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E-563

B. E. VII Semester Examination, December-2017

INDUSTRIAL MANAGEMENT AND PRODUCTION SYSTEM

Branch : Mech. Engg.

(Main & RE Exam)

Time : Three Hours] *[Maximum Marks : 75*

[Minimum Marks : 30

Note : Attempt *all* questions from *Section – A, four* questions from *Section – B* and *three* questions from *Section – C.*

SECTION – A [Marks : 1.5 × 10 = 15

(Objective Type Questions)

Note : Attempt *all* questions.

1. Which of the following is ***not*** an element of management process ?

   (a) Pricing (b) Staffing

   (c) Planning (d) Controlling

2. Micro motion study is :

   (a) analysis of one stage of motion chart

   (b) motion study, when seen on a time chart

   (c) subdivision of an operation into therbligs and their analysis

   (d) enlarged view of motion study

3. A milk powder tin is being weighed as it is filled is an example of :

   (a) Operation cum transportation (b) Operation cum inspection

   (c) Transportation cum inspection (d) None of the above

P. T. O.

4. In THERBLIGS, colour for 'search' is :

(a) Black (b) Grey (c) Red (d) Green

5. An assembly line consists of 5 tasks with times of 12, 9, 8, 7, and 11 minutes. The cycle time for the line is 25 minutes. The theoretical minimum number of workstations for this situation is :

(a) 1 (b) 2 (c) 3 (d) 4

6. When slack of an activity is negative :

(a) it represents a situation where extra resources are available and the completion of project is not delayed

(b) it represents that a programme falls behind schedule and additional resources are required to complete the project in time

(c) the activity is critical and any delay in its performance will delay the completion of whole project

(d) all of the above

7. In CPM, the cost slope is determined by :

(a) $\frac{\text{Crash cost}}{\text{Normal cost}}$ (b) $\frac{\text{Crash cost} - \text{Normal cost}}{\text{Normal time} - \text{Crash time}}$

(c) $\frac{\text{Normal cost}}{\text{Crash cost}}$ (d) $\frac{\text{Normal cost} - \text{Crash cost}}{\text{Normal time} - \text{Crash time}}$

8. Work sampling is applied for :

(a) estimation of the percentage utilisation of machine tools

(b) estimating the percentage of the time consumed by various job activities

(c) finding out time standards, specially where the job is not repetitive and where time study by stop watch method is not possible

(d) all of the above

9. A feasible solution to the linear programming problem should :

(a) Satisfy the problem constraints

(b) Optimise the objective function

(c) Satisfy the problem constraints and non-negativity restrictions

(d) Satisfy the non-negativity restrictions

10. What technique deals with the problem of supplying sufficient facilities to production lines or individuals that require uneven service ?

(a) Supply-demand theory (b) PERT

(c) Inventory theory (d) Queuing theory

SECTION – B

[Marks : 6 × 4 = 24

(Short Answer Type Questions)

Note: Attempt any *four* questions :

1. What is the difference between quantitative forecast methods and qualitative forecast methods ?

2. Why is CPM/PERT a popular and widely applied project scheduling technique ?

3. What are the different types of layouts ? Also explain the factors influencing plant location.

4. What are the objectives of production planning and control ? Write in short of the MRP.

5. The observed times and the performance rating for the five elements are given compute the standard time assuming rest and personal allowance as 15% and contingency allowance as 2% of the basic time.

Element	1	2	3	4	5
Observed Time (min)	0.2	0.08	0.05	0.12	0.10
Performance Rating	85	80	90	85	80

6. What are the principles of Management ? Explain functions of management.

SECTION – C

[Marks : 12 × 3 = 36

(Long Answer Type Questions)

Note : Attempt any *three* questions :

1. Describe the procedure for sampling inspection. Discuss frequency distribution charts to use as devices of quality control.

2. The demand for a product during the last 10 years is given below. Estimate the demand for next two years by the method of regression.

