

INTERMEDIATE EXAMINATION

June 2012

I-P9(OMS)
Syllabus 2008

Operation Management and Information Systems

Time Allowed: 3 Hours

Full Marks: 100

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

Section I : Operation Management

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

1. (a) For each part below, choose the most appropriate answer out of the four options given against each part: 1×5
- (i) One of the product examples for Line Layout is:
(A) Repair Workshop, (B) Welding shop, (C) Engineering College, (D) Cement.
 - (ii) The card which is prepared by the dispatching department to book the labour involved in each operation is:
(A) Labour card, (B) Wage card, (C) Credit card, (D) Job card.
 - (iii) Jigs are used in machine tool for holding:
(A) Tools, (B) Work piece, (C) Head stock, (D) Tail stock.
 - (iv) Cost reduction can be achieved through:
(A) Work sampling, (B) Value analysis, (C) Quality assurance, (D) Supply chain management.
 - (v) Addition of value to raw materials through application of technology is:
(A) Product, (B) Production, (C) Advancement, (D) Transformation.
- (b) Put an appropriate word or two in blank position: 1×5
- (i) _____ is a Single Purpose Machine Tool designed for cutting gears.
 - (ii) A key application of _____ is to reduce the current before transmitting electrical energy over long distance through wires.
 - (iii) _____ is a technique for determining the quantity and timing for the acquisition of dependent demand items needed to satisfy master production schedule requirements.
 - (iv) To evaluate the work done by preventive maintenance, _____ is derived at from the total time of stoppage of the machine for scheduled and unscheduled maintenance work.
 - (v) In linear programming, the word 'linear' establishes certain relationships among different _____.
- (c) Match the terms in Column I with the relevant terms in Column II. 0.5×8

Column I	Column II
(A) Making a cylindrical hole in an object VI	(i) Lathe
(B) Joining two metallic objects ✓	(ii) Value Analysis
(C) Heat Treatment VII	(iii) Flow Diagram
(D) Thread in a nut I	(iv) Machine Data Card
(E) To reduce movement of materials III	(v) Riveting
(F) To study one operator one machine IV	(vi) Drilling
(G) Shortest processing time . VIII	(vii) Hardening
(H) Brain storming , II	(viii) Scheduling

Please Turn Over

2. (a) Location A would result in annual fixed costs of Rs. 3,00,000, variable costs of Rs. 63 per unit and revenues Rs. 68 per unit. Annual fixed costs at Location B are Rs. 8,00,000, variable costs are Rs. 32 per unit and revenues are Rs. 68 per unit. Sales volume is estimated to be 25,000 units/year. Calculate BEP for each location and determine which location will be attractive. 2+3

- (b) The faculty in a college is planned to rise to strength of 50 staff members and then to remain at that level. The wastage of recruits depends upon their length of service and is as follows: 5+3

Year	1	2	3	4	5	6	7	8	9	10
Total %age who left upto the end of year	5	35	56	65	70	76	80	86	95	100

- (i) Find the number of staff members to be recruited every year.
(ii) If there are seven posts of Head of Deptt. for which, length of service is the only criterion of promotion, what will be the average length of service after which a new entrant should expect promotion?
- (c) Expand the following: 1x5

- (i) BOLT
- (ii) DNC
- (iii) CBA
- (iv) FMS
- (v) LOB

3. (a) M/s Kambu Ltd. are the manufacturers of Lamps. The following are the details of their operation during 2011: 2x5

Average monthly market demand 2,000 lamps

Ordering cost Rs. 200 per order

Inventory carrying cost 20% per annum

Cost of lamps Rs. 1000 per lamp

Normal usage 100 lamps per week

Minimum usage 50 lamps per week

Maximum usage 200 lamps per week

Lead time to supply 4 – 6 weeks

Compute from the above:

- (i) Economic order quantity.
- (ii) If the supplier is willing to supply quarterly 1,500 units at a discount of 10%, is it worth accepting?
- (iii) Maximum level of stock.
- (iv) Minimum level of stock.
- (v) Re-order level of stock.

- (b) What are the different stages of Technology Life Cycle? 4

- (c) Mention eight different techniques which are used for improving productivity in industry. 4

15000 200

4. (a) Examine each statement and indicate whether it is 'True' or 'False'

1×5

- (i) Gantt chart is used for production control.
- (ii) Job enrichment means increased work load for the worker.
- (iii) Scheduling and Routing are both interconnected.
- (iv) Annealing involves heating and cooling operations.
- (v) In a Network Analysis, a job for which the slack time is zero is known as non-critical job.

(b) The following data are available for a manufacturing unit:

2×4

No. of operators	15
Daily working hours	8
No. of days per month	25
Std. production per month	300 units
Std. Labour hours per unit	8

The following information was obtained for January 2012:

Mandays lost due to absenteeism	30
Unit produced	240
Idle Time	276 man hours

You are required to calculate the following:

- (i) Percent absenteeism
- (ii) Efficiency of utilisation of labour
- (iii) Productive efficiency of labour
- (iv) Overall productivity of labour in terms of units produced per man per month.

