BRAINWARE UNIVERSITY

Course – BBA

Production and Operation Management (BBA303)

(Semester – 3)

Time allotted: 3 Hours **Full Marks : 70**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)

1) **Choose the correct alternatives for the following:** **10 x 1 = 10**

i) Following is a conversion process, in which successive units has to undergo same sequence of operations

a) Mass production shop b) Job production shop

c) Batch production shop d) None of the above

ii) In most of the organizations, 60% to 70% of total cost is related with

a) Material b) Designing cost

c) Processing cost d) None of the above

iii) Expanding existing facility is a

a) short term strategy b) Medium term strategy

c) Long term strategy d) None of the above

iv) Estimate of an event to happen in future is known as-

a) Demand b) Rainfall

c) Forecast d) None of the above

v) A ship building industry uses the following layout system

a) process layout b) product layout

c) group technology d) Fixed position

vi) Plant layout is physical facility of following nature used in production

a) Boundary b) Floor plan

c) Three-dimensional object d) None of the above

vii) In the following model, price per unit changes with respect to quantity purchased

a) Quantity appreciation b) Quantity discount

c) Quantity ordered d) None of the above

viii) R&D planning is a decision

a) Strategic b) Tactical

c) Operational d) None of the above

ix) In Johnson's rule, the sequence of jobs is constructed by assigning jobs to the position in the sequence

a) always from left to right b) always from right to left

c) from middle to right d) None of the above

x) X bar chart is a control chart used to control quality of

a) a variable b) an attribute

c) Both (a) and (b) d) None of the above

Group – B

(Short Answer Type Question)

Answer any three questions **3 x 5 = 15**

2) Explain notes on ABC analysis in material management.

3) What is float? Differentiate between total float and free float.

4) What is time study? Explain steps required in time study.

5) In a drilling shop, direct time study was carried out. Two persons were engaged in doing time study. One has rated worker 100% and other as 120%. They has used 10% allowance. Figures are-

Cycle time (in Minutes)	Number of times observed
20	2
24	1
29	1
32	1

From the above data,

a) Determine the standard time using the first industrial engineer's worker rating.

b) Find the standard time using the worker rating of second engineer.

c) Comment on the reliability of time study engineers.

6) What is work sampling? Discuss steps of this method.

Group – C

(Long Answer Type Question)

Answer any three questions **3 x 15 = 45**

7) Following table gives data on number of defectives in 10 samples of size 25 each. What type of control chart will be applicable here? Prepare chart with 3 sigma limit.

Sample	1	2	3	4	5	6	7	8	9	10
Defective	4	10	2	3	6	5	2	4	3	2

8) An equipment has been purchased for Rs 60,000. Salvage value is expected to decrease by Rs 5,000 per year. Yearly operating and maintenance cost is Rs 5,000 in first year. Then it will increase by Rs 2,000 per year. Discount rate is 10% Find the economic life of the machine.

9) A job consists of four work elements and all are performed by the same operator. An analyst conducted work sampling to determine the standard time of the job. The duration of study is one day with two shifts. Each shift has 420 minutes of effective time. The details of observations are sumarised in the following table. The total number of acceptable units produced during the study period is 225 units. Determine the standard time by assuming allowance of 12 per cent.

Work element number	Frequency of performance	Performance ratings
1	50	90%
2	90	150%
3	75	100%
4	80	115%

10) What is TQM? Explain fundamental factors affecting quality.

11) Consider the data of a project shown below

Activity	Normal time (weeks)	Normal cost (Rs.)	Crash time (weeks)	Crash cost (Rs.)
1-2	13	700	9	900
1-3	5	400	4	460
1-4	7	600	4	810
2-5	12	800	11	865
3-2	6	900	4	1130
3-4	5	1000	3	1180
4-5	9	1500	6	1800

Indirect cost per week is Rs. 250. Calculate optimal crashed project completion time.