Year	1	2	3	4	5	6	7	8	9	10
Units	124	135	145	150	167	157	161	170	187	168

3. A project consists of 7 jobs. Jobs A and F can be started and completed independently. Jobs B and C can start only Job A has been completed. Jobs D, E and G can start only after jobs B, (C and D) and (E and F) are completed, respectively. Time estimates of all the jobs are given in the following table :

JOB	Time Estimates (Days)		
	Optimistic	Pessimistic	Most Likely
A	3	7	5
B	7	11	9
C	4	18	14
D	4	12	8
E	4	8	6
F	5	19	12
G	2	6	4

Draw the network and determine the critical path, and its expected duration (T_e). also find total and free slacks of all the jobs.

4. Write short notes on the following :
   (i) Scientific management
   (ii) Types of organisation
   (iii) Material handling devices
   (iv) Gantt chart

5. Transportation costs from manufacturing plants to warehouses are given in table. They are in euros. Solve this problem to minimize the cost of transportation by stating the steps used in the algorithm :

Assignment

Warehouse	PLANT			
	A	B	C	D
1	10	8	10	8
2	10	7	9	10
3	11	[illegible]	8	7
4	12	1	13	10

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E - 3518

B. E. (VII Semester) (Main & Re-Exam) December, 2014

INDUSTRIAL MANAGEMENT & PRODUCTION SYSTEM

Branch : Mechanical Engg.

[*Maximum Marks : 75*

Time : Three Hours] [*Minimum Marks : 30*

Note : Attempt *all* the questions of *Section A*, *Four* from *Section B* and *Three* questions from *Section C*.

SECTION – A

(Objective Type Questions) 1.5 × 10 = 15

1. Qualitative methods of forecasting include :

   (a) Jury of executive opinion (b) Exponential smoothing

   (c) Consumer market survey (d) Sales force composite

2. Linear regression is most similar to :

   (a) The simple moving average method of forecasting

   (b) The trend projection method of forecasting

   (c) The weighted moving average method of forecasting

   (d) The naike method of forecasting

3. Key element is always found in :

   (a) Index row

   (b) Key column

   (c) Quantity column

   (d) None

P. T. O.

4. Grant chart is used for :

   (a) Inventory control

   (b) Material handling

   (c) Production schedule

   (d) Machine repair schedule

5. Linear programming is :

   (a) Constraint optimization model

   (b) Constraint decision making model

   (c) All mathematical programming model

   (d) All of the above

6. A feasible solution to the linear programming problem should :

   (a) Satisfy the problem constraints

   (b) Satisfy the problem constraints & non negativity restrictions

   (c) Optimize the objective function

   (d) Satisfy the non negativity restrictions

7. In time study, the rating factor is applied to determine :

   (a) Standard time of a job

   (b) Merit rating of the worker

   (c) Fixation of incentive rate

   (d) Normal time of a worker

8. PERT is applied for :

   (a) Marketing programmes & advertising programmes

   (b) Installation of machinery

   (c) Research and development of products

   (d) All of these

6. The elemental times (in minutes) for 4 cycles of an operation are presented below. Calculate standard time for the operation if

(i) Elements 2 & 4 are machine elements.

(ii) Total allowances are 15 % of the normal time.

(iii) For other elements, the operator is rated as 110%.

Elements	Cycle Time In Minutes			
	1	2	3	4
1	1.5	1.5	1.3	1.4
2	2.6	2.7	2.4	2.6
3	3.3	3.2	3.4	3.4
4	1.2	1.2	1.1	1.2
5	0.51	0.51	0.52	0.49

SECTION – C

(Long Answer Type Questions)

$12 \times 3 = 36$

1. Solve the following LPP by simple method.

Maximize $z = 6x_1 + 4x_2$

Subject to Constraints, $x_1 + 2x_2 \le 720$

$2x_1 + x_2 \le 780$

$x_1 \le 320$

2. Explain the two handed process chart & its construction.

3. Write down the 14 principles of management give by F.W. Taylor.

4. Write down the steps in Time study. Also explain the types of PMTS.

5. Solve the following LPP by graphical method.

Maximize $z = 100x_1 + 40x_2$

Subject to $5x_1 + 2x_2 \le 1000$

$3x_1 + 2x_2 \le 900$

$x_1 + 2x_2 \le 500$

&& $x_1, x_2 \ge 0$

8. The elemental times (in minutes) for 4 cycles of an operation using a stop watch are presented below calculate standard time for the operation :

(i) Elements 2 & 4 are machine elements.