(c) (i) Explain the need for acceptance sampling.

1

(ii) The following costs have been recorded:

1×4

Particulars	Rs.
Incoming materials inspection	10000
Training of personnel	30000
Warranty	45000
Process planning	15000
Scrap	9000
Quality laboratory	30000
Rework	25000
Allowances	10000
Complaints	14000

What are the costs of prevention, appraisal, external failure and internal failure?

Please Turn Over

Section II : Information Systems

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

5. (a) Match the terms in Column I with the relevant terms in Column II:

0.5×8

Column I	Column II
(A) Baud Rate ✓	(i) A program/utility under Windows
(B) FAQ ✓	(ii) Term associated with magnetic tape
(C) Search Engine ✓	(iii) Relating to official provider of information and files
(D) Flip-flop ✓	(iv) A website enabling users to access various level of information
(E) Domain name ✓	(v) Transmission speed of communication channel
(F) Icon ✓	(vi) Bistable device
(G) Home Page ✓	(vii) A list of common questions and sometimes with answers
(H) IBG ✓	(viii) First hypertext document displayed

(b) For each part below, choose the most appropriate answer out of the four options given against each part: 1×3

(i) A number system with a base 8 is known as:

(A) Binary; (B) Decimal; (C) Octal; (D) Hexadecimal.

(ii) A common coding language for the www is:

(A) HTML; (B) Front Page; (C) Netscape; (D) Listserver.

(iii) 'Firmware' is associated with:

(A) Application software for firms; (B) Special purpose hardware device;
(C) Benchmark software; (D) Software in ROM.

(c) Put an appropriate word in blank position:

1×4

(i) The purpose of _____ is to determine whether the developed or acquired software achieves its specified requirements.

(ii) In _____ Network, terminals (end nodes) are connected to a central node or hub node.

(iii) The basic aim of _____ in data structure is to eliminate redundancy and inconsistent dependency.

(iv) In Control Unit of CPU, the summation of instruction time and execution time is called _____ time.

(d) Each statement below is either 'True' or 'False'. Indicate the same in your answers:

1×3

(i) An open system is a self-contained one and normally a rigid one. T

(ii) Data mart is a complex form of data warehousing, costly and time consuming. F

(iii) A record is identified by its key field. T

6. (a) Briefly define Information System Infrastructure and its basic components.

1+3

(b) A company is planning to procure hardware and asks you to advise on the options available before them for hardware procurement. Please list out the options and comparative advantages for each option.

2+4

- (c) In a Purchase Order Processing system, a purchase order record has the following fields:

6

Field Name	Maximum Field Size
Purchase-order-number	6
Vendor Code	3
Order-quantity	5
Order-date	6

22.7%

It is estimated that at any point of time, the outstanding Purchase Order file would have a maximum of 750 outstanding purchase order records in the file (once material is received, the purchase order record is purged from the file). However, there may be a 15% increase in the total number of records in near future. The file management software also requires an overhead of 20% for minimising probabilities of collision and overflow conditions. Compute the total file space requirements after allowing for 10% contingency factor on the total.

- (d) In a disk pack, number of tracks in each surface are 200 and number of sectors in each track are 22. If there are 10 Nos. of recording surfaces and 500 bad sectors in the disk pack, calculate total number of good sectors. 2

7. (a) A consumer desires to transact in Electronic Cash. What are the steps involved in transferring money between the parties? State the benefits of using Electronic Cash. 4+2

- (b) You as Finance Manager has received a proposal from your IT Department to enter into an annual maintenance contract for ERP software that has been implemented in the company. Considering the fact that ERP packages are proven software packages, why should the company enter into the contract? 4

- (c) Expand the following acronyms:

1x3

(i) FTP; (ii) TCP/IP; (iii) URL.

Uniform Resource Locator

- (d) A manufacturing company is considering the implementation of an ERP system. The company has a few computerised applications running in different areas of the organisation. All these will be discontinued after ERP system is implemented. A software firm has given a quotation for the new system which states that the implementation will take a little more than a year and the capital cost will be Rs. 95 lakhs (payable as Rs. 75 lakhs in the first year and Rs. 20 lakhs in the second year). The following information about Operational Costs (Rs. lakhs) are also available:

5

	Year 1	Year 2	Year 3	Year 4	Year 5
Old system	30	33	38	42	49
New system	—	18	17	18	19

28 kg

The management is wondering as to when the ERP system will recover all of its initial costs and start making a profit. What would be your answer based on the above data?

8. Write short notes on any six of the following:

3x6

- Firewall;
- Fibre optics;
- Expert system;
- CASE tools;
- Peer-to-peer architecture;
- Advantages of Flow charts;
- Computer fraud;
- Cryptography & Encryption.