

**Advanced Electrical Engineering Paper – V**

P. Pages : 2

Time : Two Hours

**KNT/KW/16/7206**

Max. Marks : 40

- Notes :
1. Same answer book must be used for each section.
  2. All questions carry marks as indicated.
  3. Assume suitable data wherever necessary.
  4. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Define 'Electric power supply system'. Draw a single line diagram of a typical a.c. power supply scheme. **5**
- b) Draw the schematic diagram 'Hydro power plant' and explain the function of each component. **5**

**OR**

2. a) Define Earthing. Explain the necessity of earthing. mention different types of earthing. **6**
- b) Write short notes on: **4**
  - i) Uninterruptable power supply.
3. a) Why it is necessary to use a starter for starting a d.c. motor? Draw a diagram of a three point starter and explain the function of each component. **6**
- b) A 4 pole generator with wave wound armature has 51 slots each having 49 conductors. The flux per pole is 7.5 mwb. At what speed the armature must be driven to give an induced emf of 440v. **4**

**OR**

4. a) A dc shunt motor runs at 750 rpm from 250 v supply and is taking a full load line current of 60A. Its armature and field resistances are 0.4 ohm and 125 ohm respectively. calculate no load speed for a no load line current of 6 A. Assume 2 v brush drop. **5**
- b) Draw and explain the electrical characteristics of dc series motor with necessary equation & applications. **5**
5. a) A domestic consumers monthly consumption of electricity can be approximated as under: **6**

5 lamps 100 watt each for 4 hours a day,  
 Geyser 2.5 Kw for one hours daily,  
 Room heater 1 Kw for 2 hours daily.  
 Find the bill for a month of 30 days for the following tariff-  
 Rs. 2 per Kwh for first 15 units,  
 Rs 3 per kwh for next 20 units,  
 Rs 4 per kwh for remaining units.

b) Define:

4

i) Luminous flux.

ii) Light intensity.

iii) Lux

iv) Illuminance.

**OR**

6. a) Explain with a neat diagram, the operation of sodium-vapour lamp.

5

b) Draw a neat connection diagram of fluorescent tube and explain its working.

5

7. a) A 400V, 50Hz, 3 $\phi$  I.M has 4 poles. calculate.

7

1) Synchronous speed.

2) Slip, if motor speed is 1440 rpm.

3) Motor speed, if slip is 5%.

4) Rotor frequency at stand still.

b) Define :

3

1) Slip

2) Synchronous speed.

3) Rotor frequency.

**OR**

8. a) Write a short note on capacitor start capacitor run induction motor.

6

b) Why single phase I.M is not self-starting.

4

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