

(3 Hours)

[Total Marks: 80]

N.B.

1. Question No.1 is Compulsory.
2. Answer any three out of remaining five questions
3. Assume any suitable data wherever required but justified the same
4. Illustrate answer with sketches wherever required

Q 1

Attempt any **four**

- a) Illustrate the significance of load factor and diversity factor (05)
- b) Explain the function of Moderator and reflector in Nuclear Power plant (05)
- c) Illustrate the function of surge tank in hydro power station (05)
- d) Thermal power plant has more standby losses compared to other plants justify the statement? (05)
- e) Draw and explain I-V characteristics of solar cell (05)

Q 2 a)

Conventionally India has abundant coal resources. Explain one method which has less impact on environment and still can be used for power production using coal. (10)

b) The Runoff data of a river at a particular site is tabulated below (10)

Month	Mean Discharge per month (millions of cum)	Month	Mean Discharge per month (millions of cum)
January	40	July	75
February	25	August	100
March	20	September	110
April	10	October	60
May	0	November	50
June	50	December	40

i) Draw the hydrograph and find mean monthly flow

ii) Draw flow duration curve

Find the power in MW available at mean flow if the head available is 80 m and overall efficiency of generation is 85%.

Q 3 a) A generating station has a maximum demand of 80 MW, a load factor of 65%, Plant capacity factor of 40% and plant use factor of 85%. (10)

Find a) daily energy produced b) Reserve capacity of the plant c) Maximum energy that could be produced daily if the plant was running all the time and d) No of hours for which plant was under operation

b) List advantages and disadvantages of Gas turbine power plant over diesel plant and steam power plant. (10)

Q 4 a) Explain the pressurized water reactor with their advantages and disadvantages (10)

b) Draw and Explain layout of steam power plant (10)

TURN OVER

- Q 5 a) Illustrate ash handling plant in a thermal power plant (10)  
b) Illustrate Pumped storage plant with neat sketch (05)  
c) Differentiate between nuclear fission and fusion (05)
- Q 6 Write short note on (20)  
i) Tidal Power Plant  
ii) Downdraft gasifier  
iii) Basic operation of fuel cell  
iv) Vertical axis wind turbine