



RN-7471

B. E. - IV (Sem. VII) (Mech.) Examination
May / June - 2010
Production Management (Elective)

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृशविवेक निशानीवाणी विगतो उत्तरवडी पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 4 (Sem. 7) (Mech.)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Production Management (Elective)"/>	<input type="text"/>
Subject Code No. : <input type="text" value="7"/> <input type="text" value="4"/> <input type="text" value="7"/> <input type="text" value="1"/>	<input type="text"/>
Section No. (1, 2,.....) : <input type="text" value="1&2"/>	<input type="text"/>
	Student's Signature

- (2) Attempt **all** questions.
- (3) Assume any data if necessary, give reason.
- (4) Answer to the **two** sections must be written in **separate** answer books.

SECTION - I

- 1 Attempt the following : (any five) 20
- (i) Explain Hungarian Method for finding solution to the assignment problems.
- (ii) What is a Gantt chart? What are the applications of the Gantt chart?
- (iii) Discuss Operation Management and Production Management.
- (iv) List the Priority Sequencing Rules.
- (v) What is productivity? List the factors affecting productivity.
- (vi) Enlist the various production technologies. Discuss the batch production system.
- (vii) What is Replacement analysis? Discuss classification of Replacement Models.

2 Attempt any three :

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- (i) A captain a cricket team has to allot middle order batting position to five batsmen. The average runs scored by each batsman at these positions are given in the table.

	III	IV	V	VI	VII
A	40	40	35	25	50
B	42	30	16	25	27
C	50	48	40	60	50
D	20	19	20	18	25
E	58	60	59	55	53

Make the assignment so that expected total average runs scored by these batsmen are maximum.

- (ii) Find the sequence that minimise the total elapsed time (in hours) required to complete the following jobs on three machines M1, M2 and M3 are performing in the given order, M1-M2-M3.

Machines	Jobs				
	A	B	C	D	E
M1	6	8	7	10	6
M2	3	2	5	6	4
M3	4	8	6	7	8

- (iii) The maintenance cost and resale value per year of a machine whose purchase price is Rs. 7000 is given below :

Year	1	2	3	4	5	6	7	8
Maintenance cost (Rs.)	900	1200	1600	2100	2800	3700	4700	5900
Resale value (Rs.)	4000	2000	1200	600	500	400	400	400

When should the machine be replaced?

- (iv) A computer has a large number of electronics tubes. They are subjected to a mortality as given below :

Period	Age of failures (Interval of time period)	Probability of failure
1	0–200	0.1
2	201–400	0.26
3	401–600	0.35
4	601–800	0.22
5	801–1000	0.07

If the tubes are group replaced, the cost of replacement is Rs. 15 per tube. Group replacement can be done at a fixed interval in the night shift when the computer is not normally used. Replacement of individual tube which fail in service cost Rs. 60 per tube. How frequently should the tube be replaced?

- (v) Use the graphical method to find the minimum elapsed total time sequence of 2 jobs and 5 machines, when the following information is given :

	Machine					
Job1	Sequence	A	B	C	D	E
	Time	2	3	4	6	2
Job2	Sequence	C	A	D	E	B
	Time	4	5	3	2	6

- 3 Given the following tasks and requirements for an assembly line. Assembly line yields 80 units/day. 12

Tasks	Task time	Required Predecessors	Tasks	Task time	Required Predecessors
A	5	F	E	3	D, H
B	2	F	F	6	—
C	3	E, G	G	4	D
D	7	A, B	H	8	D

- (a) What is maximum daily output?
 (b) What is the minimum cycle time?
 (c) Calculate the efficiency of the line.

SECTION - II

- 4 Answer any **five** : 20

- (a) What is CRP? What are essential inputs and outputs of CRP?
 (b) Enlist MRP parameters and discuss any one with suitable example.
 (c) Enlist the types of layout. Discuss the fix position layout in detail.

- (d) Enlist four principles of material handling.
- (e) What is MPS? Discuss the various types of MPS.
- (f) Explain just in time production system.
- (g) What is 'product structure'? Explain the low level coding in product structure.

5 Answer the following :

- (a) End item X is assembled from three major assemblies. 5
A, B and C sub assembly :A consists of two units of E and three units of H. Sub assembly C requires two units of J and one unit of F. Component B requires two units of J and one unit of K. Construct a product structure tree for item X.
- (b) Explain the decision making process.
- (c) A work centre operates 5 days per week on a two 5
shift per day basis. (8 hours per shift) and has 3 machines with the same capability. If the machines are utilized 75% of the time at a system efficiency of 80%. What is rated output in standard hours per week?

OR

- (c) ABC company manufactures gears. It has 14 gear 5
hobbing machines in their shop. A work sampling study shows that around 20% time was lost due to reasons attributable to the management. Daily sectionwise reports shows that operator gives around 75% of time as standard output. Find effective capacity of scheduling assuming 100 hours.

6 Answer any **three** : **15**

- (a) Explain American V/s Japanese Management Techniques
- (b) Explain elements of TQM.
- (c) What is production management? How does it differ with operation management?
- (d) Explain Kanban system.
