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10ME53

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Energy Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Explain with a neat sketch, the working of Spreader Stroker. Discuss the advantages and disadvantages. (08 Marks)
b. Explain with a neat sketch, hydraulic ash handling system. (06 Marks)
c. Explain with a neat sketch, the working of cyclone burner. (06 Marks)
- 2 a. Explain with a neat sketch, working of Rolex boiler. (08 Marks)
b. Define draught and explain the balanced draught system, with neat sketch. (08 Marks)
c. What is Super heater and Economiser? (04 Marks)
- 3 a. List the essential components of diesel power plant and explain them briefly. (07 Marks)
b. Explain with the help of a neat sketch, the working of a thermostatically controlled cooling system. (07 Marks)
c. Explain briefly the following lubrication systems :
i) Wet sump lubrication system ii) Dry sump lubrication system. (06 Marks)
- 4 a. Explain with a neat sketch the essential elements of hydro – electric power plant. (10 Marks)
b. At a particular site of a river the mean monthly discharge for 12 months is tabulated below :

Month	Discharge (Millions of m ³ per month)	Month	Discharge (Millions of m ³ per month)
April	250	Oct	1000
May	100	Nov	750
June	750	Dec	750
July	1250	Jan	500
Aug	1500	Feb	400
Sept	1200	Mar	300

- i) Draw hydrograph for the given discharges and find the average monthly flow.
- ii) Draw the flow duration curve.
- iii) The power available at mean flow of water if available head is 90 meters at the site and overall efficiency of generation is 82 percent. Take 30 days in a month. (10 Marks)

PART - B

- 5 a. Explain with a neat sketch the working of Fast breeder reactor. State its advantages and disadvantages. (10 Marks)
b. Explain briefly about the functions of a moderator. (04 Marks)
c. Write short notes on radiation hazards and disposal of radioactive wastes. (06 Marks)
- 6 a. What are the applications of the solar pond? Explain with the help of a neat sketches solar pond electric power plant. (08 Marks)
b. What is the principle of photovoltaic power generation? Explain with a neat sketch, the working of photovoltaic cell. (06 Marks)
c. Explain with a neat sketch, horizontal axis wind mill. (06 Marks)



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- 7 a. Explain the principle of OTEC. Explain with a neat sketch, Rankine cycle OTEC plant. (08 Marks)
b. With neat sketch, explain the working of Tidal Power Plant. (06 Marks)
c. Explain with a neat sketch, the working of “Hot Dry Rock” geothermal plant. (06 Marks)
- 8 a. Explain with the help of a neat sketch the working principle of KVIC biogas plant. (10 Marks)
b. Write short notes on Photosynthesis and Anaerobic fermentation. (06 Marks)
c. Differentiate Biomass and Biogas. (04 Marks)
