

B.E. (FULL TIME) DEGREE END SEMESTER EXAMINATIONS - APRIL / MAY 2011**MATERIALS SCIENCE AND ENGINEERING - VII SEMESTER - REGULATION 2004****ML 509 – FUELS, FURNACES AND REFRACTORIES**

Time : 3 Hours

Max. Marks : 100

ANSWER ALL QUESTIONS**PART – A (10 X 2 = 20 Marks)**

1. What are the different modes of heat transfer?
2. State Peltier effect.
3. What are the different types of coal?
4. State two advantages for geothermal heating.
5. What is the principle of induction heating?
6. State two advantages of PID temperature control.
7. State two important properties of refractory material.
8. What are the types of refractories used in petroleum refinery?
9. State green house effect.
10. Define thermal discharge index.

PART – B (5 X 16 = 80 Marks)

11 Explain in detail conduction heat transfer and convection heat transfer.

12.a) Explain the different theories of petroleum crude formation.

(OR)

b) Write short notes on nuclear fuels and solar energy.

13.a) Explain in detail the working of resistance heating and induction heating furnaces.

(OR)

b) Write short notes on multi zone furnace and batch furnace.

14.a) Discuss in detail the refractories used in blast furnace, L.D. converter, open hearth furnace and aluminum smelter.

(OR)

b) i) Discuss in detail the refractories used in electric arc furnace and copper smelter. (8)

ii) Explain the refractories used in steam boiler and cement kiln. (8)

15.a) Write short notes on energy and environment.

(OR)

b) Discuss in detail emissions control.

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