

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE (HONS) EXAMINATION, DECEMBER 2019
Course code: 04 ME 7511
Course name: ADAVANCED MATERIALS AND PROCESSES

Max. Marks: 60

Duration: 3 Hours

Part A: 3 marks each

1. Explain the properties and applications of Shape Memory Alloys
2. Illustrate the composition and functions of Metallic Glass.
3. Write short note on Super Conducting Materials
4. Illustrate with examples, the different types of fibers used in the fabrication of composites.
5. Explain the different applications of Polymer Matrix Composites.
6. Identify and explain the need for non-conventional machining processes
7. Summarize the principles and elements of thermal metal spraying.
8. Explain the principles of micro-machining – micro EDM.

Part B: 6 marks each

9. Explain in detail the processing techniques for WC, TiC, Al₂O₃ and SiC.
OR
10. Define carbon nanotube? What are the types of carbon nanotubes? Highlight the properties of carbon nanotubes?
11. Describe the effect of physiological fluid on the properties of biomaterials. Briefly explain the biological responses of biomaterials.
OR
12. Demonstrate the composition, properties and applications of Ni and Ti aluminides.

13. Explain in detail with figures 1. Compression Molding 2. Filament Winding and
3. Pultrusion Technique

OR

14. . Compare Solid State fabrication process with Liquid State fabrication Process with the help of three examples.

15. What is meant by liquid phase sintering? How does the liquid phase form? What happens to the liquid phase after sintering is completed?

OR

16. Discuss various characteristics of ceramics of ceramic white ware products and their industrial applications.

17. Give the classification of non-conventional machining methods

OR

18. Explain and justify the importance of manufacturing automation with the help of an example.

19. Suggest and explain an additive manufacturing technique that can be used for medical applications.

OR

20. Explain with applications the salient features of abrasive floor machining and magnetic abrasive machining