313333

24225

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

(7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) Give the classification of energy sources with examples.

b) Define –

i) Plant capacity factor

ii) Diversity factor

c) State the standard voltage levels used in India for –

i) Primary Transmission

ii) Secondary Transmission

d) State the need of Transposition of conductor.

e) State the methods of Wireless Electric powder transmission.

P.T.O.

Marks

f) State the application of following insulators –

i) Suspension type

ii) Strain Insulators.

g) Draw the symbol –

i) Relay

ii) Oil circuit breaker.

2. Attempt any THREE of the following: **12**

a) State the factors to be considered for site selection of Hydro Power Plant.

b) Draw and explain: Load curve.

c) Explain the effect of load power factor on voltage regulation of transmission line with vector diagram.

d) Draw and explain Bipolar HVDC transmission method.

3. Attempt any THREE of the following: **12**

a) State the functions of –

i) Super Heater

ii) Economiser

iii) Air pre-heater

iv) Steam turbine.

b) The peak load on a power plant is 50 mw. The loads having maximum demands of 30 mw, 10 mw and 17 mw are connected to the power station. The annual load factor is 50%. Calculate –

i) Average load on the power station

ii) Demand factor

iii) Diversity factor

iv) Energy supplied per year.

c) Draw the circuit and vector diagram of 'Nominal Pi' method of medium transmission line.

d) Draw the single line diagram (layout) of 33/11 kv substation.

Marks

4. Attempt any THREE of the following: **12**

a) Compare Thermal Power Plant and Hydro Power Plant.

b) State the advantages of combined operation of power station.

c) Compare EHVAC and HVDC transmission.

d) Explain water hammer effect and cavitational effect in Hydro Power Plant.

e) Give the classification of distribution substation in detail with its applications.

5. Attempt any TWO of the following: **12**

a) Draw and explain the construction of underground cables.

b) A lph AC distributor AB 300 m long is fed from end A and is loaded as under –

i) 100A at 0.707 pf lagging 200 m from point A.

ii) 200A at 0.8 pf lagging 300 m from point A.

The load resistance and reactance of the distributor is 0.3Ω and 0.15Ω per kilometer. Calculate total voltage drop in the distributor. The load power factor refer to the voltage at the far end.

c) Explain corona effect in overhead transmission and also state its advantages and disadvantages.

6. Attempt any TWO of the following: **12**

a) Draw and explain fire tube and water tube boilers.

b) A 1ph 11 kv with a length of 15 km is transmit 500 KVA. The inductive reactance of line is 0.5Ω/km and resistance is 0.3Ω/km. Calculate the efficiency and regulation of the line for 0.8 lagging power factor. Draw the vector diagram.

c) i) Explain Inter Connected distribution scheme.

ii) State the different types of line support with their application.