C.U.SHAH UNIVERSITY
Summer Examination-2019

Subject Name: Industrial Engineering
Subject Code: 4TE04IEN1   **Branch: B.Tech (Mechanical)**
Semester: 4   **Date:24/04/2019**   **Time: 02:30 To 05:30**   **Marks: 70**
Instructions:
   (1) Use of Programmable calculator & any other electronic instrument is prohibited.
   (2) Instructions written on main answer book are strictly to be obeyed.
   (3) Draw neat diagrams and figures (if necessary) at right places.
   (4) Assume suitable data if needed.

Q-1   **Attempt the following questions:**   **(14)**

a) Which one of the following chart gives simultaneously information about the progress of work and machine loading
(a) Process chart (b) Machine load chart (c) Man-machine chart (d) Gantt chart

b) Fixed position layout is also known as
(a) analytical layout (b) static product layout (c) synthetic layout (d) none of these

c) The production cost per unit can be reduced by
(a) Producing more with increased inputs   (b) Minimizing resource waste
(c) Producing more with the same inputs   (d) Eliminating idle time

d) A systematic job improvement sequence will consist of
(a) motion study (b) time study (c) job enrichment (d) All of these

e) Routing and Scheduling are integral part of
(a) Work study (b) Job analysis (c) Quality control (d) Product planning

f) The type of organization preferred for a steel industry, is
(a) line, staff and functional organization (b) functional organization   (c) line organization   (d) line and staff organization

g) The chart which gives an estimate about the amount of materials handling between various work stations is known as
(a) operation chart (b) flow chart (c) travel chart (d) process chart

h) Which of the following is independent of sales forecast
(a) productivity   (b) inventory control
(c) production planning   (d) production control

i) Job evaluation is the method of determining the
(a)relative value of job (b) workers performance on job (c) worth of machine (d) value of overall production

j) The main objective of scientific layout is
(a) to produce better quality of product (b) to utilize maximum floor area (c) to minimize production delays (d) all of these

k) Gantt chart is used for
(a) inventory control (b) material handling (c) production schedule (d) machine repair schedules

l) Queuing theory is associated with

(a) inventory (b) waiting time (c) sales (d) production time

m) Material handling in automobile industry is done by
(a) Overhead crane (b) Trolley (c) Belt conveyor (d) All of the these

n) According to Muther, the basic principle of best layout is
(a) Principle of overall integration (b) Principle of flow
(c) Principle of flexibility (d) All of these

Attempt any four questions from Q-2 to Q-8

Q-2		**Attempt all questions**	
	a)	Classify and explain various types of plant layout with examples.	**07**
	b)	What do you mean by forecasting and explain sales forecasting techniques and its benefits.	**07**
Q-3		**Attempt all questions**	
	a)	Explain factors affecting plant location..	**07**
	b)	Define PPC and write the different components of PPC.	**07**
Q-4		**Attempt all questions**	
	a)	Explain techniques of job evolution.	**07**
	b)	Discuss the objective & concept of SEZ and also write the benefits of SEZ.	**07**
Q-5		**Attempt all questions**	
	a)	Define the following : i) Time study ii) Work Study iii) Quality Control iv) TQM v) Quality Assurance vi) Reliability vii) Quality Inspection	**07**
	b)	Explain the importance of industrial legislation and its laws and write their necessity in factory acts.	**07**

Q-6   **Attempt all questions**

a) Find the Sequence that minimizes the total time in hours required to complete the following tasks: **07**

Tasks	A	B	C	D	E	F	G
M/c I	3	8	7	4	9	8	7
M/c II	4	3	2	5	1	4	3
M/c III	6	7	5	11	5	6	12

b) Write a short note on method study and work study & discuss their objectives for industrial tasks or jobs. **07**

Q-7   **Attempt all questions**

a) Discuss operating characteristics curves for Acceptance Sampling. **07**

b) The elemental times (in minutes) for 4 cycles of an operation using a stop watch are as follow: **07**

Elements/Time	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

Calculate standard time for the operation if Elements 2 and 4 are M/c elements, and for other elements the operator is rated at 110% and allowances are 15% of normal time.

Q-8   **Attempt all questions**

a) Explain different types of control charts with examples. **07**

b) Difference between productivity and ergonomics and write the factors which influence productivity. **07**