

Total No. of Questions : 8]

SEAT No. :

PE4337

[Total No. of Pages : 2

[6582]-111

S.E. (Robotics & Automation)

INDUSTRIAL ENGINEERING AND MANAGEMENT

(2019 Pattern) (Semester - IV) (211508)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagram must be drawn wherever necessary.
- 4) Assume suitable data if necessary.
- 5) Use of logarithmic table, slide rule or electronic pocket calculator is allowed.

- Q1) a) Explain the factors which motivate entrepreneurship. [8]  
b) Describe the strategies for business growth. [9]

OR

- Q2) a) What are the characteristics of successful entrepreneur. [8]  
b) Describe various funding organizations which support an entrepreneurship. [9]

- Q3) a) Define Industrial Engineering. What are the applications of industrial engineering? [9]  
b) The following data is available for a company. The output is Rs. 1,00,000. Calculate Partial productivity considering the input resources and total productivity. [9]

Input Resources	Rs.
Labor	20,000
Material	40,000
Capital	25,000
Energy	5,000
Other expenses	7,500

OR

- Q4) a) Describe the following tools and techniques of Industrial Engineering. [9]  
i) Work study  
ii) Micro motion study  
iii) Value analysis  
b) Describe Taylor piece wage system and Merrick piece wage system with suitable illustration. State the advantages and limitations of these systems. [9]

P.T.O.

- Q5) a)** Describe two handed process chart for the activities carried out for assembly of nut and bolt with appropriate symbols. [9]
- b) Define micro motion study. Describe various therbligs used in micro motion study. [9]

OR

- Q6) a)** Describe flow process chart for the activities carried for the writing a letter by the typist in office with appropriate symbols. [9]
- b) Describe SIMO chart with suitable illustration and appropriate symbols. [9]

- Q7) a)** Describe various types of rating system used in time study. [8]
- b) A work sampling study was carried out giving following recorded facts: [9]

Total time observed = 6500 min

Number of working observations = 2500

Number of idle observations = 250

Performance rating during observations = 90

Number of parts produced = 400

Allowance = 10%

- i) Calculate standard time
- ii) Estimate the accuracy at 95% confidence level

OR

- Q8) a)** Describe the process to carry out work sampling study. State how the standard time is calculated using work sampling study. [8]
- b) Describe various types of allowances used in time study. [9]



Total No. of Questions : 8]

SEAT No. :

PE-4344

[Total No. of Pages : 2

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**S.E. (Robotics & Automation Engineering)**  
**MATERIALS SCIENCE AND ENGINEERING METALLURGY**  
**(2019 Pattern) (Semester - III) (211503)**

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable data, if necessary.
- 5) Use of Logarithmic Table, Slide rule or Electronic pocket calculator is allowed.

Q1) a) What is powder metallurgy? discuss advantages, disadvantages and its applications. [8]

b) Write a note on : [10]

- i) Production of sintered structural composites
- ii) Self-lubricating bearing

OR

Q2) a) What is conditioning of metal powders? Why it is done. [8]

b) Explain term : [10]

- i) Electric contact materials
- ii) Cermets

Q3) a) Draw iron-iron carbide equilibrium diagram and label the temperature composition and phase. [9]

b) Define the following : [9]

- i) Ferrite
- ii) Austenite
- iii) Cementite

OR

Q4) a) Classify C.I.? And give its application. [9]

b) Write a note on :

- i) Sensitization of stainless steel [9]
- ii) Weld decay of stainless steel

P.T.O.

**Q5) a)** Explain the method of plotting TTT diagram and what information is obtained from this diagram? [9]

b) Explain why heat treatment of steel is done? [8]

OR

**Q6) a)** Draw Continuous cooling transformation diagrams. [9]

b) Write short note on Quenching media. [8]

**Q7) a)** Write note on High temperature alloy. [8]

b) What you know about Super alloys & Ti Alloys. [9]

OR

**Q8) a)** Explain : [9]

i) Biomaterials

ii) Nano-materials

iii) Sports materials

b) Write note on copper and its alloy. [8]