

OPERATION MANAGEMENT AND INFORMATION SYSTEM

OPERATION MANAGEMENT

OVERVIEW OF PRODUCTION PROCESS

Objective & Descriptive Type Questions :

- Q1. One of the important charts used in programme control is :
(a) Material chart, (b) Gantt chart, (c) Route chart, (d) Inspection chart.
[Ref: Q1. (a)(iv), June '09 / Paper-9] 1
- Q2. Mention the name of the metal working process involved in carrying out the following operations and also state the machine/equipment of which this is carried out :
(i) Reducing the diameter of a cylindrical object.
(ii) Making a cylindrical hole on an object.
(iii) Very fine finishing of the inside diameter of a cylindrical linear.
(iv) Reducing the thickness of one side of a metal cube.
[Ref: Q1. (c), June '09 / Paper-9] 1×4
- Q3. Expand the following systems of production technology. Narrate the main features related to enhancement of production and the advantages derived from the system.
(i) FMS, (ii) CIM [Ref: Q2. (a), June '09 / Paper-9] 4
- Q4. Advantages of NC Machines. [Ref: Q3. (c)(ii), June '09 / Paper-9] 1
- Q5. A shaft of 3000 mm in length requires machining on a lathe. If the spindle executes 1500 r.p.m. and the feed is 0.20 mm per revolution, how long does it take the cutter to pass down the entire length of the shaft?
[Ref: Q4. (a), June '09 / Paper-9] 2
- Q6. A shaft 1,200 mm in length is being machined on a lathe. If the spindle rotates 600 r.p.m. and the feed is 0.25 mm per revolution, how long will it take the cutter to pass down the entire length of the shaft?
[Ref: Q4. (c), Dec '08 / Paper-9] 3

- Q7. Mr. X is considering an interchange of departments B and C in the present layout. The present layout and the handling frequencies between the departments are given. What would be the effect of interchange assuming that the departments are of the same size? Also assume that the material handling cost per unit length travel between departments is same.

A	C	E
B	D	F

From/To	A	B	C	D	E	F
A	—	20	70	0	40	0
B	—	—	50	200	0	10
C	—	—	—	30	120	40
D	—	—	—	—	50	220
E	—	—	—	—	—	30
F	—	—	—	—	—	—

[Ref: Q2. (d), Dec '08 / Paper-9] 6

PRODUCTION PLANNING & PRODUCTIVITY MANAGEMENT

Objective & Descriptive Type Questions :

- Q1. A and M are two fierce competitors. N, a leading manufacturer of mobile phones approaches them separately to share what they can offer for outsourcing the manufacture of mobile phone components on a standardised machine whose operating cost is Rs. 40/- per hour. N requests you to evaluate and advice based on following offers made by A and M as to which of the two should be chosen?

	Company A	CompanyM
Production Rate / hour	20 pieces	30 pieces
Mobile components / set up	8000 pieces	6000 pieces
Set up Costs	Rs. 600	Rs. 3000

[Ref : Q2. (a), Dec '08 / Paper-9] 4

- Q2. You as a work study engineer carry out the work sampling study. The following observations were made for a machine shop :

Total number of observations – 2000, No working activities – 500,

Ratio between manual to machine element – 3 : 1, Average rating factor – 110%,

Total number of jobs produced during study – 500 units,

Rest allowance – 10%.

Calculate the standard time for the job.

[Ref : Q2. (c), Dec '08 / Paper-9] 4

- Q3. Company A wants to make large giant trucks called LARJO. Company A now requests you to list out the plant layout principles it should consider before taking any decision?

[Ref : Q3. (c), Dec '08 / Paper-9] 4

- Q4. The fixed cost for the production of particular item is Rs. 200 per month. Its variable cost being Rs. 3 per unit and its sale price being Rs. 7 per unit, determine its break-even volume. What would be the profit if 2,000 such units were sold in a month? How many such units should be sold to earn a profit of Rs. 3,000 per month?

[Ref : Q4. (b), Dec '08 / Paper-9] 5

- Q5. For each part below, choose the most appropriate answer out of the four options indicated below each part :

(i) The activity of specifying when to start the job and when to end the job is known as :

(a) Planning, (b) Scheduling, (c) Timing, (d) Follow-up.

(ii) Most suitable layout for job production is :

(a) Line layout, (b) Matrix layout, (c) Process layout, (d) Product layout.

