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H-3/2071 **Mechanical Engineering Department** 5958/MJ

Subject: Materials Technology (MME-101) **Time: 3 hrs**

Class: M.Tech (ME), 2nd semester **M.Marks: 50**

Note: Do any three questions each from Sections A & B. Section C is compulsory.

Section A (5 Marks each)

Q1. Describe in details the Brag's Law for crystal structure determination.

Q2. Discuss any five mechanical properties.

Q3. What are various creep laws? Also discuss factors affecting creep.

Q4. Explain liquid penetration and magnetic particle inspection techniques.

Q5. Discuss the construction and importance of continuous cooling transformation diagram.

Section B (5 Marks each)

Q6. Describe in detail the silicate structure in ceramics.

Q7. What do you mean by Carbon Nano Tubes (CNT)? Discuss their applications in detail.

Q8. Discuss rule of mixture and inverse rule of mixture in composites.

Q9. Explain in detail the Hand lay-up and Spray technique used for processing of polymer matrix.

Q10. Define corrosion. Describe various steps for its control.

Section C (2 Marks each)

Q11. (a)Classify engineering materials.

(b) What do you mean by ductility?

(c) What are various stages of fatigue failure?

(d) Write applications of NDT techniques.

(e) What is the importance of iron-carbon phase diagram in materials technology?

(f) Write properties of ceramic materials.

(g) Classify CNTs.

(h) Write advantages of composite materials.

(i) Define oxidation.

(j) Describe wear mechanism.