(ii) Total allowances are 15 % of the normal time.

(iii) For other elements, the operator is rated as 110%.

Elements	Cycle Time In Minutes			
	1	2	3	4
1	1.5	1.5	1.3	1.4
2	2.6	2.7	2.4	2.6
3	3.3	3.2	3.4	3.4
4	1.2	1.2	1.1	1.2
5	0.51	0.51	0.52	0.49

SECTION – C

(Long Answer Type Questions)

1. Solve the following LPP by simplex method.

Maximize $z = 6x_1 + 4x_2$

Subject to Constraints, $x_1 + 2x_2 \leq 720$

$2x_1 + x_2 \leq 780$

$x_1 \leq 320$

2. Explain the two handed process chart & its construction.
3. Write down the 14 principles of management give by F.W. Taylor.
4. Write down the steps in Time study. Also explain the types of PMTS.
5. Solve the following LPP by graphical method.

Maximize $z = 100x_1 + 40x_2$

Subject to $5x_1 + 2x_2 \leq 1000$

$3x_1 + 2x_2 \leq 900$

$x_1 + 2x_2 \leq 500$

& $x_1, \ x_2 \geq 0$

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E-205

B.E. VII Sem. (Main & Re) Examination, Dec. 2015

Industrial Management & Production System

Branch : Mechanical Engg.

Time : Three Hours] *[Max. Marks : 75*

[Min. Marks : 30

Note : Attempt **all** the questions of Section-A, **four** from Section-B and **three** questions from Section-C.

Section - A

(Objective Type Questions) 1.5×10=15

1. Linear Programming is :

   (a) Constraint optimization model

   (b) All mathematical programming model

   (c) Constraint decision making model

   (d) All of above

2. In value engineering the term value refers to :

   (a) manufacturing cost of the product

   (b) selling price of the product

   (c) total cost of the product

   (d) utility of the product

P.T.O.

3. Which are of the following charts gives simultaneously information about the progress of work and machine loadly :

(a) Process chart (b) Machine load chart

(c) Man-Machine chart (d) Gantt chart

4. The main object of scientific layout is -

(a) To utilize max floor area

(b) To produce better quality of product

(c) To minimize production delays

(d) All of these

5. Military type of organization is known as :

(a) Line and staff organization

(b) Functional

(c) Line, staff and functional

(d) Line organization

6. Bar chart is suitable for :

(a) Minor work (b) Major work

(c) Large product (d) All of these

7. Production cost refers to prime cost plus-

(a) factory overheads

(b) factory, administration sales overheads and profit

(c) factory administration and sales overheads

(d) factory and administration overheads

8. Key element is always found in :

(a) Index row (b) Key column

(c) Quality column (d) None

9. P.M.T.S (Predetermind Motion Time System, Includes)

(a) Method of Time Measurement (MTM)

(b) Work Factor System (WFS)

(c) Basic Motion Time Study (BMTS)

(d) All of these

10. For handling materials during manufacturing of cement, which one of the following is widely used :

(a) Belt conveyer (b) Bucket conveyer

(c) Fork lift truck (d) Overhead Craix

Section - B

(Short Answer Type Questions)

6×4=24

1. Define Administration.
2. Define the term "Production planning and control".
3. State the applications of Linear Programming.
4. State the elements of Project Management.
5. Briefly explain the significance of decision making.
6. Define the terms :

(a) Quality of performance

(b) Quality control.

