## INTERMEDIATE EXAMINATION

June 2015 *P-9(OMS)*
*Syllabus 2012*

### Operation Management and Information Systems

Time Allowed: 3 Hours Full Marks: 100

*This paper contains 3 questions. All Questions are compulsory, subject to instruction provided against each question.*

*All workings must form part of your answer.*

*Assumptions, if any, must be clearly indicated.*

*The figures in the margin on the right side indicate full marks.*

Question No.1: Answer *all* questions 2×10=20

1. (a) In what way does the objective of 'value engineering' differ from that of 'Value analysis'?. 2

(b) Calculate the number of components that can be produced in a month when available equipment hours are 480 per month, efficiency of utilization is 85%, and it takes 36 minutes of processing time in the equipment for each component. 2

(c) The time study of a machinery operation recorded average cycle time of 9.0 minutes. The analyst rated the observed worker as 90%. The firm uses a 0.15 allowance fraction. Compute the standard time. 2

(d) What are the different approaches to overcome hurdles in the management of productivity improvements? 2

(e) What is 'Bill of Materials'? 2

(f) Fill in the blanks:

In applications of queuing theory in maintenance, the machine breakdowns are the——in the queue and they may have their own——distribution. 2

(g) According to Working/ Output, differentiate between 'Deterministic System' and 'Probabilistic System'. 2

(h) In a Database Management System, what are the names of different categories of 'end users'? 2

(i) Re–draw the Table accurately: 2

| Levels of Management | Activities of Management |
|---|---|
| Top Management | Day–to–day activities |
| Middle Management | Strategic Planning |
| Operational Management | Resource Management |

(j) What is primary purpose of introducing ERP and BPR in an organization? 2

**Please Turn Over**

Question No.2: Answer *any three* questions 16×3=48

2. (a) (i) A work sampling study was performed on the activities of the customer care executives in a service organisation. The observations are as under :

| **Activity** | **No. of observations** |
|---|---|
| A1 | 250 |
| A2 | 60 |
| A3 | 100 |
| A4 | 160 |
| A5 | 50 |
| A6 | 60 |
| A7 | 50 |
| A8 | 70 |
| Total | 800 |

The management of the organisation plans to eliminate activity "A4" by acquiring an EDP system. This, it is felt, will enable the executives' time to be better utilised. While the executives' salary on an average is ₹ 4,000 per month (25 working days), the volume of their time utilised (i.e.for more customer-care) is put at three times what their salary reflects. There are 200 executives in the organisation and the EDP system is going to cost ₹ 75,000 a month covering the initial investment as well as operation expenses. Should the organisation go in for the EDP system? 6

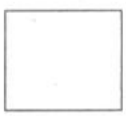
(ii) A firm is using a machine whose purchase price is ₹ 15,000. The installation charges amount to ₹ 3,500 and the machine has a scrap value of only ₹ 1,500 because the firm has a monopoly of this type of work. The maintenance cost in various years is given in the following table:

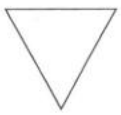
| Year | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Maintenance Cost ( ₹) | 260 | 760 | 1100 | 1600 | 2200 | 3000 | 4100 | 4900 | 6100 |

The firm wants to determine after how many years should the machine be replaced on economic considerations, assuming that the machine replacement can be done only at the year end. 5

(iii) What is TQC and what are its principles? 5

(b) (i) Give the meaning of following process flowchart symbols: 2

(a) 

(b) 

(ii) A department works on 8 hours shift, 288 days a year and has the usage data of a machine, as given below:

| Product | Annual Demand (units) | Processing time (Standard time in hours) |
|---|---|---|
| A | 325 | 5.0 |
| B | 450 | 4.0 |
| C | 550 | 6.0 |

Calculate(a) Processing time needed in hours to produce products A,B, and C, (b) Annual production capacity of one machine in standard hours, and (c) Number of machines required. 3+2+2=7

(iii) What are the objectives of maintenance management? 7

(c) (i) "The design of product is crucial to success in to-day's global competition". Justify the statement by providing the features of an excellent product design. 5

(ii) What do you mean by 'layout' in a production planning system? Name the various types of layout. 1+5=6

(iii) As a Consultant what would be your suggestions to a Production Manager for managing technological changes? 5

(d) (i) How do you distinguish among Product Design, Process Design and Production Design? 3

(ii) With reference to Time Study, define the terms (a) Relaxation Allowance, (b) Contingency Allowance, (c) Process Allowance by providing appropriate examples. 2×3=6

(iii) Write a line to define the following terms with reference to measuring productivity: 1×7=7

(a) Validity, (b) Completeness, (c) Compatibility, (d) Inclusiveness, (e) Timeliness, (f) Cost effectiveness, (g) Partial productivity

Question No.3: Answer *any two* questions 16×2=32

3. (a) (i) From the following two relations of X and Y, find X ∪ Y. 3

| RELATION X | |
|---|---|
| R No. | OCCUPATION |
| 30 | BUSINESS |
| 42 | BUSINESS |
| 43 | STUDENT |
| 48 | BUSINESS |

| RELATION Y | |
|---|---|
| R No. | OCCUPATION |
| 42 | BUSINESS |
| 48 | BUSINESS |
| 57 | STUDENT |
| 65 | STUDENT |

(ii) List the activities involved in the Information System Department. 3

(iii) List the tangible benefits of ERP. Write a line to clarify 'configuration' in ERP system. 5+1=6

(iv) "One of the important factors of success for MIS is quality of software." List the criteria for software selection. 4

(b) (i) Define "Secure System" under Section 2 of the Information Technology Act, 2000. 4

(ii) Distinguish between on-line business and conventional business. 4

(iii) List main goals of E-Commerce. 3

(iv) List the implications of database approach and write one line on each point. 5

(c) (i) Expand CASE. What is its role? Write a line on each CASE tool to clarify its function. 1+1+4=6

(ii) List the needs of integration of information. Name the major output from financial and costing sub- system of an information system. 2+5=7

(iii) List the areas of responsibilities of Database Administrator. 3