3RD SEM. /AERO/AIRCRAFT MAINT. ENGG/ AUTO/DME/ MECHANICAL./ MECH(MAINT.)/ MECH(PROD.) / MECH(SAND.) / MECH(IND.INT.) /2022(W)

Th3 Engineering Material

Full Marks: 80 Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10

a. Classify the engineering material.
b. Give two examples of each of ferrous and non-ferrous materials.
c. Define crystal and ideal crystal.
d. What is an alloy?
e. Name the various heat treatment processes.
f. What is meant by thermosetting polymers?
g. Write the purpose of heat treatment process.
h. What is point defect?
i. What is elastomer?
j. What is dislocation?

2. Answer **Any Six** Questions 6 x 5

a. Write down the difference between Edge dislocation and Screw dislocation.
b. Differentiate between thermosetting and thermoplastic polymers.
c. Give a brief classification of ceramics and write down their uses.
d. State the composition and properties of Duralmin and Y-alloy.
e. Differentiate between slip and twinning.
f. Briefly explain the cooling curves for a material with a neat diagram.
g What is effect of various alloying elements such as Cr, Mn, Ni,V and Mo?

3. Explain the iron carbon equilibrium diagram with salient micro constituents of iron and steel with a neat diagram. 10

4 Describe in detail the composition, properties and uses of tin based bearing material. 10

5. Explain in brief the following heat treatment processes: 10
   (i) Annealing
   (ii) Hardening

6. Explain various mechanical properties of engineering materials. 10

7 Describe in detail the composition, properties and use of a copper base spring material. 10