

Total No. of Questions : 12]

SEAT No. :

P2237

[Total No. of Pages : 2

[5254]-568

B.E. (Automobile) (Semester - I)
AUTOMOTIVE MATERIALS (Elective - II)
(2012 Pattern)

Time : 2.30 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Neat diagrams must be drawn wherever necessary.*
- 2) *Your are advised to attempt not more than 6 questions.*
- 3) *Assume suitable data, if necessary.*

Q1) a) Explain strength - density chart with neat sketch? [3]

b) Explain specific stiffness and specific strength chart with neat sketch?[3]

OR

Q2) a) Explain the material limit and shape factor? [3]

b) What is the criteria of selecting material for automotive components?[3]

Q3) a) Write a short note on Nano-materials? [3]

b) Explain the MEMS material? [3]

OR

Q4) a) What are the application of super-conductor material for automotive components? [3]

b) Explain the P & N type semiconductor material? [3]

Q5) a) Give four areas of application of ceramics in industries. Give specific name of ceramic being used and appropriate property which makes it suitable? [4]

b) Classify the processing of plastics & explain any one with neat sketch?[4]

OR

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- Q6)** a) What are the application of composite material and polymer in industry? [4]
b) Write a short note on "Metal Matrix composite"? [4]

- Q7)** a) Write down the different types of mechanical surface treatment and explain any one in details? [8]
b) Difference between case hardening and hard facing? [8]

OR

- Q8)** a) Explain the ceramic and organic coating? [8]
b) Explain diffusion coating and diamond coating? [8]

- Q9)** a) Write a short note on nano-crystalline material? [8]
b) Write a short note on trip steel and merging steel? [8]

OR

- Q10)**a) Explain the high strength low alloy steel? [8]
b) Explain shape memory alloy and smart material? [8]

- Q11)**a) Write the application of non-metallic material polymer for automotive purpose? [9]
b) Which steel would you select for following automotive component and justify them. [9]
i) Cam shaft
ii) Connecting rod
iii) Piston

OR

- Q12)**a) What is the criteria of selecting materials for automotive component?[9]
b) Write the application of non-metallic material composite for automotive purpose? [9]

