PVP 19

Code: 19ME4501D

III B.Tech - I Semester – Regular Examinations – JANUARY 2022

INDUSTRIAL ENGINEERING & MANAGEMENT
(MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place

PART – A

1. a) Define Industrial Engineering.
   b) What are the qualities of effective leadership?
   c) When would you perform 100% inspection instead of sampling?
   d) Explain the symbols and their meanings used in outline process chart.
   e) What is network crashing in project management?

PART – B

UNIT – I

2. a) Due to COVID -19 many software companies adopted the concept ‘work from home’. In this context explain Hertzberg's Two Factor Theory of Motivation. 8 M
   b) Explain the functions of management, (i) directing and, (ii) staffing. 4 M

OR

3. a) What are the 5 levels of Maslow hierarchy of needs? Give examples for each. 6 M
   b) Distinguish between Mc Gregor’s Theory X and Theory Y. 6 M

UNIT – II

4. a) As an Industrial Engineer which plant layout would you suggest for "mobile phone manufacturing" company and why? 8 M

   b) What are the advantages and disadvantages of decentralization? 4 M

OR

5. a) What are the various styles of leadership based on authority? Explain any one style of leadership with examples. 6 M

   b) Distinguish between mass production and batch production systems. 6 M

UNIT-III

6. a) Surface defects have been counted on 10 rectangular steel plates and the data are shown in the following table. Draw the suitable control chart for non-conformities using this data. Check if the process is under control statistically. 8 M

Sheet No.	1	2	3	4	5	6	7	8	9	10
No. of Defects	2	3	1	4	4	0	2	1	4	2

   b) Write a note on ISO 9000 series of quality standards. 4 M

OR

7. a) The following table provides the measurements of the axles of bicycle wheels in mm. Twelve samples with each sample consisting of the measurements of four axles were taken. Draw $\bar{x}$ and R charts and comment on the results. 12 M

Measurements of the Axles of Bicycle Wheels

Sl. No	Sample values in mm			
1	139	140	145	144
2	140	142	142	139
3	142	136	143	141
4	136	137	142	142
5	145	146	146	146
6	146	148	149	144
7	148	145	146	146

8	145	146	147	144
9	140	139	141	138
10	140	140	139	139
11	141	137	142	139
12	139	140	144	138

UNIT – IV

8. a) Explain the various allowances considered while estimating standard time of jobs of operators working in a manufacturing company. 6 M

   b) With an example of your choice, explain the development of an two handed process chart. 6 M

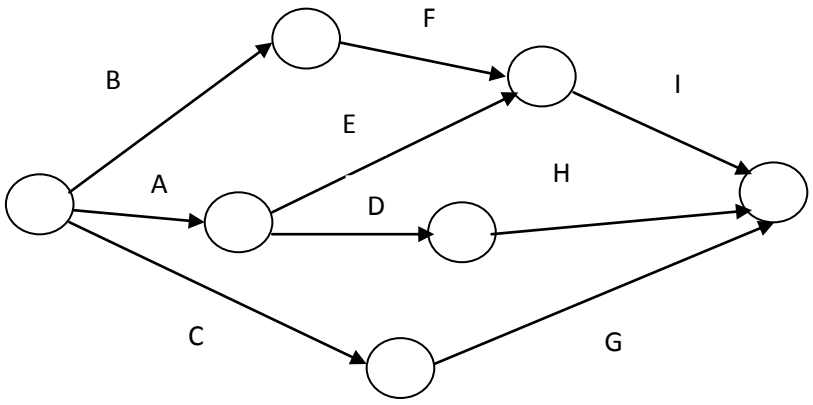
OR

9. a) A sheet metal operation is time-studied during which an operator was pace-rated as 120%. The operator took, on an average, 8 minutes for producing the funnel. If a total of 10% allowances are allowed for this operation, then find the standard time for the operation and expected standard production rate of the funnels (in units per 8 hour day). 6 M

   b) Define and draw symbols of any six 'Therbligs'. 6 M

UNIT – V

10. a) A project is represented by the network shown below and has the following data: 8 M



Task	A	B	C	D	E	F	G	H	I
Optimistic time (days)	4	18	26	16	15	6	8	7	3
Pessimistic time (days)	10	22	40	20	25	12	12	9	5
Most likely time (days)	7	20	33	18	20	9	10	8	4

Determine (i) the critical path and, (ii) project completion time.

b) Distinguish between CPM and PERT. 4 M

OR

11. a) A small assembly plant assembles, personal computers through nine interlinked stages according to the following precedence process: 8 M

Stage (from - to)	1-2	1-3	1-4	2-4	2-5	3-6	4-6	5-7	6-7	6-8	7-8	8-9
Duration (hours)	4	12	10	8	6	8	10	10	0	8	10	6

Draw project network and determine (i) the critical path and, (ii) project completion time.

b) List the common errors observed in drawing network diagrams and give example for each. 4 M