

# INTERMEDIATE EXAMINATION

June 2016

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.*

*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.*

### Section A

I. Answer the following questions which are compulsory:

2×10=20

1. Answer *all* the questions:

(a) Define 'Load Chart'.

(b) State the disadvantages of 'Vertical Integration'.

(c) Fill in the blanks with one word or two:

(i) The \_\_\_\_\_ is the sum of the setup time and run time for a batch of parts that are run on a machine.

(ii) Efficiency is a ratio of the actual output of a process relative to some \_\_\_\_\_.

(d) Write the formula for Input Efficiency.

(e) State whether 'True' or 'False':

(i) Regular spares are also called Rotable spares.

(ii) Role of the corrective maintenance department is almost active.

(f) Name the activity denoted by the following standard symbols used in Process Charting:

(i) ○ (ii) ⇨

(g) 'The characteristics of information vary with functions of levels of management'. Fill in the blanks

(i) to (iv) in the following Table with regard to contents of report:

Characteristics of Information	Top Management	Middle Management	Operational Management
Focus of Planning and Management	Strategic Planning	(i)	(ii)
Boundary	(iii)	(iv)	Internal

(h) Please complete the following sentence by putting in appropriate words in the blank positions:

'Configuration of an ERP system deals with handling of numerous usage controls, which can be switched \_\_\_\_\_ or switched \_\_\_\_\_, so as to balance its functionalities to extant needs. First thing to happen is to \_\_\_\_\_ specific modules needed and \_\_\_\_\_ these modules, as per the scope of the project.'

Please Turn Over

- (i) List two important responsibilities of Database Administrator in a database environment.
- (j) 'It is often said that we are in the information age, and that information is a valuable commodity.' Explain two areas in a business situation where information can be effectively used.

2. Match List A with List B:

1×5=5

List A	List B
(a) Simulation	(1) Controlling redundancy
(b) Quality Circle	(2) Reliability
(c) Insurance spares	(3) Voluntary group to identify problems
(d) Attribute of information	(4) Model of real phenomenon
(e) Using a DBMS	(5) High reliability and rare requirement

### Section B

II. Answer any three questions:

15×3=45

1. (a) A department works on 8 hours per day, 250 days a year and has the usage data of a machine, as given below:

6

Product	Annual demand (units)	Processing time (standard time in hours)
X	200	4.0
Y	300	6.0
Z	400	3.0

Determine the number of machines required.

- (b) 'Operations management is responsible for producing goods and / or services.' In this context, define 'Operating System' and state the principal functions of an operating system. 1+4=5
- (c) 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
2. (a) The main shaft of Calcinator has a very high reliability of 0.980. The equipment comes from abroad and has a high downtime cost associated with the failure of this shaft. This is estimated at ₹ 1.80 crores as the costs of sales lost and other relevant costs. However, this spare is quoted at ₹ 10 lakhs at present. Should the shaft spare be procured along with the equipment and kept or not? 4
- (b) Write down the formula for: 1×3=3
- Performance Ratio (as a percentage)
  - Throughput Ratio
  - Frequency of Breakdown
- (c) List the benefits of Benchmarking.

3. (a) Expand the following:

1×3=3

(i) JIT, (ii) CBA and (iii) TPM

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

Month	No. of machines employed	Working hours	Production Units
January	400	220	99,000
February	550	180	1,00,000
March	580	220	1,25,000

(c) List the various steps in Maintenance Planning.

4. (a) A project consists of five activities. Activities P and Q run simultaneously. The relationship among the various activities is as follows:

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) Define Motion Study.

'The principles of motion economy are divided into three groups.' List the three groups. 2+3=5

(c) Calculate the standard production per shift of 8 hours duration, with the following data:

Observed time per unit = 5 minutes, Rating Factor –120%, Total allowances = 30% of normal time.

### Section C

II. Answer any two questions:

15×2=30

1. (a) Distinguish between open and closed systems with examples.

(b) "Many persons are involved in the design, use, and maintenance of a large database. We call them the 'actors on the scene' and 'workers behind the scene'." List the categories of persons/professionals involved in the database with one sentence against each category to describe the responsibility attached to it.

(c) From the following two relations of X and Y, find  $X \cap Y$ :

Relation X	
Batch No.	Course
010	BCOM
011	MCOM
012	BA
013	MA
014	BSC
015	MSC

Relation Y	
Batch No.	Course
011	MCOM
013	MA
015	MSC
020	LLB
025	PHD
030	MBBS

2. (a) State the main reasons for the spread of E-commerce. 6  
(b) State the advantages of using pre-written application packages. 4  
(c) List the various phases in implementing BPR and explain each phase in one sentence only. 5
3. (a) 'OLTP are being adopted in wider scale to have certain advantages.' List three major advantages. 3  
(b) Fill in the blanks in the context of relational database management system: 1x4=4  
(i) In a formal relational model, a row is called a \_\_\_\_\_.  
(ii) A \_\_\_\_\_ header is called an attribute.  
(iii) The data type describing the types of values, appearing in each column, is called a \_\_\_\_\_.  
(iv) RDBMS supports a \_\_\_\_\_ structure for the data with enforced relationship between the \_\_\_\_\_.
- (c) State two distinctive features of each of the following terminologies used in a business situation:  
(i) Management Information System, (ii) Decision Support System, (iii) Executive Information System and (iv) Expert System. 2x4=8