M.E. Second Semester (Mechanical Engineering (Adv. Manu. & Mech. Sys. Desig.)) (New-CGS)

13469 : Advanced Material Technology : 2 MMD 1

P. Pages : 2 | **AW - 3827**

Time : Three Hours | Max. Marks : 80

Notes : 1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answer necessary with the help of neat sketches.
5. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) What are different alloying techniques? Explain any one. **7**

b) Explain in brief: **6**

i) Magnetic alloy

ii) Magnesium alloy

iii) Super hard alloy

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) Explain in brief recovery, re-crystalization and grain growth. **7**

b) What is tool steel? How to classify tool steel. **6**

4. a) Describe the various steps in 'Powder Metallurgy' with block diagram. **7**

b) Explain in brief: **7**

i) Dispersion Strengthening

ii) Solid solution strengthening

5. a) What is dislocation? Explain the edge dislocation. **7**

b) Distinguish between slip and Twining. **6**

SECTION - B

6. a) Discuss cryogenic steel and nano material. **7**

b) What do you understand by 'Matrix' and 'Reinforcement Phase' of composite? Explain with suitable example. **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) What do you understand by machinability? Explain thermal treatment for better machinability. 7

b) Write in brief: 6

i) Formability

ii) Forgibility

iii) Drawability of material

9. a) Discuss PMC, CCC, MMC in brief. 7

b) What do you understand by advance ceramic? Discuss CBN and TIC. 7

10. a) Why it is not advisable to have large volume fraction of fibre in composites? Explain. 7

b) Explain the use of plastic in the following: 6

i) Medical field

ii) Recreation

****