

CODE NO: RR222103

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY-2008

**II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS
AEROSPACE MATERIALS
(AERONAUTICAL ENGINEERING)**

AUG/SEP 2008

TIME:3HOUR
MARK:80

ANSWER ANY FIVE QUESTIONS ALL QUESTIONS CARRY EQUAL MARKS.

MARK [16*5=80]

1. Differentiate between the following
 - (a) Climb up & climb down
 - (b) Cross slip & Jog
 - (c) Partial dislocations & mixed dislocations.
2. Explain the differences between the following
 - (a) Recoverable and permanent deformation.
 - (b) Elastic and Elastomeric deformation.
 - (c) Time dependent and Time independent deformation.
3. (a) Compare the annealing and normalizing of plain carbon steels. Explaining the differences in thermal cycles given when the composition of steel increases from Hypo to Hyper Eutectoid.
(b) Aluminium and Magnesium form 2 useful commercial alloy systems i.e. AlMg and Mg-Al alloys. Discuss the reasons for the development of these alloy systems.
4. Write short notes on the following:
 - (a) Laws of dry corrosion.
 - (b) Differential aeration corrosion
 - (c) Daniel cell
 - (d) Factors affecting resistance of film.
5. (a) How Aluminium alloys are welded? What are the difficulties that have encountered in welding heat treatable aluminium alloys.
(b) Give the composition of any two high temperature resistance Aluminium alloys. What are their applications?
6. (a) What are the elastomers? Explain.
(b) What are the various synthetic rubbers you know? Explain? Give industrial applications of these.
7. Explain the following composites.
 - (a) Metal matrix composites.
 - (b) Dispersion strengthened alloys.
8. How are the nickel based super alloy structural components manufactured? Describe hot isostatic pressing of nickel based alloy powders.