Section - C

12×3=36

(Long Answer Type Questions)

1. Solve the following LPP by simple method :

Maximize $z=20x+40y$

Sub.to $1.5x+y \leq 750$

$x+3y \leq 900$

$x \leq 450$

$y \leq 250$

$x, y \geq 0$

13ME36

Total Printed Pages : 4

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E-334

B. E. VII Semester (Main & Re-Exam.) Examination December, 2016

INDUSTRIAL MANAGEMENT AND PRODUCTION SYSTEM

Branch : Mech.

Time : Three Hours] *[Maximum Marks : 75*

[Minimum Marks : 30

Note : Attempt ***all*** the questions of ***Section – A,*** Four from ***Section – B*** and *three* questions from *Section – C.*

SECTION – A 1.5 × 10 = 15

(Objective Type Questions)

1. In CPM, the project duration can be reduced by crashing :
   (a) One or more non-critical activities
   (b) One or more critical activities
   (c) One or more dummy activities
   (d) None of these

2. The interchangeability can be obtained by :
   (a) Standardization (b) Bonus plan
   (c) Better process planning (d) Better product planning

3. Which one among the following a Therbling ?
   (a) Get (b) Step
   (c) Put (d) Position

P. T. O.

4. Queuing theory is used for :

(a) Inventory Problem
(b) Traffic congestion studies
(c) Job-shop scheduling
(d) All of the above

5. Vehicle manufacturing assembly line is an example of :

(a) Product layout
(b) Process layout
(c) Manual layout
(d) Fixed layout

6. Which of the following is a control chart by attributes ?

(a) $\overline{X}$ chart
(b) R chart
(c) P chart
(d) None of these

7. Bin cards are used for :

(a) Machine loading
(b) Stores
(c) Accounts
(d) Inventory control

8. PERT is the :

(a) Time oriented technique
(b) Event oriented technique
(c) Activity oriented technique
(d) Target oriented technique

9. Quality function is the responsibility of :

(a) Production department
(b) Quality control department
(c) Inspection department
(d) Every body working in the organization

10. Which one of the following forecasting techniques is most suitable for making long range forecasts ?

(a) Time series analysis
(b) Regression analysis
(c) Exponential smoothing
(d) Market surveys

SECTION – B

[Marks : $6 \times 4 = 24$

(Short Answer Type Questions)

1. Write the differences between PERT & CPM.

2. Write down the different phases of production, planning and control.

3. Explain various terms associated with line Balancing.

4. What do you mean by Micro-motion study ? Also write *eight* Therbling with their symbols ?

5. Solve the following LPP by graphical method, Max $Z = 6x_1 + 4x_2$

   Subject to constraint $x_1 + 2x_2 \leq 720$

   $$2x_1 + x_2 \leq 780$$

   $$x_1 \leq 320$$

6. Write the differences between control charts for variable and control charts for attributes.

SECTION – C

[Marks : $12 \times 3 = 36$

(Long Answer Type Questions)

1. Solve the following LPP :

   Min $Z = 6x_1 + 4x_2$ for

   $$3x_1 + 3x_2 \geq 40$$

   $$3x_1 + x_2 \geq 40$$

   $$2x_1 + 5x_2 \geq 44$$

2. For the following activity data draw the network. Find the critical path and floats for each activity :

Activity	1-2	1-4	2-3	3-5	3-8	4-8	5-6	5-8	6-7	7-8	7-9	8-9	9-10
Duration Days	4	36	2	15	10	2	4	9	9	9	8	20	20

3. A drilling machine bores holes with a mean diameter of 0.5230 cm and a standard deviation of 0.0032 cm. Calculate the 2-sigma and 3-sigma upper and lower control limits for means of sample of 4.

4. Write down the principles of management given by F.W. Taylor.

5. What is forecasting ? Also write benefits of forecasting ? Explain different type of forecasting techniques.