

Total No. of Questions : 8]

SEAT No. :

PA-1311

[Total No. of Pages : 2

[5925]-344

S.E. (Robotics and Automation)

MATERIALS SCIENCE AND ENGINEERING METALLURGY

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

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Attempt Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Assume suitable data if necessary.
- 3) Figures to the right indicate full marks.
- 4) Draw neat figures whenever necessary.
- 5) Use of scientific calculator is allowed.
- 6) Use of cell phone is prohibited in the examination hall.

Q1) a) What is conditioning of metal powders? Why is it done? [8]

b) Explain Term: [8]

- i) Electrical Contact Materials.
- ii) Cermets.

OR

Q2) a) What is powder Metallurgy? Discuss advantage and disadvantage. [8]

b) Write note on: [8]

- i) Diamond impregnated Cutting Tools.
- ii) Cemented carbide tipped tools.

Q3) a) Define following: [10]

- i) Ferrite
- ii) Austenite
- iii) Pearlite
- iv) Cementite
- v) Bainite

b) Classify C.I.? And give its application. [8]

OR

P.T.O.

- Q4)** a) What is steel? What do you understand by eutectoid, hypereutectoid and hypoeutectoid steel? [10]
b) Explain the following with neat diagram. [8]
i) Sensitization of steel.
ii) Eutectic transformation.

- Q5)** a) What is temper embrittlement? How it is avoided? [10]
b) Explain terms: [8]
i) Quenching
ii) Normalizing

OR

- Q6)** a) Define hardenability. How it is measured? [9]
b) Write note on : [9]
i) Carburizing.
ii) Nitriding.
iii) Carbonitriding.

- Q7)** a) Write note on High temperature alloy. [9]
b) Give composition and properties of any three bearing materials. [9]

OR

- Q8)** a) Write note on copper and its alloy. [9]
b) Write note on Composite Material and Nano Material. [9]

