MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL
Paper Code : MB204/MBPT203 Operations Management
UPID : 002032

Time Allotted : 3 Hours   *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer any ten of the following :   [1 x 10 = 10]

   (I)   Name the maintenance technique where repair is made after machine or equipment failure.

   (II)   What is lead time?

   (III) A six sigma process ensures that not more than _____ defects per million opportunities.

   (IV)   TPM refers to _____-.

   (V)   Standard time is always more than _____ time.

   (VI)   The time between the placement of an order and its delivery is called as _____

   (VII) Locating all the drills in one work center, lathes in another work center represent and milling in another work center represent what type of layout?

   (VIII) When D=18000, holding cost=Rs.1.20, set-up cost=Rs.400 , EOQ = _____

   (IX)   The periodic monitoring and analysis of equipment conditions to predict future equipment performance is practiced under _____.

   (X)   **What is PERT analysis based on?**

   (XI)   What kind of layout is followed in the following facilities?
          (a) An automatic car wash
          (b) A super speciality clinic

   (XII) Activities A, B, and C are the immediate predecessors for Y activity. If the earliest finishing time for the three activities are 12, 15, and 10, then what will be the earliest starting time for Y?

Group-B (Short Answer Type Question)

Answer any three of the following :   [5 x 3 = 15]

2. Explain the terms: Dummy Activity, Burst Node, Merge Node.   [5]

3. When the annual demand of a product is 24000 units, the EOQ (Economic Order Quantity) is 2000 units. If   [5]
   the annual demand is 48000 units then find the most appropriate EOQ?

4. What do you mean by Productivity ? How are the key measures of productivity?   [5]

5. Explain the terms: Event, Predecessor Event, Successor Event,   [5]

6. Location and layout of a plant are important decision from the point of view of operation, finance, HR and [5]
   marketing . Discuss

Group-C (Long Answer Type Question)

Answer any three of the following :   [15 x 3 = 45]

7. (a) Discuss the role of Juran's trilogy in process improvement.   [5]

   (b) A machine is set to deliver packets of a given weight. 10 samples of size 5 each were recorded.   [10]
        Below are given relevant data:

Sample No. :	1	2	3	4	5	6	7	8	9	10
Mean :	15	17	15	18	17	14	18	15	17	16
Range :	7	7	4	9	8	7	12	4	11	5

   Calculate the values for the central line and the control limits for the mean chart and the range chart and then comment on the state of control. [Conversion Factors for n = 5, are A_2 = 0.58, D_3 = 0, D_4 = 2.11.]

8. (a) 10 samples (each of size 100) of a component were inspected. The results of the inspection are   [8]
       given below:

Sample No	1	2	3	4	5	6	7	8	9	10
No of Defectives	2	0	4	3	1	6	3	1	1	2

  Draw the relevant control chart taking 3 sigma limits.

    (b) What are the advantages of SQC? [7]

9. (a) What is acceptance Sampling? [7]

    (b) Discuss TQM techniques. [8]

10. (a) Explain functions of PPC. [2]

    (b) CASE STUDY:XYZ power Ltd . set up a factory for manufacturing solar lanterns in a remote village [13] as there was no reliable supply of electricity in rural areas. The revenue earned by the company was sufficient to cover the costs and the risks .the demand of lanterns was increasing day by day ,so the company decided to increase production to generate higher sales . For this they decided to employ people from the nearby village as very few job opportunities were available in that area. The company also decided to open schools and crèches for the children of its employees.

    i. Identity and explain the objectives of management discussed above.

    ii. State and two values which the company wanted to communicate to the society

11. Draw a network diagram of the following schedule of activities and calculate the following questions. [15]

Activity	1-2	1-3	1-4	2-6	3-7	3-5	4-5	5-9	6-8	7-8	8-9
Duration (in days)	2	2	1	4	5	8	3	5	1	4	3

i)   Break down the project into various activities systematically. Label all activities. Arrange all the activities in logical sequence. Construct the arrow diagram.

ii)   Number all the nodes (events) and activities. Find the time for each activity considering it to be deterministic. Indicate the activity times on the arrow diagram.

iii)   Calculate earliest start time, earliest finish time, latest start time and latest finish time. Tabulate activity normal times, earliest time and latest time.

iv)   Determine the total float for each activity by taking difference between the earliest time and the latest time for each node.

v)   Calculate the total project duration.

*** END OF PAPER ***