



Sanjay Ghodawat University, Kolhapur

2018-19

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/02

Year and Program: 2018-19

School of Technology

Department of SY B.Tech

Course Code: MET 203

Course Title: Material Science & Metallurgy

Semester -III

Day and Date: Friday  
07/06/2019

End Semester Examination  
(ESE)

Time: 3 hrs. Max Marks: 100  
2.30 to 5.30 pm.

**Instructions:**

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	Solve any Two	Mark s	Bloom's Level	CO
a)	Explain stainless steels with its applications.	05	L <sub>2</sub>	CO1
b)	Differentiate steels and cast irons w. r. t. carbon content and mechanical properties.	05	L <sub>2</sub>	CO2
OR				
b)	Explain ceramics and polymers with engineering applications.	05	L <sub>3</sub>	CO2
Q.2	Solve any one			
a)	Draw Iron-Iron Carbide equilibrium diagram indicating compositions, various phases and temperatures on it.	10	L <sub>3</sub>	CO2
b)	What do you mean by eutectoid, hypoeutectoid and hypereutectoid steels? Draw their microstructure indicating different phases	10	L <sub>3</sub>	CO3
Q.3	Solve any Two			
a)	What do you mean by heat treatment process for metals? State its purposes for steels.	06	L <sub>2</sub>	CO4
b)	Differentiate annealing and normalizing heat treatment processes.	06	L <sub>2</sub>	CO4
c)	What is hardening heat treatment process? State its industrial applications.	06	L <sub>2</sub>	CO4

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**Q.4 Solve any Two**

- |  |    |                |     |
|--|----|----------------|-----|
| a) Draw T-T-T diagram for hypoeutectoid steels and explain               | 10 | L <sub>3</sub> | CO4 |
| b) Explain tensile testing and draw stress strain diagram for mild steel | 10 | L <sub>3</sub> | CO5 |
| c) Explain principle of Magnetic particle test with neat sketches        | 10 | L <sub>3</sub> | CO5 |

**Q.5 Solve any Two**

- |  |    |                |     |
|--|----|----------------|-----|
| a) Explain impact testing with neat sketches.                                  | 12 | L <sub>3</sub> | CO5 |
| b) Write the principles of Brinell hardness test with sketch & explain.        | 12 | L <sub>3</sub> | CO5 |
| c) Explain characterization and testing of metal powders in powder metallurgy. | 12 | L <sub>2</sub> | CO6 |

**Q.6 Solve any Two**

- |  |    |                |     |
|--|----|----------------|-----|
| a) Describe various steps involves in powder metallurgy with importance of each steps. | 12 | L <sub>2</sub> | CO6 |
| b) Explain manufacture of self-lubricating bearings using powder metallurgy technique. | 12 | L <sub>3</sub> | CO6 |
| c) Explain manufacture of diamond impregnated tools using powder metallurgy technique. | 12 | L <sub>3</sub> | CO6 |

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