

# CRASH COURSE

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10ME53

## Fifth Semester B.E. Degree Examination, May 2017 Energy Engineering

Time: 3 hrs.

Max. Marks:100

- Note: 1. Answer any FIVE full questions, selecting atleast TWO questions from each part.**  
**2. Assume missing data, if any suitably.**

### PART – A

- 1 a. With neat sketches, explain over feed and under feed principle of coal burning. (06 Marks)  
b. List the advantages and disadvantages of pulverized coal or pulverized fuel. (08 Marks)  
c. Explain the working of screw conveyor. Mention its merits and demerits (06 Marks)
- 2 a. Explain the working of Benson boiler, with a neat sketch. (08 Marks)  
b. Give comparison between Forced draught and induced draught. (06 Marks)  
c. Calculate the mass of flue gases flowing per second through the chimney, when the draught produced is equal to 1.9cms of water. Temperature of flue gases is 290<sup>0</sup>C and that of ambient air is 20<sup>0</sup>C. Flue gases formed per kg of coal/fuel burnt are 23kg. Neglect losses and take the diameter of Chimney as 1.8mts. (06 Marks)
- 3 a. Draw the layout of a diesel engine power plant. Explain briefly. (08 Marks)  
b. State the applications of diesel engines in power field. Enlist the merits and demerits of diesel engine power plant. (12 Marks)
- 4 a. Explain the following terms related to hydro electric power plant :  
i) Run – off ii) Hydrograph ii) Flow duration curve iv) Mass curve. (08 Marks)  
b. The run – off data of 2 rivers for 12 months is tabulated below. Run off is given in million of m<sup>3</sup>/month.

Month	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
River-A	40	30	20	15	10	80	140	120	100	60	50	40
River - B	50	50	40	40	40	90	100	100	80	70	60	70

Using the above data, find

- i) Ratio of run – off of two rivers, if run off is constant for 40% time of the year.
- ii) If constant run-off is 80% time of total year, then which river site is more preferable for run – off plant and why?
- iii) Which site is more preferable for storage type plant and why?
- iv) At what percentage of time, run off rate of both rivers is same? (12 Marks)

### PART – B

- 5 a. With a neat sketch, explain pressurized water reactor (PWR), highlighting its merits and demerits. (10 Marks)  
b. Explain i) Radiation Hazards ii) Radio active waste disposal. (10 Marks)
- 6 a. With the help of a neat sketch. explain the construction and working principle of solar pond. (08 Marks)  
b. Explain the principle PV conversion. (06 Marks)

- c. Discuss the problems associated with wind power. **(06 Marks)**
  
- 7**
  - a. Explain single basin and double basin arrangement of tidal power plant. **(08 Marks)**
  - b. Explain the working principle of OTEC closed cycle system. **(06 Marks)**
  - c. Explain the working of liquid dominated binary cycle. **(06 Marks)**
  
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  - a. Explain the factors affecting the Bio – gas generation. **(10 Marks)**
  - b. With a neat sketch, explain the construction and working of KVIC digester. **(10 Marks)**

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