Mar Athanasius College of Engineering, Kothamangalam

First Series Exam – August 2025

Mechanical Engineering - S_3MB

B24ME2T03- Metallurgy & Material Science

Time: 1 hr. 30 mints **Marks: 40**

PART-A (Answer all questions)

1. Write three differences between slip & twinning.

2. What is the influence of grain size on the mechanical properties of a material?

3. State and Explain Schmid's law

4. How polymorphism differ from allotropy.

(4x3=12 marks)

PART-B (Answer all questions)

6 i) Draw the planes for the following Miller Indices
(a) (110) (b) (101) (c) (111) **(6 marks)**

ii)Define atomic packing factor and Estimate the APF of FCC crystal structure **(8 marks)**

7. i) Copper has an atomic radius of 0.128 nm, an FCC crystal structure, and an atomic weight of 63.5 g/mol. Compute its theoretical density **(6 marks)**

ii) Describe different types of point defects in crystal structure **(8 marks)**

VISION

❖ Mentoring to ensure excellence

MISSION

❖ To facilitate comprehensive and integrated development of students by providing quality education

❖ To mould disciplined and socially committed engineers capable of assuming professional leadership.