

AQ-2859

Faculty of Engineering & Technology

**M.E. Mechanical Engg. (Adv. Manu. & Mech. Sys. Desig.) Semester-II (New-CGS)
Examination**

ADVANCED MATERIAL TECHNOLOGY

Paper—2 MMD 1

Sections—A & B

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Answer **THREE** questions from Section A and **THREE** questions from Section B.
- (3) Due credit will be given to neatness and adequate dimensions.
- (4) Assume suitable data wherever necessary.
- (5) Illustrate your answers wherever necessary with the help of neat sketches.

SECTION—A

1. (a) What are the different categories of thermoplastic ? Write its characteristics. 7
(b) What would be the influence of each of the following alloying elements on the properties of tool steel :
(i) Cobalt
(ii) Chromium
(iii) Molybdenum. 6
2. (a) What is metallic glass and how it is different than traditional glass ? 7
(b) Explain strain hardening and strain aging. 6
3. (a) Write notes on the following :
(i) Superhard material
(ii) Nano materials. 7
(b) Discuss CIP and HIP in detail. 6

4. (a) What do you understand by 'Hot-hardness Test' ? Explain its method of testing in detail. 7
- (b) Define the metal glass, also state its special application and characteristics. 6
5. (a) What do you understand by Atomization ? Explain its mechanisms and steps involved. 7
- (b) What do you understand by creep ? Explain the creep test in detail and draw its curve. 7

SECTION—B

6. (a) Compare traditional ceramic and advance ceramic with respect to processing, properties and application. 7
- (b) Differentiate dispersion strengthened and particle strengthened composite. 6
7. (a) Discuss the mechanical properties, application and limitation of GRP. 7
- (b) What is carbon-carbon composite ? How it can be produce and enlist its various properties ? 6
8. (a) Explain forgability, drawability and machinability with suitable examples. 7
- (b) Discuss the following in brief :
SIC, CBN, WC. 6
9. (a) Explain in brief Plasticizer and Cross linking. 7
- (b) Why the ceramics are used as refractory materials ? Also discuss the properties exhibited by ceramic refractory material. 6
10. (a) Explain the drawback of thermosets over thermoplastic. Also explain the use of plastic in the following :
(i) Medical field
(ii) Recreation. 7
- (b) Why it is not advisable to have large volume fraction of fibre in composites ? Explain. 7