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Roll No. ....

**D202**

**B.Tech. EXAMINATION, May 2019**

(Fourth Semester)

(B. Scheme) (Main & Re-appear)

(AER)

AER204B

AIRCRAFT MATERIAL

*Time : 3 Hours]*

*[Maximum Marks : 75*

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Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

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**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

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**P.T.O.**

### **Unit I**

1. (a) What do you mean by the imperfections in crystal and their disadvantages ? **10**  
(b) What do you mean by bonding in solids ? Explain it. **5**
2. (a) What do you mean solid phase and phase diagram ? Justify your answer. **10**  
(b) Define the following :
  - (i) Stress and Strain
  - (ii) Stiffness and Ductility
  - (iii) Plasticity and Elasticity. **5**

### **Unit II**

3. Explain the concept of creep and creep failure and factor effects strength of material. Explain the creep failure with neat sketch. **15**
4. Explain the following :
  - (a) Deformation in the material
  - (b) Plasticity and viscoelasticity
  - (c) Heat treatment. **15**

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### **Unit III**

5. (a) What is the need of finishing materials and their utilisation in the Aircraft Industries. **10**  
(b) Explain the utilisation of rubber used in aircraft manufacture. **5**
6. (a) Explain the method of testing and storage in the Aircraft Industry. **10**  
(b) Explain the importance of Al alloy and Mg alloy in Aircraft Industry. **5**

### **Unit IV**

7. Explain the importance of protective finishes and the utilisation of Non-destructive testing used in the Aircraft Industries. **15**
8. Explain the following :
  - (a) Fluorescent and magnetic particles testing
  - (b) X-ray testing
  - (c) Dye Penetrant testing. **15**

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**60**