

C.U.SHAH UNIVERSITY

Winter Examination-2019

Subject Name: Industrial Engineering

Subject Code: 4TE04IEN1

Branch: B. Tech (Mechanical)

Semester: 4

Date: 19/09/2019

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.
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Q-1

Attempt the following questions:

(14)

- a) Process layout is employed for
 - (a) batch production
 - (b) continuous type of product
 - (c) effective utilization of machines
 - (d) all of the above
- b) Which of the following is independent of sales forecast
 - (a) productivity
 - (b) inventory control
 - (c) production planning
 - (d) production control
- c) Material handling in automobile industry is done by
 - (a) Overhead crane
 - (b) Trolley
 - (c) Belt conveyor
 - (d) All of the above
- d) Fixed position layout is also known as
 - (a) Analytical layout
 - (b) Synthetic layout
 - (c) Static product layout
 - (d) None of these
- e) Military organization is known as
 - (a) line organization
 - (b) line and staff organization
 - (c) functional organization
 - (d) all of the above
- f) The value engineering technique in which experts of the same rank assemble for product development is called
 - (a) Delphi
 - (b) Brain storming
 - (c) Morphological analysis
 - (d) Direct expert comparison
- g) In which of the following layouts, the lines need to be balanced
 - (a) process layout
 - (b) product layout
 - (c) fixed position layout
 - (d) plant layout
- h) A low unit cost can be obtained by following
 - (a) product layout
 - (b) functional layout
 - (c) automatic material handling equipment
 - (d) specialization of operation
- i) Current assets include
 - (a) manufacturing plant
 - (b) manufacturing plant and equipment
 - (c) inventories
 - (d) common stock held by the firm
- j) The product layout
 - (a) Lowers overall manufacturing time
 - (b) Requires less space for placing machines
 - (c) Utilizes machine and labour better
 - (d) All of these



- k) 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
- l) 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
- m) 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
- n) In order to avoid excessive multiplication of facilities, the layout preferred is
 (a) process layout (b) product layout (c) fixed position layout (d) plant layout

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

Q-2

Attempt all questions

- a) Discuss various factors which influence layout of plant location. (07)
- b) Define PPC and also explain various components of PPC. (07)

Q-3

Attempt all questions

- a) Explain various types of plant layout with suitable examples of each layout. (07)
- b) Comparison between time study and work study. (07)

Q-4

Attempt all questions

- a) Explain provident fund scheme, 1952. (07)
- b) Explain operating characteristics curves for acceptance sampling. (07)

Q-5

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

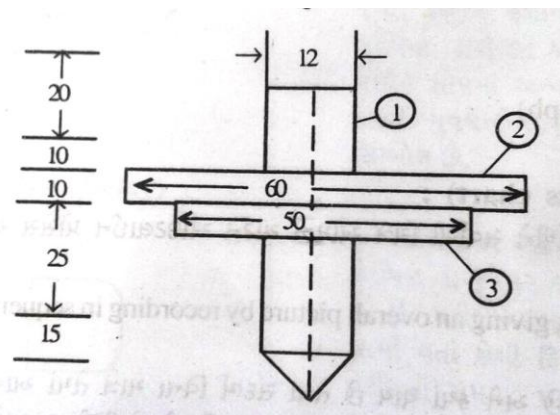
- b) Discuss concepts of entrepreneurship and write various factors affecting entrepreneurship. (07)

Q-6

Attempt all questions

- a) Explain different types of control charts with examples. (07)
- b) Prepare Operation Process Chart for given an assembly of pin & disks have 3 parts and its operation time as below:- (07)

- Part 1 – A.S. Pin (ϕ 12 mm),
 Part 2 – Wooden disk (ϕ 60 mm) &
 Part 3 - Wooden disk (ϕ 50 mm).
 Clamping – 1.50 minute
 Inspection – 1 minute
 Turning Operation – 3.20 minute
 Parting – 1 minute
 Drilling Operation – 0.4 minute



Q-7

Attempt all questions

- a) Explain method of merit rating, wage and wage incentive plans. (07)
- b) The elemental times (in minutes) for 4 cycles of an operation using a stop watch are as follow: (07)

Elements				
	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) Prepare Flow diagram for Material and Man for given below condition. (07)
- A Lathe operator wants to prepare a job using lathe. So, first of all he takes raw material from store using work order. Then he transport material from store to the lathe machine. He inspects the raw material size in order to finalize the material required to be removed. He fixed the raw material on the chuck and inspects the tightness of chuck. Then he starts the lathe machine and does the cutting operation. Again, cross-checking of the job is done. After completing all jobs, he waits for trolley to be free. Finally he transports the jobs to the assembly department.
- b) Define the following : (07)
- i) Productivity ii) Work Study iii) Quality Control iv) TQM
v) Quality Assurance vi) Reliability vii) Quality Inspection

