

(3 Hours)

[Total Marks: 80]

- N.B.:** (1) All questions carry equal marks.
(2) Question No. 1 is **compulsory**. Attempt any three questions from remaining.
(3) Figures to the **right** indicate full marks.
(4) **Illustrative answers** with neat sketches wherever required.

- Q1.a) What is MR fluid. Enlist application of MR fluid in Automobile Industry. 05
b) Justify the importance of Air bag along with materials. 05
c) What are characteristics of Composite materials? Explain in brief. 05
d) With the help of neat sketch explain Resin Transfer Moulding process. 05
- Q2.a) Briefly describe need to shift new materials and risk in adopting new materials. 10
b) What are the considerations in the use of Steel and Aluminum for car bodies. 10
- Q3.a) Explain car seat considerations and material used. 10
b) Write down different types of plastics and its applications in automobiles. 10
- Q4.a) Mention properties and composition of glass used in automobiles. 10
b) Justify use of Nano particles to make self-cleaning. 10
- Q5.a) Briefly describe recent developments in smart automobiles. 10
b) Explain Ashby charts for making a good selection of materials in automobiles. 10
6. Write short notes. (Any Four) 20
a) Evolution of Casting Technology
b) Materials used in Flooring
c) Fuel Injector materials
d) Material Selection criteria
e) GFRP
