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**B.E.(FULL-TIME) DEGREE END SEMESTER EXAMINATIONS, APRIL/MAY 2011
MATERIALS SCIENCE AND ENGINEERING**

**SIXTH SEMESTER
(REGULATIONS 2004)**

10

ML 503 AUTOMOTIVE MATERIALS

Time : 3 Hours

Answer ALL Questions

Max. Marks : 100

PART - A (10 X 2 = 20 Marks)

1. List any 2 examples of cost oriented materials for chasis.
2. What are the safety aspects to be considered while selecting material for crash bar of an automobile?
3. Mention the materials which are used in pipelines for transit of petroleum.
4. What are the anticorrosive coatings meant for marine engines.
5. What are the properties to be considered for low temperature applications?
6. What do you understand by hot hardness?
7. Why aluminium and magnesium alloys are the preferable for Engine components?
8. What are the material properties to be considered while choosing material for rocker arm?
9. Why there is growing importance for recyclable materials in automobiles.
10. What do you understand by smart materials?

PART - B (5 X 16 = 80 Marks)

11. Write a brief note on the materials selection criteria based on
 - i) Electronic properties (8)
 - ii) Manufacturing process (8)
12. a) Elaborate the materials selection for chemical industries.
(OR)
b) In recent past there is a more emphasis on wear characteristics of automotive components-Why? Discuss the materials selection and coatings for wear resistance.
13. a) Write a brief note on
 - i) HSLA (8)
 - ii) Super alloys. (8)
(OR)
b) Discuss the material properties to be considered for high temperature applications.

14. Describe the materials and properties of
a) Reciprocating internal combustion engines.

(OR)

b) Chasis of Heavy vehicles.

15. a) Discuss briefly the future trends in body construction and materials.

(OR)

b) Elaborate the recent development of natural hybrids with exceptional combination of light, stiffness and damping properties.