BNBUSST4T3(A)/01/2023

Duration: 2 hrs. 30 min **Marks: 60**

N.B.: 1) All questions are compulsory and carry equal marks.
2) Figures to the right indicate marks for each question.
3) Use of calculators is allowed.

Q.1 (a) How the network analysis does help the management in planning, scheduling, and controlling the Project? Explain the basic steps in network analysis. **(08)**

OR

Q.1 (a) Explain the need of crashing of activities and the effect of crashing on the cost of the project. **(08)**

Q.1 (b) Write rules for drawing the network in PERT. Draw the following network **(08)**

Activity	follows activity
a, d	-
b, c	a
e, f	d
g	b
h	b, c
i	e
j	f, i
k	g, h, j

OR

Q.1 (b) What are Gantt Charts? What are their strengths and weaknesses? **(08)**

Q.2 (c) i) Define Quality of the product. What do you understand by Statistical Quality Control (SQC)? **(08)**
ii) What is meant by Variable control charts & attribute control chart?

OR

Q.2 (c) i) Explain the causes of variation in quality. **(08)**
ii) What is meant by 'Process Control' & 'Product Control'?

Q.2 (d) Set up $\bar{X}$ & s (σ) chart when standards are not given. How the standard deviation of process can be estimated from s chart? **(08)**

OR

Q.2 (d) Discuss any two methods of stabilization of 'P' chart when sample size is variable. **(08)**

Q.3 (e) Explain following terms w.r.t. Acceptance Sampling plan **(08)**
i) Producer's Risk.
ii) Consumer's Risk.

OR

Q.3 (e) What do you understand by Acceptance Sampling plan (ASP)? Explain Process Average Fraction Defective. **(08)**

Q.3 (f) Describe double Sampling Plan. Obtain an expression for Probability of accepting a lot on the basis of first sample. (08)

OR

Q.3 (f) Describe Single Sampling Plan. Obtain Average Sample Number & Average Total Inspection. (08)

Q.4 (A) **State True or False and correct if necessary (Attempt any Three)** (06)

1. With a c-chart, the sample size is small and may contain only one item.
2. As the duration of the project goes on reducing that indirect cost also goes on increasing
3. We can select any activity from the network for crashing
4. Pessimistic time is the shortest time that could be required to complete the activity
5. PERT is activity oriented
6. An $\bar{X}$ and R chart constructed to monitor and control a process use the same raw data.

Q.4 (B) **Answer the following (Attempt any Three)** (06)

1. Define critical path.
2. Define optimistic time estimate.
3. Define total float.
4. P charts are based on which distribution?
5. Which are the M's that are important to maintain quality?
6. Which causes are removable in statistical quality control?

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