

Roll No. 

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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (AE) (2012 to 2017) (Sem.-3)

**AUTOMOTIVE MATERIALS**

Subject Code : BTAE-305

M.Code : 54113

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. Attempt all parts.**

- a. How are materials classified?
- b. What is effect of alloying vanadium to carbon-steel?
- c. What are the characteristics of glass?
- d. What are the applications of plastics in automobile industry?
- e. What is recrystallization?
- f. What are the advantages of isothermal annealing process over full annealing?
- g. What do you meant by cryogenic wear?
- h. Name the materials used for manufacturing clutch plates.
- i. Why is electroplating?
- j. What are the advantages of carbon matrix?

### SECTION-B

- Q2. Based upon the properties & their application, differentiate between white cast iron and grey cast iron.
- Q3. What do you mean by vulcanization of rubber? Explain with diagram.
- Q4. Describe electroplating process with neat sketches.
- Q5. Explain the criteria to be taken care of while selecting the material for cylinder block and cylinder head.
- Q6. Write a short note on metal matrix composite.

### SECTION-C

- Q7. Taking gear as an example, explain the need of surface hardening of steel. What is the major difference in surface hardening given to low carbon steel and medium carbon steel?
- Q8. State and explain the applications of ceramics in automobiles.
- Q9. Write short notes on :
- a) Tempering
  - b) Alloys of Cu

**NOTE: Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**