find out Break Even Quantity.

Also find out which process is suitable for producing 5000 items. (8)

12 a) Enumerate the two approaches used in CAPP system. What are the advantages and limitations of them. (16)

(Or)

12 b) Describe various steps in manual process planning. (16)

13a i) Explain the functions of estimation. (8)

ii) Describe any eight important aims and objectives of costing. (8)

(Or)

13b i) Discuss the procedure involved in estimation. (10)

ii) Distinguish between estimation and costing (6)

14 a i) From the following data for a sewing machine manufacturer prepare a statement showing prime cost, factory cost, production cost, total cost and profit. (10)

Value of stock of material as on 01-04-2011	Rs.1,00,000/-
Material purchased	Rs.9,00,000/-
Wages to labor	Rs.6,00,000/-
Depreciation of plant and machinery	Rs.30,000/-
Depreciation of office equipment	Rs. 12,000/-
Rent, taxes and insurance of factory	Rs.50,000/-
General administrative expenses	Rs.12,000/-

Material transportation in factory	Rs.10,000/-
Insurance and rent of office building	Rs.9,000/-
Direct Expenses	Rs.19,000/-
Commission and pay of Sales man	Rs.40,000/-
Repair and maintenance of plant	Rs.20,000/-
Works manager salary	Rs.6,50,000/-
Salary of office staff	Rs.7,50,000/-
Value of stock material as on 31-03-2012	Rs.90,000/-
Sale of products	Rs 45,00,000/-

14 a ii) The catalogue price of an oil engine is Rs.7500. The discount allowed to the distributor being 15%, selling expenses cost is $\frac{1}{2}$ the factory cost and if the material cost, labor cost and factory overhead charges are in the ratio of 1:4:3. What profit is to be made by the owner on each engine, if the material cost is Rs.500. (6)

(Or)

14 b i) Enumerate various methods of allocation of overhead expenses. (8)

ii) A drilling machine is purchased at the cost of 4,00,000. The assumed useful life is 10 years and salvage value Rs.30,000. Calculate the percentage by which the value of the machine is decreasing every year and depreciation fund after 2 years if depreciation is charged by Reducing balance method. (8)

15 a i) Calculate the cost of welding two pieces of mild steel sheets 1 meter long and 7 mm thick. A 60^oV is prepared by means of gas cutting before welding is to be commenced. The cost of oxygen is Rs 7/ cu. meter and of acetylene is Rs.40 / cu. meter. The filler metal costs Rs.30/ kg. The following data are available:

For cutting

- Cutting speed is = 20m/hr.
- Consumption of oxygen = 2 cum / hr.
- Consumption of acetylene= 0.2 cum / hr.

Data for right ward welding

- Consumption of oxygen = 0.8 cum / hr.
- Consumption of acetylene= 0.8 cum / hr.
- Diameter of filler rod used = 3.5 mm.
- Filler used per meter of weld = 3.4 m.

Welding speed = 3 meters/hr.

Density of filler metal = 8 gm /cc. (10)

15a ii) Find the time required for rough grinding of a 15 cm long steel shaft to reduce its diameter from 4 cm to 3.8 cm, with a grinding wheel of 2 cm face width. Assume wheel traverse speed as 15 m/min. The depth of cut is not exceed 0.25 mm and total over travel is 0.5 cm. (6)

15 b i) A casting weighs 10 Kg, the weight of the returnable scrap is found to be 8 Kg. The cost of molten metal at the cupola spout may be taken as Rs. 10/Kg and the scrap is valued at Rs.3/kg. The following are the details regarding the time taken by the casting in different departments along with their individual on cost rates.

Shop	Time Taken	Labor rate	On cost rate
Moulding and Pouring	20 min	Rs. 50/hr	Rs. 40/hr
Shot blasting	5 min	Rs. 40/hr	Rs. 30/hr
Fettling	1 min	Rs. 30/hr	Rs. 25/hr

There is a general rate of Rs.30/hr to cover the factory on cost.

Find the factory cost of the casting. (8)

15 b ii) 1000 stepped bolts of size shown in Fig. are to be made by machine forging. Estimate net weight, gross weight and number of bars required if m.s bars are available in 5 m length and 20 mm diameter. Take the density of m.s bar 7.868 gm / cubic cm. (8)