(iii) The act of assessing the future and making provisions for it is known as :

(a) Planning, (b) Forecasting, (c) Assessment, (d) Scheduling.

[Ref : Q1. (a),(i)(ii)(iii) June '09 / Paper-9] 1×3

- Q5. As on August 1, the following jobs are to be processed. Their processing times and due dates are given :

Job	A	B	C	D
Processing time (days)	2	6	7	12
Due date	August 12	August 7	August 4	August 8

Sequence the jobs based on minimum critical ratio.

[Ref: Q3. (a), June '09 / Paper-9] 4

- Q6. What are the factors that force an organisation to redesign plant layout?

[Ref: Q3. (b), June '09 / Paper-9] 4

- Q7. Briefly explain :

(i) MDD as a sequencing rule for single facility.

[Ref: Q3. (c)(i), June '09 / Paper-9] 2

- Q8. A company is planning to undertake the production of medical testing equipment and has to decide on the location of the plant. Two locations are being considered, namely, A and B. The fixed costs of two locations are estimated to be Rs. 25 lakhs and Rs. 30 lakhs respectively. The variable costs are Rs. 300 and Rs. 250 per unit respectively. The average sale price of the equipment is Rs. 550 per unit.

Find the range of annual production/sales volume for which each location is most suitable.

[Ref: Q3. (d), June '09 / Paper-9] 4

- Q9. Requirement of raw materials for a company is 250 units per month. The carrying cost for the same is 10% of its purchase price which is Rs. 10 per unit. The ordering cost is Rs. 15 per order. Compute EOQ and related total cost.

[Ref: Q4. (b), June '09 / Paper-9] 4

MAINTENANCE MANAGEMENT

Objective & Descriptive Type Questions :

Q1. What requirements need to be fulfilled in the order to ensure that the full benefits of effective maintenance are achieved? [Ref: Q2. (b), Dec '08 / Paper-9] 4

Q2. A key electric component lasts for a maximum of 3 weeks. The chances of its failing at the end of first week is 0.1 and the chance of its failing at the end of second week is 0.3. The cost per component for individual replacement is Rs. 5 and cost per component for bulk replacement is Rs. 3. What is the optimal replacement period assuming there are 100 components initially? [Ref: Q3. (a), Dec '08 / Paper-9] 4

Q3. Briefly enlist and explain the rules to be enforced for proper control of maintenance work. [Ref: Q3. (d)(i), Dec '08 / Paper-9] 3

Q4. Load Scheduling Power Utility Company has been given the task of power supply by the State. The Company has noticed that the system has been experiencing the following number of failures for months over the past one year.

Number of failures	0	1	2	3
Number of months this occurred	2	3	3	4

Each breakdown costs an average of Rs. 10,000/- Preventive maintenance can be carried out for a cost of Rs. 3,000/- to limit the failures to an average of one month. The Company seeks your advice on which policy is most suitable for adoption.

[Ref: Q4. (a), Dec '08 / Paper-9] 4

Q5. What types of work are carried out during routine maintenance? [Ref: Q3. (e), June '09 / Paper-9] 2

Q6. Calculate the number of units expected to fail in a year and the mean time between failures from the following :

Testing time = 100 hours

Samples tested = 50 units

Failures = 2 units

Average usage = 2 hours/day

Total sales in the year = 500 units

[Ref: Q4. (c), June '09 / Paper-9] 4

Q7. What are the requirements to be fulfilled in order to get the full benefits of effective maintenance? [Ref: Q4. (d), June '09 / Paper-9] 3

- Q8. A Public Transport Corporation has gathered the data about the number of breakdowns for months over the past two years in their new fleet of vehicles :

Number of breakdowns	0	1	2	3	4
Number of months this occurred	3	7	11	2	1

Each breakdown costs the firm an average of Rs. 3000. For a cost of Rs. 1375 per month, preventive maintenance can be carried out to limit the breakdowns to an average of one per month. Which policy will be suitable for the firm?

[Ref: Q4. (e), June '09 / Paper-9] 5

RESOURCE MANAGEMENT

Objective & Descriptive Type Questions :

- Q1. The following is the demand for Product A in 5 towns :

Population (in lacs) : X	9	5	8	5	3
Demand : Y	12	20	15	10	5

Estimate the demand for Product A for a town with a population of 10 lacs.

