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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M.TECH DEGREE EXAMINATION, NOVEMBER 2016

Mechanical Engineering
(Machine Design)

04 ME 7511 ADAVANCED MATERIALS AND PROCESSES

Max. Marks: 60

Duration: 3 Hours

Part A: 3 marks each

1. Explain the properties and applications of Smart materials
2. Justify the importance of any 2 magnetic and photo electric materials based on their properties
3. Illustrate with examples, the production techniques for fibres and foams.
4. Discuss any two processing methods for Polymer Matrix Composites.
5. Explain the steps involved in Powder Metallurgy technique.
6. Illustrate the tool life equation and explain speed, feed and depth of cut for orthogonal cutting process.
7. Explain the principles of micro-machining – micro EDM.
8. Distinguish between Physical Vapour Deposition (PVD) and Chemical Vapour Deposition (CVD).

Part B: 6 marks each

9. Explain in detail the structure, properties and applications of any three engineering polymers.

OR

10. With a neat sketch, explain mechanical milling process for synthesis of nano particles?
List advantages and disadvantages also?
11. Describe the Processing method for Si_3N_4 and CBN. Explain the applications

OR

12. How are super conducting scanners constructed? Describe with a neat sketch

13. Explain Compression Moulding Process. Describe the advantages and disadvantages

OR

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

15. Mention few examples to highlight the applications of Ceramics in medical science, interior decoration and in electronic gadgets.

OR

16. Explain in detail with figures Filament Winding and Pultrusion Technique.

17. Elaborate the process parameters, applications and limitations of laser beam machining.

OR

18. Describe any four conventional manufacturing processes with at least three applications.

19. Discuss in detail any three methods that can be employed for surface modification process of an alloy.

OR

20. Describe in detail (i) Electro-chemical grinding (ii) Honing (iii) Lapping.