Seat No.	

T.E. (ETC) (Part - II) (Semester - VI) (Revised)
Examination, November - 2017
INDUSTRIAL MANAGEMENT
Sub. Code : 66920

Day and Date : Tuesday, 07 - 11 - 2017   Total Marks : 100

Time : 02.30 p.m. to 05.30 p.m.

Instructions:
1) All Questions are compulsory.
2) Figures to the right indicate full marks.
3) Assume suitable data, if necessary.
4) Use of non-programmable scientific calculator is allowed.

SECTION - I

Q1) Solve any two of the following :

a) State principles of organization. Distinguish formal organization and Informal organization. **[8]**

b) What is importance of Staffing? Explain the commonly used staffing procedure for any company. **[8]**

c) What is the motivation? Explain McGregor's Theory X & Theory Y. **[8]**

Q2) Solve any two of the following :

a) What is marketing strategy? Explain the importance of 4 P's in marketing of Mobile Handset. **[8]**

b) What are the steps involved in starting the Small Scale Industry (SSI).**[8]**

c) Explain importance of Inventory Control and Cost Associated with Inventory. **[8]**

P.T.O.

Q3) Write short notes on any three of the following :

    a)   Marketing and Selling Concept.   [6]

    b)   EOQ and ABC analysis.   [6]

    c)   Forms of Business Organization.   [6]

    d)   Functions of Material Management.   [6]

    e)   Management and Social Responsibility.   [6]

SECTION - II

Q4) Attempt any three from the following :

    a)   Define operations research and Explain steps involved in solving problems in operations research.   [6]

    b)   Use Graphical Method to solve the following LPP   [6]

$$\text{Minimize } Z = 4x_1 + 2x_2$$

subjected to constraints,

$$3x_1 + x_2 \geq 27,$$

$$x_1 + x_2 \geq 21$$

$$x_1 + 2x_2 \geq 30$$

$$x_1, x_2 \geq 0$$

    c)   An agriculturist has a farm with 126 acres. He produces radish, pea and potato. Whatever he raises is fully sold in the market. He gets Rs. 15 for radish per kg, Rs. 10 for pea per kg and Rs. 25 for potato per kg. The average yield is 1,500 kg of radish per acre, 1,800 kg of pea per acre and 1,200 kg of potato per acre. To produce each 100 kg of radish and pea and to produce each 80 kg of potato, a sum of Rs. 12.50 has to be used for manure. Labour required for each acre to raise the crop is 6-man-days for radish and potato each and 5-man-days for pea. A total of 500 man-days of labour at a rate of Rs. 40 per man-day are available. Formulate this problem as an LP model to maximize the agriculturist's total profit.   [6]

d) Use simplex method to solve the following : [6]

$$\text{Maximize } Z = 3x_1 + 2x_2$$

subjected to constraints,

$$2x_1 + x_2 \leq 60,$$
$$x_1 + x_2 \leq 18$$
$$3x_1 + x_2 \leq 44$$
$$x_1, x_2 \geq 0$$

Q5) Attempt any two from the following :

a) Explain the following :

i) Unbalanced assignment problem [4]

ii) Unbalanced Transportation problem [4]

b) Five tasks are to be assigned to five engineers. Cost of the assignment of a task to each engineer is given in the table below. Determine optimum assignment to minimize total cost. [8]

Engineers	Tasks				
	I	II	III	IV	V
A	60	30	75	90	100
B	35	20	30	60	75
C	40	10	55	70	85
D	50	40	80	80	75
E	55	35	70	90	85

c) A Company has to work out a minimum cost transportation schedule to distribute their product from three of its factories X, Y, and Z to its five warehouses A, B, C, D and E. The required particulars are given below. Find IBFS using [8]

i) Northwest corner method

ii) Least cost method

From	Transportation cost in Rs Per unit					Supply
	To					
	A	B	C	D	E	
X	10	15	17	19	16	90
Y	20	12	16	18	20	50
Z	9	14	21	10	18	60
Demand	30	40	50	20	60	

Q6) Attempt any two from the following :

a) Compare CPM & PERT. State its applications. [8]

b) The following table gives the activity time of a certain project together with immediate predecessor requirements. [8]

Activity	Immediate predecessor	Time in days
A	-	6
B	-	8
C	A	4
D	B	6
E	A,B	10
F	C,D	6
G	E	8
H	F,G	4

i) Draw the network

ii) Determine the expected project completed time

iii) Find critical path?

c) A project consists of seven activities. Table below gives the estimates of the optimistic, most likely and pessimistic duration in weeks of each activity. [8]

Activity	Expected Duration in Days		
i-j	Optimistic	Most likely	Pessimistic
1-2	2	2	14
1-3	2	8	14
1-4	4	4	16
2-5	2	2	2
3-5	4	10	28
4-6	4	10	16
5-6	6	12	30

i) Draw project network

ii) Compute the expected time and variance of each activity.

iii) Determine expected project duration and its variance.