[Ref: Q3. (b), Dec '08 / Paper-9] 4

- Q2. List out the internal factors, which influence the choice of technology in an organisation?
[Ref: Q3. (d)(ii), Dec '08 / Paper-9] 3

- Q3. A workshop has 30 nos. of identical machines. From the failure pattern of the machines it is calculated that the expected time before failure is 3 months. It costs Rs. 200 to attend a failed machine and rectify the same. Compute the yearly cost of servicing the broken down machines.
[Ref: Q4. (d), Dec '08 / Paper-9] 2

- Q4. Expand and briefly explain the following in the context of technology used to enhance production :
(i) AGV, (ii) AIS. [Ref: Q4. (e), Dec '08 / Paper-9] 2×2

- Q5. A company manufactures items X_1 and X_2 which are sold at a profit of Rs. 35 per unit of X_1 and Rs. 25 per unit of X_2 .
 X_1 requires 3 kgs. of materials, 4 man-hours and 2 machine-hours per unit.
 X_2 requires 2 kgs. of materials, 3 man-hours and 2 machine-hours per unit.

During each production run, there are 350 kgs. of materials available, 600 man-hours and 550 machine-hours for use.

Formulate under Simplex method of linear programming :

- (i) the objective function and the linear constraints, and
- (ii) the equations after introducing slack variables.
- (iii) What are the various methods of solving a linear programming problem?
[Ref: Q2. (b), June '09 / Paper-9] 2+2+2

Q6. The annual sales of TV sets by a dealer in Delhi are as under :

Year	2004	2005	2006	2007	2008
Sales (thousand units)	3	14	36	4	33

Fit a linear trend equation to the sales figure and estimate the sales for the year 2009.
[Ref: Q2. (c), June '09 / Paper-9] 4

MISCELLANEOUS

Objective & Descriptive Type Questions :

Q1. For each part below, choose the most appropriate one and write its number only in the answer sheet :

Match column (1) with column (2)

Column (1)	Column (2)
(i) Castings	A. Gravity Chute
(ii) Pig Iron	B. Rotary kiln
(iii) Steel	C. Foundry
(iv) Rails	D. Blast furnace
(v) Cement	E. Open Hearth Furnace
(vi) Material Handling	F. Rolling Mills

[Ref: Q1. (a), Dec '08 / Paper-9] 1×6

Q2. Expand the following abbreviations :

- (i) ASRS
 - (ii) GERT
 - (iii) AQL
- [Ref: Q1. (b), Dec '08 / Paper-9] 1×3

Q3. Put an appropriate word or two in blank position :

- (i) _____ uses algebraic procedure to solve any problem, which satisfies the test of linearity and certainty.
- (ii) Under preventive maintenance “(hours worked for maintenance)/(Scheduled hours) \times 100 = _____ ”
- (iii) Trend values of all years of the series may be obtained advantageously using the _____ .
- (iv) _____ is a process that bakes on a white, brittle protection finish.
- (v) _____ is the degree to which a firm’s own production system handles the entire supply chain starting from procurement of raw materials to distribution of finished goods.

[Ref: Q1. (c), Dec '08 / Paper-9] 1 \times 5

Q4. Given below are two lists – list ‘A’ containing six observations and list ‘B’ containing various functional areas associated with production management. Expand the abbreviations and match them with the corresponding functional areas.

List ‘A’	List ‘B’
LP	Quality control
PERT	Project planning
CRAFT	Inventory management
MRP	Product design
CAD	Product mix determination
AOQ	Plan layout

[Ref: Q1. (b), June '09 / Paper-9] 1 \times 6

INFORMATION SYSTEM

INFORMATION SYSTEM ANALYSIS AND DESIGN

Objective & Descriptive Type Questions :

