

# MTP\_Intermediate\_Syllabus 2008\_Jun2015\_Set 2

## Paper 9 - Operations Management & Information Systems

Time allowed-3hrs

Full Marks: 100

### Section I (Operations Management)

Answer Question No. 1 which is compulsory and answer any two from the rest, under Section I.

Working Notes should form part of the answer.

1. (a) Match each item in Column I with an appropriate item in Column II: [1 x 10=10]

| Column I              | Column II              |
|-----------------------|------------------------|
| (A) Assembly Line     | (i) F.W. Taylor        |
| (B) Scheduling        | (ii) Surface Treatment |
| (C) Fractionalization | (iii) Meredith & Gibbs |
| (D) Work Study        | (iv) Machining         |
| (E) Mortality Curve   | (v) Metal Forming      |
| (F) Black Oxidation   | (vi) Gilbreth          |
| (G) Counter boring    | (vii) Joining          |
| (H) Drawing           | (viii) Heat Treatment  |
| (I) Tempering         | (ix) Henry Ford        |
| (J) Brazing           | (x) Henry Gantt        |

- (b) Expand the following abbreviations: [1 x 4 =4]

- (i) WBS
- (ii) CWQC
- (iii) PDCA
- (iv) PG

2. (i) ABC Corporative bank receives and disburses different amount of cash in each month. The bank has an opening cash balance of ₹15 Crores in the first month. The pattern of receipts and disbursements from the past data is as follows:

| Monthly cash receipts |             | Monthly cash payments |             |
|-----------------------|-------------|-----------------------|-------------|
| ₹ Crores              | Probability | ₹ Crores              | Probability |
| 30                    | 0.20        | 33                    | 0.15        |
| 42                    | 0.40        | 60                    | 0.20        |
| 36                    | 0.25        | 39                    | 0.40        |
| 99                    | 0.15        | 57                    | 0.25        |

- Calculate probability that the ABC Cooperative bank will fall short in payments.
- Calculate average monthly shortfall.

## MTP\_Intermediate\_Syllabus 2008\_Jun2015\_Set 2

- If the ABC Cooperative Bank can get an overdraft facility of ₹45 Crores from some other bank, what is the probability that they will fall short in monthly payments?

Use the following sequence of paired random numbers:

|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| 17,78 | 43,16 | 74,35 | 31,23 | 72,44 | 46,92 |
| 51,58 | 68,08 | 93,58 | 54,78 | 96,54 | 09,77 |

[8]

- (ii) Draw network. Determine the critical path and duration of the project. Find total float for each activity. (Duration in days)

| Activity | 1-2 | 1-3 | 1-4 | 2-5 | 3-6 | 3-7 | 4-6 | 5-8 | 6-9 | 7-8 | 8-9 |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Duration | 2   | 2   | 1   | 4   | 8   | 5   | 3   | 1   | 5   | 4   | 3   |

[10]

3. (i) The data on the operating costs per year and resale prices of equipment A whose purchase price is ₹1,00,000 are given here:

| Year               | 1      | 2      | 3      | 4      | 5      | 6      | 7      |
|--------------------|--------|--------|--------|--------|--------|--------|--------|
| Operating Cost (₹) | 15,000 | 19,000 | 23,000 | 29,000 | 36,000 | 45,000 | 55,000 |
| Resale value (₹)   | 50,000 | 25,000 | 12,500 | 6,000  | 4,000  | 4,000  | 4,000  |

- (a) What is the optimum period for replacement?  
 (b) When equipment A is 2 years old, equipment B, which is a new model for the same usage, is available. The optimum period for replacement is 4 years with an average cost of ₹36,000. Should we change equipment A with that of B? If so, when? [12]

- (ii) Explain Quality Control and six major objectives of Quality Control. [6]

4. (i) Solve the following Assignment problem. The data given in the table refers to production in units:

| Operators | Machines |   |   |    |
|-----------|----------|---|---|----|
|           | A        | B | C | D  |
| 1         | 10       | 5 | 7 | 8  |
| 2         | 11       | 4 | 9 | 10 |
| 3         | 8        | 4 | 9 | 7  |
| 4         | 7        | 5 | 6 | 4  |
| 5         | 8        | 9 | 7 | 5  |

[12]

- (ii) For a certain element of work, the basic time is established to be 20 seconds. If for three observations, a time study observer records ratings of 100,125 and 80 respectively, on a '100 normal scale' what are the observed timings? [6]

## **MTP\_Intermediate\_Syllabus 2008\_Jun2015\_Set 2**

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### **Section II Information System**

**Answer Question No. 5 which is compulsory and answer any two from the rest, under Section II.**

5. (a) Fill in the blanks given below : [1 x 5 =5]
- (i) Half-duplex is a mode of data .....
  - (ii) ----- basically sends a mail to the e-mail address of the receiver.
  - (iii) People soft is an ----- package.
  - (iv) ----- allows numbers of jobs processed simultaneously.
  - (v) ----- are the procedures and rules for inter-computer communication.
- (b) Expand the following abbreviations: [1 x 5 =5]
- (i) RISC
  - (ii) PROM
  - (iii) CODASYL
  - (iv) OLAP
  - (v) WAIS
- (c) State whether following statements are true or false: [1x 4 =4]
- (i) Interpreter translates a whole program.
  - (ii) Cache memory is a very fast RAM.
  - (iii) In multiprogramming, one CPU processes a number of programs by time-sharing technique.
  - (iv) Tree topology is a combination of Ring topologies.
6. (i) Describe Supply Chain Management. [6]
- (ii) Discuss Peer-to-peer architecture and its benefits. [3]
  - (iii) List the advantages and disadvantages of in-house development of software. [5]
  - (iv) State the objectives of database. [4]
7. (i) Describe the need for Office Automation System. [6]
- (ii) Explain the terms Auditing around the computer and Auditing through the computer. [4]
  - (iii) Explain the term Distributed Data Processing. [4]
  - (iv) Describe data mining. [4]
8. (i) List the benefits of using electronic cash. [3]
- (ii) State the advantages of internet. [7]
  - (iii) Discuss the application of electronic payment system. [5]
  - (iv) State the three sub-systems of EDI's process. [3]