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B.E./B.Tech. (FULL TIME) DEGREE END SEMESTER EXAMINATIONS - NOVEMBER / DECEMBER 2012

MATERIALS SCIENCE AND ENGINEERING BRANCH

23

VII SEMESTER - REGULATION 2008

ML 9029 – 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. Name the different types of coal.
4. Give two advantages of solar energy.
5. Give two differences between resistance heating and induction heating.
6. What is a PID temperature control and give its characteristic feature?
7. How are refractories classified ?
8. List the steps involved in the manufacture of refractory.
9. What is green house effect?
10. Define collection efficiency of particulate matter in flue gas.

PART – B (5 x 16 = 80 Marks)

11. Discuss in detail about conduction heat transfer and radiation heat transfer.
- 12.a) i) Briefly explain about three gaseous fuels. (9)
ii) Explain about the modern theory of petroleum crude formation. (7)
(OR)
b) Discuss in detail about nuclear fuels and geothermal heating.
- 13.a) Discuss in detail resistance heating and induction heating.
(OR)
b) Explain in detail about batch furnaces and tunnel furnaces.
- 14.a) i) List out the refractories used in L.D. converter and open hearth furnace. (10)
ii) Write short notes on fireclay refractory and magnesite refractory. (6)
(OR)
b) List out the refractories used in aluminium making, steam boiler, cement kiln and petroleum refinery.
- 15.a) Discuss in detail the issues involved in energy and environment.
(OR)
b) Explain in detail about recycling of thermal energy and emissions control.