Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. Summer 2018 – 19 Examination

Semester: 3 **Date: 28/05/2019**
Subject Code: 03101204 **Time: 02:00 pm to 04:30 pm**
Subject Name: Aircraft Materials and Processes **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - Fill in the blanks (All are compulsory) **(15)**

1. The strength of wood increases very rapidly with a decrease in the _____ content.
2. A _____is a longitudinal crack in wood caused by rough handling.
3. In general, Glass fibers are _____ in nature.
4. Thermoset belongs to the polymer based on the type of _____ material.
5. Glass belongs to the classification of _____ material.
6. A composite with fiber reinforcement is called:
7. The first aircraft made of wood is:
8. What is plywood material?
9. Brake pedal brackets in automotive industry are made up of:
10. Abrasive ceramics are used in:
11. Matrix type of composite among the following is:
    (a) Discontinuous (b) Stronger (c) Harder (d) Continuous
12. Carbon content of medium carbon steel:
    (a) 0.3 – 0.6% (b) 0.9 – 1.2% (c) 1.5 – 1.8% (d) None
13. Which among the following were used extensively in gluing propellers:
    (a)Animal Glues (b) Resorcinol Phenolic Glues
    (c) Blood Albumin Glues (d)Urea Formaldehyde Resin Glues
14. Superalloys are heat-resisting alloysbased on:
    (a) Nickel (b) Nickel-Iron (c) Nickel-Cobalt (d) All the above
15. Which among the following is useful in applications that utilize its magnetic properties, corrosion resistance, wear resistance, and/or its strength at elevated temperatures
    (a) K-Monel (b) Cobalt (c) Monel (d) Calcium

Q.2 Answer the following questions. (Attempt any three) **(15)**

A) Define Malleability**,** Ductility, Elasticity, Hardness and Brittleness with examples.
B) Differentiate between Isotropy and Orthotropy, Isotropic and Anisotropic metals with examples.
C) Explain in brief the magnetic particle and ultrasonic tests.
D) Differentiate between fatigue and creep. Give one example for each

Q.3 A) What is weldability? Explain in detail diverse types of welding (Compulsory) **(07)**
B) Explain about Aluminum and its alloys (Optional) **(08)**

OR

B) Explain about Nickel and it's 3 alloys. what are the parts that are made up of Nickel in an aircraft (Optional) **(08)**

Q.4 A) What are super alloys? Explain their significance in industrial applications with proper examples (Optional) **(07)**

OR

A) What is a Composite? Explain the classification of Composites used in aircraft in detail with examples. (Optional) **(07)**
B) What are the Non-metals used in aircraft construction. Explain about several types of plywood and glues used in aircraft with an example. (Compulsory) **(08)**