



CBCS SCHEME

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Fourth Semester B.E. Degree Examination, Aug./Sept. 2020 Aircraft Material Science

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain various tests conducted on material to identify their mechanical properties with example. (07 Marks)
- b. Classify and explain the importance of non-destructive testing techniques with example. (06 Marks)
- c. Briefly explain the current trend in material used in aircraft structure and engine. (07 Marks)

OR

- 2 a. Explain the material selection process in manufacturing aircraft along with their criteria. (06 Marks)
- b. Elaborate all heat treatment process with examples. (07 Marks)
- c. Discuss about alloy's used in aircraft manufacturing. (07 Marks)

Module-2

- 3 a. Discuss most commonly used super alloys in aircraft with applications. (10 Marks)
- b. Compare conventional material with composites. (10 Marks)

OR

- 4 a. Discuss metal matrix composites based on :
 - (i) Aluminium
 - (ii) Magnesium
 - (iii) Titanium
 - (iv) Nickel.(10 Marks)
- b. Write a short note on:
 - (i) Carbon-Carbon composites.
 - (ii) Ceramic matrix composites.
 - (iii) Abrasive composites.(10 Marks)

Module-3

- 5 a. Classify and explain types of ceramic materials with example. (10 Marks)
- b. List out advantages of ceramic material in aircraft structure and components. (10 Marks)

OR

- 6 a. Classify and explain polymer's in aircraft industry. (10 Marks)
- b. Write a note on following aircraft materials :
 - (i) Plastics.
 - (ii) Glass.(10 Marks)

Module-4

- 7 a. Explain the criteria for wood joining process. (10 Marks)
- b. Explain types of wood used in aircraft. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain the process of seasoning of wood with example. (10 Marks)
b. Discuss the purpose of doping with commonly used dope. (10 Marks)

Module-5

- 9 a. Explain various methods used for removal of corrosion from common aircraft materials. (10 Marks)
b. Explain types of propellant's and it's desirable properties. (10 Marks)

OR

- 10 a. Write a short note on:
(i) Insulating materials used. (10 Marks)
(ii) Solid propellants. (10 Marks)
b. Explain mechanical characterization of solid propellant using uni-axial tension and ship biaxial test. (10 Marks)
