

## Note:

- Attempt all questions and
- All questions carry equal marks.

Qus.1: Draw the network for the following project and indicate the event tines, critical path, activities early/latest start/finish times, and three types of floats. Do not change the order in which activities are listed in the table.

| Activity | D | Precedents | EST | EFT | LST | LET | Total F | Fee F | Independent F |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| A | 2 | - |  |  |  |  |  |  |  |
| B | 1 | A |  |  |  |  |  |  |  |
| C | 4 | - |  |  |  |  |  |  |  |
| D | 3 | I,M |  |  |  |  |  |  |  |
| E | 1 | - |  |  |  |  |  |  |  |
| F | 2 | B |  |  |  |  |  |  |  |
| G | 5 | F,L |  |  |  |  |  |  |  |
| I | 2 | G,K |  |  |  |  |  |  |  |
| J | 1 | A |  |  |  |  |  |  |  |
| K | 4 | J,L |  |  |  |  |  |  |  |
| L | 3 | C,E |  |  |  |  |  |  |  |
| M | 4 | G,K |  |  |  |  |  |  |  |
| N | 2 | I |  |  |  |  |  |  |  |
| O | 1 | D,N |  |  |  |  |  |  |  |

Qus.2: Determine the optimum time and cost of a project for the given set of data, take indirect cost Rs. 10,000/- per month.

| Activity | Normal Time <br> (Months) | Normal Cost <br> (Rs) | Crash Time <br> (Months) | Crash Cost(Rs) |
| :--- | :--- | :--- | :--- | :--- |
| $1-2$ | 2 | 30000 | 1 | 32000 |
| $1-3$ | 8 | 40000 | 6 | 46000 |
| $1-4$ | 10 | 50000 | 5 | 75000 |
| $2-5$ | 5 | 10000 | 3 | 15000 |
| $3-5$ | 7 | 25000 | 6 | 26000 |
| $4-5$ | 15 | 70000 | 10 | 100000 |
| $5-6$ | 6 | 15000 | 4 | 23000 |

Qus.3: (a). Explain the Normal Distribution Curve`.
(b). what o you understand by updating why it is essential, the under what circumstances it is needed?
Qus.4: (a) What is the work breakdown structure?
(b) Differe itiate between resource leveling and resource smoothening.

Qus.5: Contractor intends to bid for a project, data is given below, find the completion time having probability $95 \%$ assuming z factor as 1.65 .


