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ANNA UNIVERSITY :: CHENNAI



(UNIVERSITY DEPARTMENTS)

B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2013

B.E. MATERIAL SCIENCE AND ENGINEERING
VIII SEMESTER

ML9023 – AUTOMOTIVE MATERIALS
(REGULATIONS 2008)

Time: 3hours

Answer All Questions

Max Mark: 100

Part –A (10 X 2 = 20 Mark)

1. What do you understand by GADSL?
2. Short note on Physical and Chemical Properties of material
3. What is HSLA Steel?
4. What kind of materials is used for Rocker arm and tappet?
5. What do you mean by ELV Regulation?
6. Engine Pistons are sometimes made with Aluminium alloy with SiC particles. Why?
7. What is mean by thermal barrier coating?
8. What is galvanized steel?
9. Define Modulus of Elasticity
10. Name any four new materials

Part – B (5 X 16 = 80 Mark)

11. Explain the material selection criteria for

- | | |
|----------------------|-----|
| (i) Piston | (4) |
| (ii) Cam shaft | (4) |
| (iii) Cylinder head. | (4) |
| (iv) Connecting rod. | (4) |

12.a. How modern automobiles are equipped to meet the challenges of environmental requirements?

OR

b. Briefly explain about i) New materials and its process (8)

ii) Recycling requirements (8)

13. a. Explain the different corrosion prevention coatings given for automotive engine component?

OR

b. Define the thermal spray coatings and its use for automotive components.

14. a. Discuss the fundamental structure-Property relationship exist for low temperature strength and high temperature strength?

OR

b) Explain the material selection criteria for

(i) Cylinder block (4)

(ii) Piston ring. (4)

(iii) Piston pin (4)

(iv) Rocker arm (4)

15.a. Explain in detail

i) High temperature steels

ii) Super alloys

OR

b. What are the prime criteria for selecting material for good manufacturability?