

INTERMEDIATE EXAMINATION

June 2014

P-9(OMS)
Syllabus 2012

Operation Management and Information Systems

Time Allowed: 3 Hours

Full Marks: 100

*The figures in the margin on the right side indicate full marks.
Working Notes should form part of the answer.*

SECTION A : (60 Marks)

OPERATION MANAGEMENT

*Answer Question No. 1 (carrying 12 marks) which is compulsory and
any four (carrying 12 marks each) from the rest in this Section.*

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

0.5×8

Column I	Column II
(A) Benefit of Production Control	(i) Reduced Manufacturing Cost
(B) Limitations of Linear Programming	(ii) Model of real phenomenon
(C) Project Clean-up Phase	(iii) Single Objective and Given Constraints
(D) Simulation	(iv) Balanced Inventory
(E) Process Velocity	(v) Voluntary group to identify problems
(F) Quality Circle	(vi) High reliability and rare requirement
(G) Insurance Spares	(vii) Value-added activities
(H) Benefit of Work Study	(viii) Dues are collected

(b) State suitable Material Handling Equipment, by choosing one out of (A) to (D), that should be used in each of the following four operations (i) to (iv) : 2

[(A) EOT Crane; (B) Gravity chute; (C) Belt Conveyor; (D) Roller Table.]

- (i) Transferring heavy materials from one department to another;
- (ii) Feeding coal and iron in steel plant;
- (iii) Transporting fertilizer packed bags to a truck on the ground below;
- (iv) Moving heavy load above the machine on the shop floor.

(c) State which of the following does not affect the Production Design: 1

- (i) Cost/Price Ratio
- (ii) Process Capability
- (iii) Reliability
- (iv) Product Quality

(d) The time study of a machinery operation recorded cycle times of 7.0, 9.0, 10.0 and 10.0 minutes. The analyst rated the observed worker as 90%. The firm uses a 0.15 allowance fraction. What is the standard time? 2

- (i) 8.1
- (ii) 10.35
- (iii) 9.53
- (iv) 9.0

Please Turn Over

(e) If a firm sells 7,000 units, its loss is ₹ 40,000. But if it sells 10,000 units, its profit is ₹ 20,000. Calculate Fixed Cost: 2

(i) 2,00,000 (ii) 1,80,000 (iii) 1,60,000 (iv) 1,75,000

(f) Given the following alternatives, Linear Programming is a technique used in: 1

(i) Manufacturing Sequence (ii) Product Mix (iii) Production Programme (iv) Plant Layout

2. (a) Write down the formula for: 1×3

(i) Performance (ii) Through put Ratio (iii) Breakdown Maintenance Index (as a % age)

(b) The main shaft of calcinator has a very high reliability of 0.990. The equipment comes from abroad and has a high downtime cost associated with the failure of this shaft. This is estimated at ₹ 2 crore as the costs of sales lost and other relevant costs. However, this spare is quoted at ₹ 10 Lakh at present. Should the shaft spare be procured along with the equipment and kept or not? 2

(c) Compute the productivity per machine hour with the following data. Also draw your interpretation. 2

Month	No. of machines employed	Working hours	Production units
March	400	225	99,000
April	500	200	1,00,000
May	600	250	1,35,000

(d) List down various phases of the simulation process. 2

(e) A steel plant has a design capacity of 50,000 tons of steel per day, effective capacity of 40,000 tons of steel per day and an actual output of 36,000 tons of steel per day. Compute the efficiency of the plant and its utilisation. 2

(f) Fill in the blank: 1

Being part of operations function, _____ involves the shipping of goods to warehouses, retail outlets or final customers.

3. (a) What are the various stages in the Design Process? 3

(b) Briefly state the role of Information Technology in Production/Operations Management. 3

(c) Two alternative set-ups, A and B are available for the manufacture of a component on a particular machine, where the operating cost per hour is ₹ 20.