- Q1. _____ System is a software that controls the hardware devices, software, Communication media and channels. [Ref: Q5. (a)(v), Dec '08 / Paper-9] 1
- Q2. Expand the following abbreviations :
EEPROM. [Ref: Q5. (c)(iii), Dec '08 / Paper-9] 1
- Q3. Each statement below is either **True** or **False**, Indicate the same in your answers :
Virtual memory is a provision of primary storage which acts as secondary memory. [Ref: Q5. (b)(i), Dec '08 / Paper-9] 1
- Q4. Explain peer-to-peer architecture and list out its benefits? [Ref: Q6. (b), Dec '08 / Paper-9] 5
- Q5. Expand the following abbreviations :
TCP/IP. [Ref: Q5. (c)(iv), Dec '08 / Paper-9] 1
- Q6. What is Access Control? What are the checks one needs to ensure before executing a system of access control? [Ref: Q7. (b), Dec '08 / Paper-9] 4
- Q7. Expand the following abbreviations :
EEPROM. [Ref: Q5. (c)(iii), Dec '08 / Paper-9] 1
- Q8. Q. File and Smile Online asks you to draw a flow chart for calculation of income tax as per slabs prescribed which are as below :
- | Salary in currency limit | Rate % |
|--------------------------|--------|
| Up to 1,50,000 | Nil |
| 1,50,001 to 3,00,000 | 10 |
| 3,00,001 to 5,00,000 | 20 |
| 5,00,001 and above | 30 |
- [Ref: Q7. (d), Dec '08 / Paper-9] 4
- Q9. _____ System is a software that controls the hardware devices, software, Communication media and channels. [Ref: Q5. (a)(v), Dec '08 / Paper-9] 1
- Q10. List the salient features of a WAN? [Ref: Q8. (c), Dec '08 / Paper-9] 4

Q11. Fill up the following missing blocks which form part of the system development team in a System Development Life cycle. Write missing answer against Serial Number only in the answer sheet :

Sl No.	Step	Person Responsible	Responsibility
1.	System proposal	?	Study requirement and prepare proposal for clearance by management
2.	Systems Implementation	Programmer and Systems Analyst	?
3.	?	Programmers	To develop programs according to system specifications and testing the programs

[Ref: Q8. (d), Dec '08 / Paper-9] 3

Q12. _____ basically sends a mail to the e-mail address of the receiver.

[Ref: Q5. (a)(iv), Dec '08 / Paper-9] 1

Q13. Expand the following abbreviations :

- (i) MICR.
- (ii) ASCII
- (iii) GUI

[Ref: Q5. (a), June '09 / Paper-9] 1×3

Q14. Put an appropriate word or two in blank position :

- (i) _____ means loading Operating System in computer after power is switched on.
- (ii) Programs written in High Level Language are called _____ .
- (iii) _____ is a process of continuous checking of possible encroachment of virus in a machine.

[Ref: Q5. (b), June '09 / Paper-9] 1×4

Q15. Each statement below is either *True* or *False*. Indicate the same in your answers :

- (i) ROM is used for temporary data storage.
- (ii) File Volatility is the rate of change in the records in the file.

[Ref: Q5. (a), June '09 / Paper-9] 2

Q16. Name the four divisions in COBOL. What are its advantages?

[Ref: Q7. (b), June '09 / Paper-9] 2+2

Q17. Explain FTP mentioning the steps involved in it.

[Ref: Q7. (d), June '09 / Paper-9] 3

Q18. (i) What are the objectives of Information System Auditing?

- (ii) Explain the major areas for imposition of system of Internal Control.

[Ref: Q8. (a), June '09 / Paper-9] 3+4

Q19. What are the facilities that are required in the computer for an access to the Internet? What are the problems associated with use of Internet?

[Ref: Q8. (b), June '09 / Paper-9] 2+4

DATABASE MANAGEMENT SYSTEMS

Objective & Descriptive Type Questions :

- Q1. (i) Name any two models of DBMS.
 (ii) What does one mean by "Going Live". [Ref: Q6. (d), Dec '08 / Paper-9] 2+2
- Q2. What are the characteristics of a database? [Ref: Q8. (b), Dec '08 / Paper-9] 4
- Q3. Put an appropriate word or two in blank position :
 (i) Oracle is based on a concept of _____ Technology. [Ref: Q5. (a)(i), Dec '08 / Paper-9] 1
- Q4. Each statement below is either **True** or **False**, Indicate the same in your answers :
 In Multiprogramming, one CPU processes a number of programs by time-sharing technique.
 [Ref: Q5. (b)(iii), Dec '08 / Paper-9] 1
- Q5. Expand the following abbreviations:
 ORDBMS. [Ref: Q5. (c)(i), Dec '08 / Paper-9] 1
- Q6. Expand the following abbreviations :
 DML. [Ref: Q5. (a)(i), June '09 / Paper-9] 1
- Q7. Put an appropriate word or two in blank position :
 _____ is extracting of data from multiple data sources by way of interactive and analytical software tools. [Ref: Q5. (b)(iv), June '09 / Paper-9] 1
- Q8. Each statement below is either *True* or *False*. Indicate the same in your answers :
 (i) File Volatility is the rate of change in the records in the file.
 (ii) Data Mart has no relevance to Data Warehousing.
 [Ref: Q5. (c)(iii)(iv), June '09 / Paper-9] 1+1
- Q9. What is Data Warehousing? Give examples of strategic use of data warehousing in different business environment. [Ref: Q6. (d), June '09 / Paper-9] 2+2
- Q10. What are the advantages of Database Management System?
 [Ref: Q6. (e), June '09 / Paper-9] 2

