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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Eighth Semester, B.E. - Mechanical Engineering

Semester End Examination; June/July - 2015

Power Plant Engineering

Time: 3 hrs

Max. Marks: 100

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

PART - A

1. a. With a neat sketch explain harnessing of Tidal energy. 6
- b. Explain thermoelectric power generator with a neat sketch. 6
- c. The peak load on a power station is 40 Mw. The loads having maximum demands of 18 MW, 12 MW, 8 MW and 9 MW are connected to the power station. The capacity of the power station is 50 MW, annual load factor is 62%. Find;
 - i) Average load on the power station 8
 - ii) Energy supplied per year
 - iii) Demand Factor
 - iv) Diversity Factor.
- 2 a. Sketch and explain general arrangement of hydroelectric power plant. 10
- b. The average monthly discharge for 12 months at a site of river is given below

Month	Jan	Feb	March	April	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Discharge m ³ /s	100	250	350	600	700	800	1000	1200	900	600	400	200

10
- Draw: i) Hydrograph ii) Flow duration curve.
- 3 a. With the help of neat diagram explain the working of spreader stoker and List the Advantages. 10
- b. Explain the BIN system of handling pulverized coal with a neat sketch and state the limitations. 10
- 4 a. With a neat sketch explain the working of Velox Boiler 10
- b. Sketch and explain Induced draught. 6
- c. A chimney is 28 m high and the temperature of hot gases inside the chimney is 320° C. The temperature of outside air is 23°C and furnace is supplied with 15 kg of air per kg of coal burnt. Calculate; 4
 - i) Draught in mm of water
 - ii) Draught head in meters of hot gasses.

PART – B

- 5 a. Describe the working of Dry cooling tower with suitable sketch. 6
- b. What is re-heater? Sketch and explain Gas reheating. 5
- c. With a neat sketch explain pneumatic Ash handling system. 9
- 6 a. Explain with neat sketch cooling system in diesel power plant. 10
- b. With necessary sketches explain Direct open cycle and Indirect open cycle gas turbines. 10
- 7 a. Write short notes on Nuclear fission and Nuclear fusion reactions. 10
- b. With a neat sketch explain the components of a nuclear reactor. 10
- 8 a. With a neat sketch explain Pressurized Water Reactor (PWR) and list the advantages. 12
- b. Describe briefly the method of nuclear waste disposal. 8

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