Particulars	Setup A	Setup B
Components / Setup	4000 pieces	3000 pieces
Setup cost / year	₹ 300	₹ 1500
Production rate / hour	10 pieces	15 pieces

Which of these set-ups should be used for long range and economic production? 6

4. (a) You are appointed as a Consultant to implement ISO-9000 in a firm. Suggest various steps to be taken for implementing this. 10

(b) Monthly demand for a component is 1000 units. Setting-up cost per batch is ₹ 120. Cost of manufacture per unit is ₹ 20. Rate of interest may be considered at 10% p.a. Calculate the EBQ. 2

5. (a) The following data on the exports of an item by a company during the various years fit a straight line, (for the time being, assume that a straight line gives a good fit). Give a forecast for the years 2013 and 2014. 6

Year	No. of items ('000)
2004	13
2005	20
2006	20
2007	28
2008	30
2009	32
2010	33
2011	38
2012	43

- (b) State the three levels of quality. 3
- (c) Expand the following: 1×3
- (i) TPM
- (ii) PCO
- (iii) COVERT
6. (a) A project consists of five activities. Activities P and Q run simultaneously. The relationship among the various activities is as follows: 2

Activity	Immediate Successor
P	R
Q	S

Activity T is the last operation of the project and it is also immediate successor to R and S. Draw the network of the project.

- (b) _____ is another name for Human Factor Engineering. 1
- (c) The principles of motion economy are divided into three groups. What are the groups? 2
- (d) The equation of the demand curve of a firm is $p = 12 - 0.4q$ and the equation of the total cost curve is $C = 0.6q^2 + 4q + 5$.
Determine price, output, total revenue and profit if the objective of the firm is to maximize profit. 4
- (e) State the limitations of Oligopoly Price Policy. 3

SECTION B (40 Marks)
INFORMATION SYSTEMS

Answer Question No. 7 (carrying 8 marks) which is compulsory and any four (carrying 8 marks each) from the rest in this Section.

7. (a) Match the terms in Column I with the relevant terms in Column II: 0.5×8

Column I

(A) Digital Signature

(B) Software Package

Column II

(i) Scanning routines

(ii) Interact with environment

Please Turn Over

- | | |
|--------------------------|---|
| (C) OLTP | (iii) A computer to execute |
| (D) Open Systems | (iv) Algorithm to interpret data |
| (E) Deterministic system | (v) Direct access to information |
| (F) Mathematical Model | (vi) Syntax error |
| (G) Debugging | (vii) Authentication of electronic record |
| (H) Programming language | (viii) Interaction with certainty. |

(b) Each statement below is either **True** or **False**. Indicate the same in your answers: 1×2

- (i) The primary existence of online business is in cyber space.
(ii) Rucker plan is an inventory control technique.

(c) Put an appropriate word or two in blank position: 1×2

- (i) Transferring programmes from main memory to disk storage and back is called _____.
(ii) In _____ information system architecture, each workstation has equivalent capabilities and responsibilities.

8. (a) "After the identification of the problem, objectives of the proposed solution can be defined." What are the questions that should be answered while stating the solution? 3

(b) What are the objectives of MIS? 3

(c) Is there any influence of qualitative factors on making decisions? 2

9. (a) Briefly explain the features of Inventory Management in SAP? 5

(b) From the following two relations of X and Y, find $X \cap Y$. 3

Relation X

Batch No.	Course
1	BBA
2	MCOM
3	BCOM
4	CMA

Relation Y

Batch No.	Course
2	MCOM
4	CMA
5	BA
6	BCA
7	DCA

10. (a) Explain (i) Asymmetric Crypto System, and (ii) Gray Box Testing. 2+2

(b) What are the advantages of the successful implementation of an ERP system? 4

11. (a) List down various legal aspects of E-Commerce. 4

(b) What are the Various Database System Utilities? 4

12. Explain *any four* of the following terms:

2×4

- (a) Iconic Scale Model;
 - (b) Programme-data Independence;
 - (c) Benefits of EDI;
 - (d) Expert System;
 - (e) Different parts of a Decision Table;
 - (f) PKI.
-