MANAGEMENT INFORMATION SYSTEMS (MIS)

Objective & Descriptive Type Questions :

- Q1. List the nature of preparatory work to be undertaken before a decision on outsourcing of information system services can be taken? [Ref: Q7. (a), Dec '08 / Paper-9] 4
- Q2. Depending on the level of management, different functional areas will require various types of MIS reports. Keeping this in view, you are required to list out kind of reports under the following categories :
- (i) Top level (Strategic) Reports required for Personnel Management;
 - (ii) Middle Level (Tactical) Reports for Production Management;
 - (iii) Operational Level (Operational) Reports for Sales Mnagement.
- [Ref: Q7. (c), Dec '08 / Paper-9] 6
- Q3. Put an appropriate word or two in blank position :
 _____ basically sends a mail to the e-mail address of the receiver.
 [Ref: Q5. (a)(iv), Dec '08 / Paper-9] 1
- Q4. One of the important factors for the success for MIS is the quality of software. List out the criteria, which the software must fulfil for the basis for selection apart from meeting the user specific functional specifications? [Ref: Q8. (a), Dec '08 / Paper-9] 4
- Q5. Fill up the following missing blocks which form part of the decision making pattern. Write missing answer against Serial Number only in the answer sheet :

Sl No.	Level of Management	Decision making on	Information support from
1.	Lower Level	?	Transaction Processing
2.	Middle Level	Planning & Control	?
3.	Top Level	?	Executive System/Expert System

[Ref: Q6. (b), June '09 / Paper-9] 3

- Q6. What is 'Risk Management' in an Infomation System and what are the steps involved in it? [Ref: Q7. (a), June '09 / Paper-9] 1+3

ENTERPRISE RESOURCE PLANNING (ERP)

Objective & Descriptive Type Questions :

- Q1. PTC a large manufacturer of agro-based products is in the process of evaluation to go in for an ERP package for managing its entire Financial, Supply Chain Management, Manufacturing, Procurement, Inventory, and Sales etc. and requests you to list out the common criteria it should consider before selection of a package. [Ref: Q6. (a), Dec '08 / Paper-9] 4
- Q2. Name common modules of an ERP Package and a few important sub-systems under each module. [Ref: Q6. (c), Dec '08 / Paper-9] 5
- Q3. Name three popular ERP packages. [Ref: Q8. (e), Dec '08 / Paper-9] 3
- Q4. Each statement below is either **True** or **False**, Indicate the same in your answers :
Readymade software is one, which meets the full-customised requirements of a specific organisation. [Ref: Q5. (b)(ii), Dec '08 / Paper-9] 1
- Q5. Expand the following abbreviations :
ISAM [Ref: Q5. (c)(v), June '09 / Paper-9] 1
- Q6. Each statement below is either *True* or *False*, Indicate the same in your answers :
ERP package covers the function of production management only and excludes Finance and Human Resources. [Ref: Q5. (c)(v), June '09 / Paper-9] 1
- Q7. Explain briefly the different phases in implementation methodologies of an ERP system. [Ref: Q6. (a), June '09 / Paper-9] 5
- Q8. What are the sub-systems under the Sales and Distribution Module of an ERP system? [Ref: Q6. (c), June '09 / Paper-9] 4
- Q9. (i) What will be the nature of costs to be included in the budget for implementation of an ERP package?
(ii) What is 'Gap Analysis' in ERP Life Cycle? [Ref: Q7. (c), June '09 / Paper-9] 3+1
- Q10. What is E-Commerce? What are the components involved in it? What are the steps by which a transaction take place in E-Commerce? [Ref: Q8. (c), June '09 / Paper-9] 1+1+3