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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent Institution of Manipal University

V SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)
END SEMESTER MAKE UP EXAMINATIONS, NOV/DEC 2017

SUBJECT: COMPOSITE MATERIALS [AAEE 4024]

REVISED CREDIT SYSTEM
(01/01/2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitable assumed.

- 1A.** Define polymer matrix composite. Explain the functions of matrix and reinforcement material. **(03)**
- 1B.** With neat sketch explain the fabrication process of boron fibers. **(04)**
- 1C.** With suitable diagram explain ex-cellulose carbon fiber fabrication process. **(03)**
- 2A.** With suitable sketch explain resin transfer moulding process. List the advantages, disadvantages and applications of the same. **(05)**
- 2B.** With suitable sketch explain injection moulding process. List the advantages, disadvantages and applications of the same. **(05)**
- 3A.** What fibre volume fraction is achieved if 3 layers of 800 g/m² glass woven roving is compression moulded to a thickness of 2 mm? **(02)**
- 3B.** Derive the expression for Rule of Mixture with suitable assumptions. **(03)**
- 3C.** Define sintering process. With suitable sketch explain the steps involved in the fabrication of MMC by sintering process. **(05)**
- 4A.** With neat sketch explain pressure die infiltration process. **(03)**
- 4B.** With suitable sketch explain chemical vapour infiltration process. List advantages and disadvantages. **(04)**
- 4C.** Define Carbon-Carbon composite. Explain the steps involved in processing of Carbon-Carbon composite. **(03)**
- 5A.** Explain the different types of failures observed in adhesive bonding. **(03)**
- 5B.** Define nanocomposite. Explain the laser ablation process used in carbon nanotube production. **(03)**
- 5C.** With neat sketch explain the water jet machining used in composite industry. List advantages and disadvantages. **(04)**