Paper 9 - Operations Management & Information System

Full Marks: 100   **Time allowed-3hrs**

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 indicted.

Question No. 1 : Answer all questions. [20 marks]

1. (a) Define Repetitive focus.   2
   (b) Explain the term 'worker-machine chart.'   2
   (c) 'A project starts with statement of work.'- Justify.   2
   (d) Compute the productivity per machine hour with the following data.

Month	No. of machines employed	Working Hours	Machine hours	Production Unit
March	400	225	90,000	99,000

      2

   (e) Define Maintenance Engineering.   2
   (f) Write a note on the human side of Technology Integration.   2
   (g) Program Design Language is also known as Structured English.- Why?   2
   (h) Define Declarative.   2
   (i) What is Cyber Crime?   2
   (j) Cost accounting module consists of some functionalities. List them.   2

Operation Management

Answer any three questions

2. (a) (i) Describe the term Commercialisation in relation to planning of products.   3
   (ii) Define Process Strategy and name its key aspects.   3
   (iii) List the benefits of Production Control.   6
   (iv) State the limitations of Production Planning and Control.   4

   (b) (i) State the benefits of Work Measurement.   6
   (ii) An analyst has observed a job long enough to become familiar with it and has divided it into five elements. The element times for the first four cycles and a performance rating for each element are given in the following table:

Element	Cycle-1	Cycle-2	Cycle-3	Cycle-4	Performance Rating(%)
1	1.246	1.328	1.298	1.306	90
2	0.972	0.895	0.798	0.919	100
3	0.914	1.875	1.964	1.972	100
4	2.121	2.198	2.146	2.421	110
5	1.253	1.175	1.413	2.218	100

   - Compute an estimated normal time for the job based on the data available at this stage of the study.   4
   (iii) A department works on 8 hours shift, 250 days a year and has the usage data of a machine, as given below:

Product	Annual demand (units)	Processing time (Standard time in hours)

A	600	4.0
B	800	6.0
C	1000	3.0

Determine the number of machines required. 6

(c) (i) ABC airline operating 7 days a week has given the following time table. Crews must have a minimum layover of five hours between the flights. Obtain the pairing flights that minimize the layover time away from home. For any given pairing the crew will be based at the city that results in the smaller layover.

HYDERABAD - DELHI				HYDERABAD - DELHI		
Flight No.	Departure	Arrival		Flight No.	Departure	Arrival
A1	6 AM	8 AM		B1	8 AM	10 AM
A2	8 AM	10 AM		B2	9 AM	11AM
A3	2 PM	4 PM		B3	2 PM	4 PM
A4	8 PM	10 PM		B4	7 PM	9 PM

12

(ii) List the problems in Maintenance Scheduling. 4

(d) (i) A city hospital has the following minimal daily requirement for nurses:

Period	Clock time (24 hours day)	Minimal number of nurses required
1	6 AM - 10 AM	2
2	10 AM - 2 PM	7
3	2 PM- 6 PM	15
4	6 PM-10 PM	8
5	10 PM – 2 AM	20
6	2 AM - 6 AM	6

Nurses report to the hospital at the beginning of each period and work for consecutive 8 hours. The hospital wants to determine the minimal number of nurses to be employed so that there will be sufficient number of nurses available for each period. Formulate LPP. Do not solve. 6

(ii) The following activities must be accomplished in order to complete a construction project:

Activity	A	B	C	D	E	F	G	H	I	J
Time	3	8	4	2	1	7	5	6	8	9
Predecessors	—	—	AB	B	A	C	EF	DF	GH	I

- Construct a network diagram for this project. Find the CP and the duration of the project.
- Assume that you are project manager of the project mentioned above. The project has progressed for 10 weeks and the status is follows:

Activities completed: A, B, E. Other activities have not started as yet.

- ❖ If no managerial action is taken at all when will the project get completed?
- ❖ What action might you take to get the project back to a schedule that can be completed by the end of week 42? 5+5

Information System

Answer any two questions.

3. (a) (i) Discuss the various fact-finding techniques used by the system analysts for determining the needs/requirements of an organization. **4**
   (ii) List the categories of tests that a programmer performs on a program unit. **5**
   (iii) What are the pre-requisites of an effective Management Information System (MIS)? **4**
   (iv) Define query compiler. **3**

   (b) (i) List the categories of Goods Movement. **5**
   (ii) "There are other implications of using the database approach that can benefit most organizations." –Justify. **6**
   (iii) Describe the activities involved in conversion. **5**

   (c) (i) State the main goals of E-commerce. **3**
   (ii) List the benefits of Electronic Data Interchange. **5**
   (iii) Explain the term E-banking. **5**
   (iv) "Price fixation is one of the advantages of E-commerce". – Justify. **3**