GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– VI EXAMINATION – SUMMER 2020

Subject Code: 2161907   **Date:27/10/2020**

Subject Name: INDUSTRIAL ENGINEERING

Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Discuss the factors to be considered for the selection of the site for Automobile Industry.	**03**
	(b)	Explain in brief Six sigma.	**04**
	(c)	Compare different types of layout plan used for production.	**07**
Q.2	**(a)**	Define Sales forcasting. Explain its importance.	**03**
	(b)	What is P.P.C.? Give the major objectives of the same.	**04**
	(c)	Forecast the demand for the following series by exponential smoothing method. (take $\alpha = 0.3$)	**07**

Period	1	2	3	4	5	6	7	8	9	10
Actual Demand	10	12	8	11	9	10	15	14	16	15

OR

(c) Six jobs are to be processed on machine A and then on machine B. Time in hours taken by each machine is given below. Determine optimum sequence of jobs that minimize the total elapsed time to complete jobs. And compute the minimum time.   **07**

Job	A	B	C	D	E	F
Machine M1	5	3	2	10	12	6
Machine M2	3	2	5	11	10	7

Q.3	**(a)**	Define Method Study and explain technique with its various steps?	**03**
	(b)	Explain Flow Process chart with suitable example.	**04**
	(c)	What is therblig? State the importance of micro motion study. List the various therbligs with their symbols.	**07**

OR

Q.3	**(a)**	State the relationship between productivity and work study. Explain various tools for increasing productivity.	**03**
	(b)	Explain String diagram with suitable example.	**04**
	(c)	Explain in brief the normal work area and work place design.	**07**
Q.4	**(a)**	Incentives are necessary for smooth and the efficient running of the manufacturing organization. – Discuss giving suitable example	**03**
	(b)	State wage incentive plans. Explain any one in details.	**04**
	(c)	Write short note on "line of balancing".	**07**

OR

Q.4 **(a)** State the advantages of S.Q.C. Explain attribute and variable quality Characteristics. **03**

(b) Explain workman's compensation act, 1923. **04**

(c) What is entrepreneur and explain major characteristics of entrepreneur. **07**

Q.5 **(a)** Explain following terms **03**
(1) quality assurance
(2) quality and inspection
(3) T. Q. M.

(b) What is Process Capability? Discuss it in relation with Specification limits. **04**

(c) Following are the readings of diameters taken for pins manufactured on the lathe machine. Draw the X bar and R chart and also give the process trend. **07**

1	2	3	4	5	6	7	8	9	10
14.8	14.9	14.8	15.0	14.6	16.1	15.2	14.8	14.9	14.9
15.1	14.6	14.9	16.2	15.1	14.7	15.1	15.4	15.9	16.3
15.0	15.2	15.2	14.9	15.3	14.9	15.3	15.2	15.5	14.8
14.9	15.1	15.3	14.7	14.8	15.1	15.1	14.9	14.5	15.3

(Take value of A_2=0.729, D_4= 2.282. D_3= 0) for the process.

OR

Q.5 **(a)** What is industrial legislation and why it is required? **03**

(b) Explain in detail how P chart is constructed? Explain its applicability. **04**

(c) Write short note on "Operating Characteristics curve". **07**

****