

Total No. of Questions : 8]

SEAT No. :

P-9188

[Total No. of Pages : 2

[6179]-320

S.E. (Robotics & Automation)

MATERIALS SCIENCE AND ENGINEERING  
METALLURGY

(2019 Pattern) (Semester - III) (211503)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figure to the right indicates 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) What is powder metallurgy? Discuss advantages, disadvantages and its applications. [8]
- b) Explain term : [10]
- i) Electric contact materials
  - ii) Cermets

OR

- Q2) a) What is conditioning of metal powders? Why it is done? [8]
- b) Write a note on : [10]
- i) production of sintered structural comports
  - ii) Self-lubricating bearing

- 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

P.T.O.

- Q4)** a) Classify C.I.? And give its application. [9]  
b) Write a note on : [9]  
i) Sensitization of stainless steel  
ii) Weld decay of stainless steel.

- Q5)** a) Explain the method of plotting TTT diagram and what information is obtained from this diagram. [8]  
b) Explain terms : [9]  
i) Quenching  
ii) Annealing  
iii) Normalizing

OR

- Q6)** a) Explain why heat treatment of steel is done. [8]  
b) Write short note on Quenching media. [9]

- Q7)** a) Write note on High temperature alloy. [8]  
b) Write note on copper and its alloy. [9]

OR

- Q8)** a) Explain : [9]  
i) Biomaterials  
ii) Nano-materials  
iii) Sports materials  
b) What you know about Super alloys & Ti-Alloys? [8]

