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G.R. No.	
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Paper code: U219-156 (BE-F&FS)

DECEMBER 2019/ENDSEM – *Backlog exam*

S. Y. B. TECH. (MECHANICAL) (SEMESTER -I)

**COURSE NAME: MATERIAL SCIENCE AND ENGINEERING
METALLURGY**

COURSE CODE: MEUA21176

(PATTERN 2017)

Time: [2 Hours]

[Max. Marks: 50]

(*) Instructions to candidates:

- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

Q.1) a) Enlist with self-explanatory diagram for ionic defect. [6]

OR

b) Determine all the type of two-dimensional defect? Show the proper diagram [6]

Q.2) a) Explain magnetic particle inspection method with a neat diagram for longitudinal inspection. [6]

OR

b) Initial stress required in FCC is more than a BCC metal than afterwards? Explain why? [6]

Q.3) a) Can we see the lines on cast component? Explain why? [6]

OR

b) Explain Hume Rothery rule for solid solution formation with proper example [6]

Q.4) a) What all critical temperature from room temperature till melting temperature in Iron Carbon Diagram. [4]

OR

b) State the difference between steel and cast iron. [4]

Q.5) a) Define Function of carbide forming elements in Tool steel and explain why they are required? [6]

b) Enlist the advantages of normalizing. [4]

c) Draw the microstructure of Pearlitic SG iron, Ferritic Gray CI. [4]

OR

- Q.6) a) Define 1. Martensite 2. Hardening 3. Ausforming [6]
b) What is the importance of carbon in hardening? [4]
c) Draw the microstructure of Gray Cast Iron, Malleable CI [4]

- Q.7) a) Define: 1. Tempering, 2. Non-Ferrous materials 3. Widmanstätten structure [6]
b) Why Annealing in hypereutectoid steel is done above A_{c1} Explain. [4]
c) What is bronze? Give it 1 composition and 1 type. [4]

OR

- Q.8) a) Define: 1. Retained Austenite 2. Medium temperature tempering 3. Accicular Bainite [6]
b) Explain the advantages of Hardening. [4]
c) What is nonferrous materials? Explain with proper example? [4]