

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (AE) (2011 Onwards) (Sem.-3)

AUTOMOTIVE MATERIALS

Subject Code : BTAE-305

Paper ID : [A1155]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

Q1 Answer briefly :

- a) Define Engineering materials.
- b) List the alloys of Ni.
- c) What type of products made of ceramic materials are used in automotive?
- d) What is composition of glass used in automotive?
- e) Briefly discuss about structure of elastomers.
- f) Define FRP composites.
- g) List some reinforcement material for CMC.
- h) Define Normalizing.
- i) What are different surface hardening techniques?
- j) Name some special alloys used for heavy duty vehicles.

SECTION-B

- Q2 Explain the merits and demerits of carbon matrix.
- Q3 What are different types of Cu alloys? Illustrate their properties.
- Q4 Step by step explain the process of annealing.
- Q5 Brief about phosphating and electroplating surface hardening techniques.
- Q6 What is the need of composites and how properties can be enhanced by it?

SECTION-C

- Q7 What are the criteria of selecting materials for automotive components like cylinder block, crank case and gear wheel?
- Q8 What are the properties, advantages and limitations of engineering ceramic matrix?
- Q9 Describe following :
- i) Thermosetting resins
 - ii) Induction hardening.