

Total No. of Questions : 8]

SEAT No. :

PA-1203

[Total No. of Pages : 2

[5925]-225

S.E. (Electrical Engineering)
POWER GENERATION TECHNOLOGY
(2019 Pattern) (Semester - III) (203141)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Solve Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.
- 2) Figures to the right indicate full marks.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Assume suitable additional data, if necessary.
- 5) Use of non-programmable calculator is allowed.

Q1) a) Explain the function of the following component in HPP : [6]

- i) Dam
- ii) Penstock.

b) Describe the advantages of hydroelectric power plant. [4]

c) The average rate of inflow during 12 months for a river are as under [8]

| Month | Discharge in m ³ /s | Month | Discharge in m ³ /s |
|----------|--------------------------------|-----------|--------------------------------|
| January | 200 | July | 1600 |
| February | 400 | August | 1200 |
| March | 600 | September | 2000 |
| April | 2400 | October | 1200 |
| May | 1200 | November | 800 |
| June | 1800 | December | 400 |

Draw the hydrograph. Determine the average inflow and the power that can be developed at an effective head of 90M. Assume overall generation efficiency to be 80%

OR

Q2) a) Differentiate between Kaplan and Pelton wheel turbine. [4]

b) Classify hydro electric power plant based on i) head ii) load [6]

c) Describe the types of wind turbine electrical generators. [8]

P.T.O.

- Q3)** a) Describe the historical development of wind turbine on Indian level. [3]
b) Define cut in, cut out and rated speed as applied in wind energy system with suitable diagram. [6]
c) Explain how the wind pattern affects power generation in wind energy systems. [8]

OR

- Q4)** a) Write in brief advantages and disadvantages of wind energy. [3]
b) Differentiate between horizontal axis and vertical axis wind turbine. [6]
c) Explain grid connected wind energy conversion system with the help of neat diagram. [8]

- Q5)** a) What is the need of solar hybrid system? [4]
b) Discuss the working of a parabola collector with neat sketch. [6]
c) With the help of diagram explain the concept of solar thermal power plant. [8]

OR

- Q6)** a) Explain impact of temperature and insolation on I-V curves of PV cells. [4]
b) Explain flat type solar collector and its application. [6]
c) Explain the working of PV cell and Simplest Equivalent Circuit for a Photovoltaic Cell. [8]

- Q7)** a) Write a short note on Ocean thermal energy conversion. [4]
b) Explain the process of municipal solid waste to energy conversion. [6]
c) Describe the following systems in renewable energy system. [7]
i) Stand alone
ii) Hybrid stand alone

OR

- Q8)** a) Write a short note on Geothermal energy. [4]
b) Explain grid connected renewable systems and their requirements. [6]
c) Explain the process Biomass energy conversion. [7]

