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**Presidency University**

**Bengaluru**

**SCHOOL OF ENGINEERING**

**MAKE-UP EXAMINATION JULY-2024**

**Even Semester**: III

**Course Code**: MEC3012

**Course Name**: Material and Characterization Techniques

**Program & Sem**: B. Tech & V Sem

**Date**: 03-07-2024

**Time**: 1:30 PM to 4:30 PM

**Max Marks**: 100

**Weightage**: 50%

**Instructions:**

1. *Read the all questions carefully and answer accordingly.*

**Part A [Memory Recall Questions]**

**Answer any 5 Questions. Each question carries TWO marks. (5Qx 2M= 10M)**

1. How the Engineering Materials are classified ( CO.No.01) [Knowledge]

2. What is the Need of Materials Characterization? ( CO.No.01) [Knowledge]

3. List the various Characterization Techniques. ( CO.No.01) [Knowledge]

4. What do you mean by Microscope? ( CO.No.02) [Knowledge]

5. List the various Applications of the Microscope. ( CO.No.02) [Knowledge]

6. Mention 3 common crystal structures present in the periodic table. (CO.No.02) [Knowledge]

7. Write full forms of XRD, SEM and TEM. (CO. No.01)[Knowledge]

**Part B**

**Answer any 5 Questions. Each question carries TEN marks. (5Qx 10M= 50M)**

6. On what basis do you differentiate Crystalline & Non-crystalline materials

( CO.No.01) [Comprehension]

7. How do you select the material for different engineering applications?

( CO.No.01) [Comprehension]

8. How the characterization of the meal is checked by Scanning Electron Microscopy (SEM)?

( CO.No.02) [Comprehension]

9. How the characterization of the meal is checked by Transmission Electron Microscopy (TEM)?.

( CO.No.02) [Comprehension]

10. How the X-ray Diffraction technique is used to test the given material? (

CO.No.03) [Comprehension]

11. With the help of a diagram explain the Low Energy Electron Diffraction (LEED) method.

( CO.No.04) [Comprehension]

**Part C**

**Answer all the Questions. Each question carries Twenty marks. (2Qx20M=40M)**

12**.** What are the various properties of Engineering Materials? Discuss each of them in detail

(C.O.No.1) [Application]

13. Explain in detail how the specimen is prepared before testing. Also, list the applications of Characterization Techniques. (C.O.No.4) [Application]

14. Explain the working principle of X-ray diffraction. (CO.No. 3) [Application]