Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **14ME3021** | **Duration :** | **3hrs** |
| **Sub. Name :** | **COMPOSITE MATERIALS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain in detail the general characteristics of composite materials and state some of its applications? | CO1 | 8 |
| b. | List the classification of hybrid composites and commercial forms of fibres available . Also  mention its importance in the evaluation of elastic properties. | CO2 | 12 |
| (OR) | | | | |
| 2. | a. | What are advanced composites? Also give the classification of composites based on matrix and reinforcements. | CO1 | 8 |
| b. | Discuss in roles / functions served by matrix and reinforcement in composite materials. | CO2 | 12 |
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| 3. | a. | State and explain any one of the theory of failures of a Lamina and list the different types of ply used in laminates. | CO1 | 8 |
| b. | Define Rule of Mixtures in the determination of elasticity modulus and name the precursors used in the manufacturing of glass fibres and carbon fibers. | CO1 | 12 |
| (OR) | | | | |
| 4. | a. | Write short notes on the application of composite materials in the field of Space , Missile , Marine , Recreational and sports. | CO1 | 8 |
| b. | With the help of sketch / flow chart explain the stages involved in hand lay-up method for the production of polymer based composites | CO2 | 12 |
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| 5. | a. | What are bags used in Bag molding? What characteristics they should exhibits? | CO1 | 8 |
| b. | Write the applications of Polymer composite and draw a sketch and explain the Filament winding process. | CO2 | 12 |
| (OR) | | | | |
| 6. | a. | Explain the curing cycle in autoclave molding with neat sketches. | CO1 | 8 |
| b. | With illustration and giving all the details explain the squeeze casting process used to manufacture composites. | CO2 | 12 |
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| 7. | a. | With help of a flow chart explain the metallurgy techniques for the production of Al-Si composite and write its mechanical properties. | CO1 | 8 |
| b. | With help of neat sketches explain the principles and applications of the Compocasting and Chemical vapour deposition with respect to the Ceramic matrix composite. | CO2 | 12 |
| (OR) | | | | |
| 8. | a. | Enumerate specific strength of different aluminium alloy composite. | CO1 | 8 |
| b. | Give an overview of the different manufacturing processes for the production of Metal matrix composite. | CO2 | 12 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Define fatigue failures. How will a composite material to be tested for its fatigue strength and state the importance of the fatigue strength in composite materials. | CO1 | 8 |
| b. | List the various tests to be conducted to evaluate the properties of composite materials. Explain any one of such test procedure as per the ASTM in detail with help of a sketch . | CO2 | 12 |