

INTERMEDIATE EXAMINATION

December 2014

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.

1. Answer all questions: 2×10=20
- (a) Distinguish between Regular Spares and Insurance Spares. 2
 - (b) Write the formula for Input Efficiency and Effectiveness. 2
 - (c) List the various steps in New Product Development. 2
 - (d) A worker is employed for 11 hours. During this period he takes 7 hours to complete a job with the standard time of 6 hours. Calculate the productivity of the worker as a percentage. 2
 - (e) What are the main functions of production planning? 2
 - (f) Expand LOB. Where is it applied? 2
 - (g) Define two types of data independence in the three-schema architecture under Data Base Management System. 2
 - (h) Expand CASE and list various CASE tools. 2
 - (i) On what basis the cost price for a standard item is calculated? 2
 - (j) Define the models used for representing the information. 2

2. Answer any three questions: 16×3=48
- (a) (i) An engineering firm has a machine whose purchase price is ₹ 85,000. The expected maintenance costs and resale price in different years are as given below:

Year	1	2	3	4	5	6	7
Maintenance Cost (₹)	1200	1400	1800	2600	3200	4100	5200
Resale Value (₹ Thousand)	80	76	71	67	63	58	52

- After what time interval should the machine be replaced? 6
- (ii) List the advantages of Method Study. 6
- (iii) State the four generic components of technological innovation. 4

Please Turn Over

- (b) (i) XYZ manufacturing company planning to start its production activities has to decide on the location of the plant. Three locations are being considered:

Location A, B and C. The following data are available:

	Location A	Location B	Location C
Fixed costs (₹ Lakhs per annum)	35	55	30
Variable cost (₹ per annum)	350	250	400

The expected sales price of the product is ₹ 750 per unit. Find out:

- (A) The range of annual production/sales volume for which each location is most suitable, and
(B) Which one of the three is the best location at the production/sales volume of 22,000 units?

Clearly mention the assumptions, if any.

- (ii) Justify your choice between 'Preventive Replacement' and 'Breakdown Replacement'. 8
- (iii) Write a sentence or two on each of the various methods applied for finding the optimal solution for a given linear programming problem. What is 'non-negativity condition'? 4+1=5
- (c) (i) Classify the functions of Production Planning & Control. 9
- (ii) An Industrial Engineer, appointed to conduct a time-study for a job, has after observation, divided the job into 5 elements. He had noted the timings for four cycles of the job as below:

Element	Time in Minutes				Performance Rating (%)
	Cycle 1	Cycle 2	Cycle 3	Cycle 4	
1	1.327	1.254	1.351	1.269	85%
2	0.983	1.854	0.882	0.956	95%
3	1.894	1.821	1.928	1.963	100%
4	2.569	2.173	2.132	2.285	120%
5	1.358	1.139	2.561	1.438	100%

- (A) Are there any outliers in the data i.e. probable errors in reading or recording data which should not be included in the analysis?
- (B) Compute the basic time for the job. Also compute the standard time if a relaxation allowance of 13%, a contingency allowance of 4% and an incentive of 25% are applicable for the job. 1+6=7

- (d) (i) What are the managerial considerations in Scheduling? 3
- (ii) State the Eight Most Common Benchmarking Errors. 8

- (iii) In a simulation operation, a firm's maintenance person received requests for service and provided service during an 8 hour period as shown below:

Request Arrival Time (Clock Time)	Service Time (Hours)
0.00	1.0
0.30	1.0
2.00	1.5
3.00	1.5
6.30	0.5

The maintenance labour cost is ₹ 150 per hour, and the delay time cost is ₹ 500 per hour. Find:

- (A) The idle time cost for the maintenance person, and
(B) The delay time cost for the machinery.

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2. Answer any two questions:

16×2=32

- (a) (i) State the important factors which should be considered while designing the user outputs. 6
(ii) What are the various intangible benefits of ERP system? 5
(iii) What are the main reasons for the spread of E-commerce? 5
- (b) (i) Define Executive Information System and list the special features of EIS. 2+4=6
(ii) From the following two relations of X and Y, find X – Y. 4

RELATION X	
UID	OCCUPATION
A15	STUDENT
A 16	BUSINESS
A 25	STUDENT
A 38	BUSINESS

RELATION Y	
UID	OCCUPATION
A16	BUSINESS
A 17	BUSINESS
A 32	STUDENT
A 58	STUDENT

- (iii) List major categories of Flow Charts. What are the benefits of Flow Charts and limitations of using these Charts? 2+2+2=6
- (c) (i) What is meant by BPR? What are its basic characteristics and what could be the effect of implementation? 1+2+2=5
(ii) Discuss about the prerequisites of an effective MIS. 6
(iii) Write one sentence only to explain each of the following terms used in a DBMS: 1×5=5
- (a) Tuple
(b) Attribute
(c) Domain
(d) Graphical User Interface
(e) Backup Utility