313333

12425

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

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

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

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

(4) Figures to the right indicate full marks.

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

(6) 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) Name any two hydropower stations in Maharashtra with their installed capacity.

b) Define the terms :-

i) Cold reserve

ii) Hot reserve capacity

c) State the standard voltages in India for the following :-

i) Generation voltage

ii) Primary transmission voltage.

d) List any four transmission line supports.

e) State any two routes of HVDC transmission line in India.

f) State the meaning of ACSR term used in transmission and distribution system.

g) Write the function of –

i) Isolator

ii) Current Transformer in distribution substation.

P.T.O.

Marks

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

a) Draw a typical layout of coal fired Thermal power plant and lable the parts :

i) Boiler

ii) Turbine

iii) Economiser

iv) Condenser

b) Define the terms :-

i) Load curve

ii) Load factor

iii) Connected load

iv) Diversity factor

c) A single phase 11 KV overhead line of 20 Km length delivers 1000 kW power at 0.8 p.f. lagging. The resistance and reactance of line are 0.25 ohm per km and 0.28 ohm per km respectively.

Determine :-

i) Sending end voltage

ii) Efficiency of line

d) Draw layout diagram of monopolar and bipolar HVDC transmission line.

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

a) State any four factors to be considered in selection of site for thermal power plant

b) A generating station has following duty load cycle :-

Time (Hrs)	0–6	6–10	10–12	12–16	16–20	20–24
Load (MW)	40	50	60	50	70	40

Draw the Load curve and find :-

i) Maximum Demand

ii) Average Load

iii) Units generated per day

iv) Load factor

Marks

c) State the effect of use of high voltage in transmission of electrical power on the following parameters :-

i) Line current

ii) Line Losses

iii) Volume of material

iv) Weight of supporting structure.

d) Draw a single line layout diagram of 11 KV/400 V distribution station and label the components :

i) Lighting Arrester

ii) Transformer

iii) Air Break switch

iv) Potential transformer

4. Attempt any <u>THREE</u> of the following : **12**

a) Draw a neat diagram of Hydro electric power station and state function of –

i) Surge tank

ii) Penstock

b) Explain following terms related to grid system :

i) National grid

ii) State grid

iii) Blackout

iv) Brownout

c) Draw symbol and use the following components used in EHVAC transmission line substation :

i) Transformer

ii) Circuit breaker

iii) Reactors

iv) Relay

Marks

d) Give classification of Hydro power plant on basis of –
   i) Water flow regulation
   ii) Water head

e) Compare indoor and outdoor substation on basis of :
   i) Space required
   ii) Fault detection
   iii) Operation and maintenance
   iv) Erection cost

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

a) Differentiate between overhead transmission line with underground transmission line on basis of –
   i) Public safety
   ii) Fault possibility
   iii) Fault detection
   iv) Installation cost
   v) Flexibility
   vi) Application

b) A single phase AC distributor has 900 meter length with total impedance of (0.02 + j0.04) ohm and is fed at point 'A' at 250 volt. It is loaded as shown in Fig. No. 1. Calculate voltage drop and voltage at far end at 'D' point.

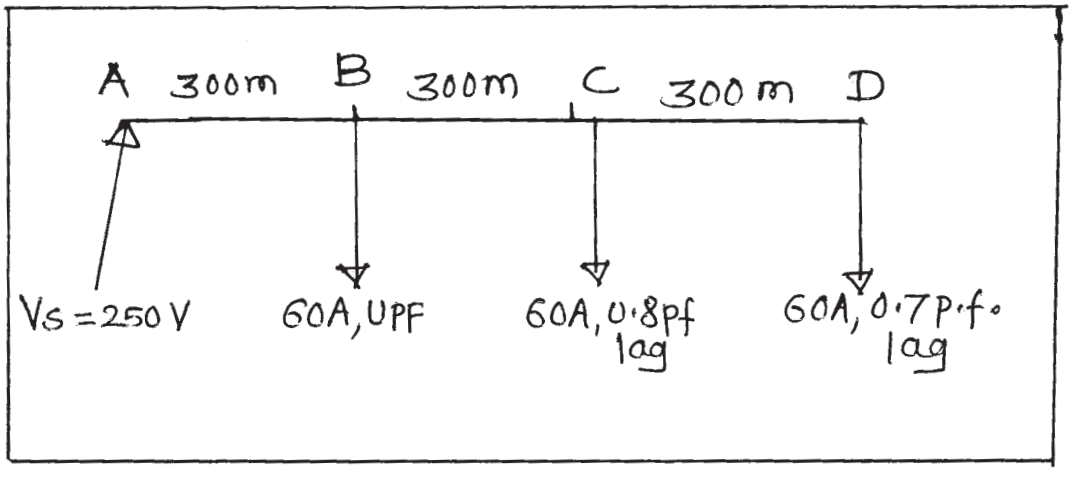

Fig. No. 1

Marks

c) Explain Ferranti effect and Corona effect in High voltage transmission line and list methods to reduce it.

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

a) State any six safe practices to be followed in Thermal power plant.

b) Explain nominal 'T' and 'PI' method to represent medium transmission line with its equivalent circuit and lable R, L & C parameters.

c) Explain radial and ring main distribution scheme with neat diagram and write any two advantages of each.

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