

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech Degree Regular and Supplementary Examination December 2020

Course Code: ME363**Course Name: COMPOSITE MATERIALS AND MECHANICS**

Max. Marks: 100

Duration: 3 Hours

PART A*Answer any three full questions, each carries 10 marks.*

Marks

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| 1 | a) What are the roles of the constituents of composite materials? | (4) |
| | b) Classify composite materials based on reinforcement and matrix. | (6) |
| 2 | a) What is aspect ratio? Explain its importance. | (3) |
| | b) Differentiate laminar composite and sandwich structured composites. | (4) |
| | c) What are the applications of sandwich structure? | (3) |
| 3 | a) Classify carbon fibers based on precursor fiber materials. | (3) |
| | b) Explain the boron fiber fabrication procedure with a neat diagram. | (7) |
| 4 | a) What are the applications of glass fibers? | (3) |
| | b) Explain Ex-PAN carbon fiber fabrication process. | (7) |

PART B*Answer any three full questions, each carries 10 marks.*

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| 5 | a) Explain the following:
i) Spray layup method ii) Pultrusion method | (10) |
| 6 | a) What are the advantages, disadvantages and applications of resin transfer moulding process? | (5) |
| | b) Differentiate vacuum bag moulding and pressure bag moulding processes. | (5) |
| 7 | a) Write the properties and applications of any two metal matrix composites. | (3) |
| | b) "Precipitation-hardenable alloy materials are used in the manufacture of metal matrix composites" Comment with proper examples. | (3) |
| | c) Write a short note on intermetallic. | (4) |
| 8 | a) What are the different liquid state processing techniques for metal matrix Composites? Explain. | (10) |

PART C

Answer any four full questions, each carries 10 marks.

- 9 a) Mention the advantages and disadvantages of ceramic matrix composites. (3)
b) Write a short note on sol-gel technique for CMC production. (7)
- 10 a) With a schematic diagram explain slurry infiltration technique used for fabrication of ceramic matrix composites. (10)
- 11 a) Discuss the benefits of reaction bonding process of CMCs. (4)
b) Explain Chemical Vapour Infiltration method for CMC production? (6)
- 12 a) Explain water jet cutting process with a neat diagram. Also mention its any two advantages and disadvantages. (10)
- 13 a) Give a short note on mechanics of load transfer from matrix to fiber. (4)
b) State and explain the maximum- stress theory for predicting the composite failure. (6)
- 14 a) Describe the following advanced post processing methods (10)
(a) plasma coating (b) laser machining
