16134(J)

B. Tech 6th Semester Examination

Industrial Engineering & Production Management (NS)

ME-323   June-16

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all, selecting one question each from Sections A, B, C & D of the paper and all sub-parts of question no. 9 of Section E.

SECTION - A

1. (a) Describe the principle of motion economy. Who defined the therbligs? Make the symbol, description, colour and abbreviation for following therbligs Grasp, hold, Position, Assemble, Rest, Inspect, Release (10)

   (b) The elemental timings are given below alongwith the respective ratings. Assuming rest and personal allowance as 12% and contingency allowance of 2%, calculate the standard time for the operation.

Elements	Observed Time	Rating	Remark
A	0.2	90	-
B	0.05	80	-
C	0.03	100	-
D	0.78	100	-
E	0.06	100	-
F	0.05	100	-
G	0.02	85	Once in 5 pieces
H	0.06	80	-
I	0.10	90	-
J	0.04	90	Once in 20 pieces

(8)

   (c) Describe various methods of job evaluation and merit rating in an industry. (2)

2. (a) A work sampling study was conducted to establish the standard time for an operation. The observation of the study conducted is given below:

Total Number of Observations	=160
Manual	=14
Machined Controlled work	=106
Machine Idle Time	=40
Average performance rating	= 80%
No. of parts Produced	= 36
Allowance for personal needs and fatigue	= 10%
Study conducting for 3 days	
Available working hours/day	= 8 Hrs

   Calculate the standard time for one piece. (10)

   (b) Define product and productivity. How one can measure the productivity of manufacturing industry? Explain any one method with example to measure the productivity. (6)

   (c) How incentives play vital role in increasing the morale of an employee? What is the various incentive payment schemes used in an industry? (4)

SECTION - B

3. (a) What do you understand by cost variance analysis? Differentiate between Cost estimating and costing. Describe Aims of costing in any organization. (8)

   (b) A certain product is manufactured in batches of 100. The direct material cost is Rs. 500, direct labour cost is Rs. 750 and the factory overheads are 50% of the prime cost. If the selling expenses are 30% of the factory cost, what would be the selling price of each product so that the profit is 10 percent of the total cost? (7)

   (c) How industry take advantage from MIS for formulating effective policies in the organization? Define Job costing. (5)

4. (a) The fixed costs for the year 2010-2011 are Rs. 100000. The estimated sales are Rs. 300000. The variable cost per unit for the single product made is Rs. 5. If each unit sells at Rs. 30 and the number of units involved coincides with the expected volume of output, construct the break even chart and calculate the following.

   (i) Determine BEP

   (ii) Determine the profit at turnover of Rs. 180000

   (iii) Find the margin of safety.

   (iv) Measure the angle of incidence. (10)

(b) What are the assumptions in BEA? Plotting the B. chart showing various costs. (6)

(c) How industries manage the cost controlling over any process. How it will effect on the profit of organization? (4)

SECTION - C

5. (a) Why material management is necessary in any organization? Is there any difference between material management of process industry and manufacturing industry? (8)

(b) The annual demand for an item is 3200 parts. The unit cost is Rs. 6 and the inventory carrying charges are estimated as 25% per annum. If the cost of one procurement is Rs. 150, find

(i) E.O.Q.

(ii) Time between two consecutive orders.

(iii) Number of orders per year.

(iv) The optimal Cost (8)

(c) What are the various methods used for purchasing in any organization? Describe advantage & disadvantage of any one method. (4)

6. (a) Differentiate between E.O.Q & E. B.Q. Derive the expression for E.B.Q and plot the graph. (8)

(b) Write the full form of the following terms:

ABC, FSN, SDE, VED, HML & SOS (6)

(c) A company consumes 12000 units of a particular item. The company has a production capacity of 60 units/day. The cost of each unit produced by the company is Rs. 8. The setup and tooling up cost is Rs. 96 per setup. The carrying charges are 15% of cost per unit. Determine.

(i) E.B.Q.

(ii) How frequently should the production runs be made?

(iii) Determine the production period.

Assume 300 working days per annum. (6)

SECTION - D

7. (a) Define JIT. Who is the founder of JIT? What are the various benefits of implementing JIT in manufacturing industry? Can JIT be implemented in educational institutions? (10)

[P.T.O.]

(b) Six jobs are to be processed on two machines A and then on the machine B. Time in hours taken by each job on each machine is given below.

	Jobs					
	1	2	3	4	5	6
Machine A	5	3	2	10	12	6
Machine B	3	2	5	11	10	7

Determine the optimum sequence of jobs that minimizes the total elapsed time to complete the jobs and compute the minimum time. (10)

8. (a) Five jobs are to be processed on two machines A and then on the machine B. Time in hours taken by each job on each machine is given below.

	1	2	3	4	5
Machine A	5	1	9	3	10
Machine B	2	6	7	8	4

Determine the optimum sequence of jobs that minimizes the total elapsed time to complete the jobs and compute the minimum time. (10)

(b) Define forecasting. Differentiate between forecasting and prediction. What are the various forecasting errors? Explain any one in detail. (10)

SECTION - E
(Compulsory Question)

9. Write short answers of the following:

(a) Production cost refers to prime cost plus.....................

(b) Importance of MIS in any organization.

(c) How industry can recover overhead cost?

(d) What strategies are adopted by you for increasing the productivity?

(e) Differentiate between P, Q and S systems.

(f) What are the factors to be considered for determination of order point?

(g) Classify the forecasting methods.

(h) Various methods for line and intermittent production systems.

(i) Define PMTS and MTM.

(j) What is the function of Johnson algorithm in PPC? (10×2=20)