Printed Pages : 7

TME-401

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 4079   Roll No.

B. Tech.

(SEM. IV) EXAMINATION, 2007-08
INDUSTRIAL ENGINEERING

Time : 3 Hours]   *[Total Marks : 100*

Note :   *(1)   Attempt **all** questions.*

(2)   Assume any data suitably with proper justification, if missing.

1   Attempt any **four** parts :   5×4

(a)   Discuss the relationship between work measurement and job design. Which typically follow the other and why ?

(b)   Contrast the operations chart and activity chart. Supplement your answers with suitable example.

(c)   Contrast the job enlargement and job enrichment. Are they mutually exclusive ?

(d)   What are the Different types of production systems ? Explain the difference between product and process oriented production system in relation product life cycle.

(e) What are the different types of productivity indices ? Explain the strategies for productivity improvement.

(f) An experienced industrial engineer conducted a direct time study for an acid mining operation. The analyst found cycle time as show below, rated the observed worker at 80%, and used the firm's allowance fraction as 0.1. Determine standard time :

Cycle Time (in min.)	No. of cycle observed
2.7	3
2.7	4
2.9	2
3.1	1
3.2	1

2 Attempt any **four** parts :   5×4

(a) Explain JIT Philosophy.

(b) "Forecasting is a basis of planning", explain in brief. Identify the relation between moving average method and exponential smoothing method.

(c) State the objectives of production planning and its management process.

(d) Explain the main function of production Control system. Briefly outline at least two of these with focus on development.

(e) What are the factors affecting selection of plant location ?

(f) Following are the data related to the jobs arriving at a shop with the due dates / time :

Waiting (Numbered in Order of arrival)	317	318	319	320
Processing Time (days)	12	11	14	2
Due date (In days from now)	20	20	18	8

Apply FCFS priority rule and calculate average job lateness. Now apply SPT rules and calculate ave. job lateness compare the rules with reasons.

3 Attempt any **four** parts :   5×4

(a) The price of an equipment is Rs. 20,000. It's resale price and maintenance cost at the end of the subsequent year are as follows :

Year	1	2	3	4	5	6
Maintenance cost (Rs.)	1500	1700	2000	2500	3500	5500
Resale Price (Rs.)	17000	15300	14000	12000	8000	3000

Determine economic life of the equipment and minimum average cost.

(b) In how many ways, cost can be classified. Define the following :

   (i)   Estimate

   (ii) Cost and

   (iii) Price.

(c) A Co. is trying to decide which of the following two machines, each requiring an investment of Rs. 10,000/- be purchased. The expected net incremental cash flow in rupees are as follows :

Year	Machine P	Machine Q
1	2000	5000
2	3000	4000
3	5000	2000
4	4000	2000

If Co. cost of capital is 10% which machine should be purchased

(d) Compare the different methods of depreciation accounting. Explain IRR, NPV and Pay-Back period.

(e) What are the different types of maintenance ? Explain each briefly.

(f) (i) Illustrate Bath Tub Curve' phenomenon of failure rate.

(ii) Define the term "Terotechnology" What is the impact of it on Maintenance management.

4   Attempt any **four** parts :   5×4

(a) Derive the formula to EPL and its associated total cost. Mention clearly the assumption made.

(b) Clearly Differentiate between MRP and MRP II. What are the outputs and inputs of a closed loop MRP.

(c) (i) What are the costs that increases or decreases with the size of inventory ?

(ii) What are the advantages of inventories to an organization ?

(d) Explain single, double and sequential sampling. What are the factors on which selection of sampling technique is done.

(e) Explain the fire pillars of TQM.

(f) A sharpening machine at a Electrical Razor Co., sharpens the blades on a rotatory cutter head for electric razors. If there is a burr on any of the cutter blade, razor will not operate properly, so random samples of 25 parts are inspected regularly to see if machine is operating properly so random samples of 25 parts are inspected. The results of 10 samples are 0.08, 0.08, 0.04, 0.12, 0.2, 0.24, 0.04, 0.12, 0.08, 0.04. Establish the control limit for the proportion defective for this process to be 68.34% level confident.

OR

(f) Describe $\bar{X}$-chart and R-chart. Explain why both $\bar{X}$-chart and R-chart are needed in SQC.

5   Attempt any **four** parts :   5×4

(a) What do you understand by Human resource planning ? Enumerate its aids and activities.

(b) What is collective bargaining ? Discuss its advantages and disadvantages.

(c) What are the principles of organization ?

(d) Contrast between line and staff organization and project organization.

(e) Contrast conventional compensation system with incentive system. As a beginning management trainee, which one you will prefer ?

(f) Contrast any three methods of jobs rating on the basis of merits and demerits.