

# 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

