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Question Paper Code: 71335

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Sixth Semester

Aeronautical Engineering

AE 6604 — AIRCRAFT MATERIALS AND PROCESSES

(Regulations 2013)

Time: Three hours Maximum: 100 marks

Answer ALL questions.

PART A — $(10 \times 2 = 20 \text{ marks})$

1. What is meant by crystal imperfection?

- 2. What are the requirements of materials for aircraft applications?
- 3. Differentiate between linear and non linear elastic properties.
- Distinguish between ceramics plastics with composites.
- 5. State the types of corrosion.
- 6. Define quenching.
- 7. What is meant by cermets?
- 8. Mention any two applications of composite materials.
- 9. What are the applications of high temperature materials at elevated temperature of the aircraft components?
- 10. Explain the application of super alloys.

PART B — $(5 \times 16 = 80 \text{ marks})$

11. (a) Explain the structure of solid materials.

Or

(b) Describe the atomic structure of materials.

12. (a) Explain in detail about Bauchinger's effect.

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- (b) Explain the flaw detection in materials and aircraft components.
- 13. (a) Explain stress corrosion cracking.

Or

- (b) Describe the effect of alloying treatment.
- 14. (a) Explain about the production of semi fabricated forms.

Or

- (b) Explain the special requirements of shape memory alloys.
- 15. (a) Describe the characteristics of high temperature materials.

Or

(b) Explain the thermal protection system requirements for the space

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