

INTERMEDIATE EXAMINATION

December 2015

P-9(OMS)
Syllabus 2012

Operation Management and Information Systems

Time Allowed: 3 Hours

Full Marks: 100

This paper contains three 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) Identify four principal functions of an operating system with reference to Operation Management.
- (b) List the various elements of the framework for Project Management Issues.
- (c) Categorise spare parts for stocking policy analysis under Spare Parts Management.
- (d) Define Quality Trilogy under Total Quality Management.
- (e) State the formula for maintenance cost index (as a percentage) to measure maintenance effectiveness.
- (f) An analyst wants to obtain a cycle time estimate that is within $\pm 5\%$ of the true value. A preliminary run of 20 cycles took 40 minutes to complete and had a calculated standard deviation of 0.3 minutes. Calculate the coefficient of variation to be used for computing the sample size for the forthcoming time study.
- (g) Distinguish between 'Private Key' and 'Public Key'.
- (h) Explain the term 'rescue maintenance' under System Maintenance.
- (i) Identify different functions commonly performed by Database System Utilities.
- (j) Identify characteristics of a good quality information.

2. Answer *any three* questions. 16×3=48

- (a) (i) "Higher productivity has manifold advantages." State these advantages. 6
- (ii) A faculty in a college is planned to rise to strength of 60 staff members and then to remain at that level. The wastage of recruits depends upon their length of service and is as follows: 3+4=7

Year	1	2	3	4	5	6	7	8	9	10
Total % who left up to end of year	6	36	57	66	71	77	81	87	96	100

- (I) Find the number of staff members to be recruited every year.
- (II) If there are seven posts of Head of Department for which length of service is the only criterion of promotion, what will be average length of service after which a new entrant should expect promotion?
- (iii) State three major purposes of Materials Budget. 3

Please Turn Over

- (b) (i) List the major areas and types of maintenance an organization may use in those areas. 4
 (ii) Calculate the standard time per article produced from the following data obtained by a work sampling study: 7

Total No. of observations = 2597

No. of working observations = 2000

No. of units produced in 100 hours duration = 5000 numbers

Proportion of manual labour = $\frac{3}{4}$

Proportion of machine time = $\frac{1}{4}$

Observed rating factor = 120%

Total allowances = 15% of normal time

- (iii) Define simulation and identify its four phases. 3+2=5
 (c) (i) Expand TPM. Identify various activities a TPM system is encompassed of, with influence on equipment up time. 1+4=5
 (ii) Explain 'Eight Steps Benchmarking Process'. 6
 (iii) Compute the productivity per machine hour with the following data. Also draw your interpretation. 5

Month	No. of machines employed	Working hours	Production Units
July	400	225	99,000
August	500	200	1,00,000
September	600	250	1,35,000

- (d) (i) Distinguish between Run Time and Setup Time. Illustrate Throughput Time. 2+2=4
 (ii) The work-study engineer carries out the work sampling study for 120 hours. The following observations were made for a machine shop:

Total number of observations	7000
No. of Idle activities	1200
Ratio between manual to machine elements	3 : 1
Average rating factor	120%
Total number of jobs produced during study	800 units
Rest and personal allowances	17%

Compute the standard time for the job. 6

- (iii) Define (a) Work Measurement and (b) Qualified Worker, as implied in work measurement.

3+3=6

3. Answer any two questions. 16×2=32
- (a) (i) State the advantages of System Development Life Cycle from the perspective of IS Audit. 3
(ii) Define Flow Chart and list major categories of flow charts. 1+3=4
(iii) State the basic purpose of Inventory Management in any business enterprise. 3
(iv) Define EIS and list the special features of an EIS. 2+4=6
- (b) (i) Identify tangible and intangible benefits of ERP. 3+3=6
(ii) State three major misconceptions about MIS. 3
(iii) State the key functionalities of Accounts Receivable Module. 3
(iv) You are appointed as a System Analyst and assigned system analysis of the organisation. Discuss various fact finding techniques which are used for this purpose. 4
- (c) (i) List the advantages and disadvantages of E-commerce. 6
(ii) Explain the Three Schema Architecture in a Database System. 6
(iii) From the following two relations of X and Y, find $X - Y$. 4

Relation X	
S No.	DEP CODE
35	ADM
40	FIN
46	HRM
49	MIS
54	PUR

Relation Y	
S No.	DEP CODE
40	FIN
49	MIS
51	SLS
54	PUR
57	PRD