USN | | | | | | | | | | |

10ME53

Fifth Semester B.E. Degree Examination, June/July 2013
Energy Engineering

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. What the advantages are of stokes firing? With the help of a neat diagram, explain the working of traveling Grate stokes. **(10 Marks)**

b. Sketch and explain the following pulverized fuel handling systems: i) Unit system and ii) Central or Bin system. **(10 Marks)**

2 a. Explain the Benson boiler with a neat sketch. What are its advantages? **(10 Marks)**

b. A 30 m high Chimney is used to discharge hot gases at 297°C to the atmosphere which is at 27°C. Find mass of air actually used per kg of fuel. It the draught produced in 15 mm of watts. If the coal burnt in the combustion chamber contains 80% carbon, 6% moisture and remaining ash, determine the percentage of excess air supplied. **(10 Marks)**

3 a. Draw a general layout of diesel power plant and explain all the system employed in it. **(10 Marks)**

b. Explain the important functions of lubrication system. **(04 Marks)**

c. State the application of diesel engines in power field. **(06 Marks)**

4 a. What are hydrographs? With the help of a graph, explain a unit hydrograph. Mention the limitations for its usage. **(10 Marks)**

b. With the help of a neat diagram, explain pumped storage hydro-electric power plant. What are their advantages? **(10 Marks)**

PART – B

5 a. Draw a schematic sketch of a gas cooled reactor, briefly explain its principle of working. Lists its merits and demerits. **(10 Marks)**

b. A nuclear reactor consumes 10 kg of U^{235} per day. Calculate its power output if the average energy released per U-235 fission is 200 MeV. Take Avagadro's constant = 6.02×10^{26}. **(06 Marks)**

c. Write short notes on disposal of radio active wastes. **(04 Marks)**

6 a. What is pyranometer? With a neat sketch, explain its working principle. **(08 Marks)**

b. Write short notes on the following:
i) Solar pond ii) Application of wind energy iii) Vertical type wind mill. **(12 Marks)**

7 a. Explain single basin and double basin arrangement of tidal power plants. **(08 Marks)**

b. With sketch describe the closed cycle OTEC system. Mention its advantages. **(08 Marks)**

c. What are the advantages and disadvantages of geothermal energy? **(04 Marks)**

8 a. With a neat sketch, explain the construction and working of KVIC digestor. **(08 Marks)**

b. Write a short notes on the following:
i) Photosynthesis ii) Anaerobic digestion iii) Biomass gasifier. **(12 Marks)**

* * * * *