

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B.Tech. Summer 2017 - 18 Examination

Semester: 3
Subject Code: 03101204
Subject Name: Aircraft Material & Processes

Date: 13/06/2018
Time: 2.00 pm to 4.30 pm
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, one word answer) (All are compulsory) (Each of one mark) (15)

1. Define Toughness.
2. Write a short note on Creep.
3. What is Heat Treatment?
4. Explain the Principle of DPT/LPT
5. Why Oxidizing Flame is Roaring in Nature?
6. Materials ability to resist indentation, Scratching or Abrasion is called
(a) Toughness (b) Creep (c) Hardness (d) Strength
7. Frenkel Defect is a
(a) Point Defect (b) Line Defect (c) Area Defect (d) Surface Defect
8. Following which is not a corrosion type
(a) Fretting (b) Inter Granular (c) HAZ (d) Crevice
9. Which of the following is not a Fabrication Method
(a) Riveting (b) Soldering (c) Forging (d) Brazing
10. Coordination Number of a BCC Structure.
(a) 6 (b) 8 (c) 10 (d) 12
11. Dye Penetrant Test is used to find out the cracks subjected to ----- of specimen.
12. -----metal is used for manufacturing of precision measurement instruments due to least co-efficient of thermal expansion.
13. In the Spot Welding Machine, Electrodes are made of ----- material.
14. Titanium alloys provide -----Tensile Strength, Toughness and Corrosion resistance.
15. Dislocation Density -----the Strength of the material.

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

- A) Calculate the APF for BCC and FCC Structures.
- B) Compare and Contrast the Destructive and Non-Destructive Testing's.
- C) What is the function of Reinforcement and Matrix in Composite Materials?
- D) What is Fabrication? Advantages and Draw backs of Riveting over Welding.

Q.3 A) With a neat sketch explain about all the phases in Fe-FeC diagram. (07)

- B) What are the properties and applications of Nickel? Write the composition, advantages and applications of Inconel, Monel, K-Monel alloys. (08)**

OR

- B) Write the classification of materials. Explain any 5 non-metals that can be used for aircraft applications. (08)**

Q.4 A) With a neat diagram explain the procedure, advantages, disadvantages and applications of TIG. (07)

OR

- A) Enlist the process for Manufacturing of Aircraft. Explain about Hydroforming Technique. (07)**
- B) Which NDT method would you suggest to inspect the TIG Welded Steel plate? Explain the principle, advantages and draw backs of the method with suitable figures. (08)**