

Total No. of Questions : 8]

SEAT No. :

PD4153

[Total No. of Pages : 2

[6402]-114

S.E. (Robotic and Automation)

**INDUSTRIAL ENGINEERING AND MANAGEMENT
(2019 Pattern) (Semester - IV) (211508)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.

Q1) a) Describe the entrepreneur's role and task. [5]

b) Following data is available for ABC company; [12]

Selling Price per unit = Rs. 110

Variable cost per Unit = Rs. 70

Fixed cost = Rs. 1,00,000

Total units sold = 20,000

Calculate:

- i) PV ratio
- ii) BEP in units
- iii) BEP in sales
- iv) Total Profit
- v) Margin of Safety

OR

Q2) a) Describe the characteristics of an entrepreneurship. [5]

b) Explain the following terms related to Break Even Analysis. [12]

- i) Contribution
- ii) PV ratio
- iii) BEP in units
- iv) BEP in sales
- v) Total Profit
- vi) Margin of Safety

P.T.O.

- Q3) a)** Define Industrial Engineering. What are the functions carried out by an Industrial Engineer? Describe any four tools and techniques of Industrial Engineering. [9]
- b)** Describe Taylor Piece Wage System and Merrick Piece Wage System with suitable illustration. State the advantages and limitations of these systems. [8]

OR

- Q4) a)** Define Basic work content. Describe the factors which affects the basic work content (i.e. excess work content) [9]
- b)** Describe Halsey plan and Rowan plan of wage and incentive system with their characteristics, advantages and limitations. [8]

- Q5) a)** Describe principles of motion economy related to [10]
- i) Work place
- ii) Design of equipment and tools.
- b)** Describe SIMO chart with suitable illustration and appropriate symbols. [8]

OR

- Q6) a)** Describe Micro motion study. Describe various therbligs used in Micro motion study. [9]
- b)** Describe Man-Machine chart with appropriate symbols [9]

- Q7) a)** Describe the process to carry out work sampling study. State how the standard time is calculated using work sampling study. [10]
- b)** The following data is collected from work sampling study. [8]
- Determine

- i) Normal time
- ii) Standard time

Duration of the study (Hrs)	1500
Total number of units produced during study	9000
Total number of observations	750
Number of observations of productive work	600
Number of observations of machine controlled work	400
Average performance rating	100
Total allowances (%)	15

OR

- Q8) a)** Describe various types of allowances used in time study. [8]
- b)** Describe MTM and MOST with suitable illustration. [10]

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