B.E. All Branches Second Semester (C.B.S.) / B.E. (Fire Engineering) Second Semester
Advanced Electrical Engineering

P. Pages : 2

NJR/KS/18/4346/4996

Time : Two Hours

0657

Max. Marks : 40

_____

Notes : 1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Due credit will be given to neatness and adequate dimensions.
7. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) Explain with neat block diagram the operation of thermal power plant. **5**

   b) Draw and Explain single line diagram of Electrical Power System. **5**

OR

2. a) Explain with neat diagram, plate type earthing. **5**

   b) What is fuse? Draw & Explain HRC fuse. **5**

3. a) Derive EMF equation of DC generator. **4**

   b) An 8 pole armature has 96 slot's with 8 conductor's per slot. It is driven at 600 rpm. The useful flux per pole is 10 mwb. Calculate the induced emf in armature winding when it is
   a) LAP Connected   b) WAVE connected. **6**

OR

4. a) Draw and explain electrical characteristics of DC series motor, necessary equation & applications. **5**

   b) A 250 V DC shunt motor runs at 1000 rpm at No - load and takes 8 Amp. The total armature and shunt field resistances are 0.2Ω and 250Ω respectively. Calculate the speed when loaded and taking 50 A. Assume flux to be constant. **5**

5. a) Define : Tariff. What are the types of tariff & explain simple rate tariff. **3**

   b) A domestic consumer monthly consumption of electricity can be approximated as under. **7**
   10 lamps of 60 watts each for 4 hours a day.
   01 water Heater 1 kW for 2 hours daily.
   02 ceiling fan 90 w each for 6 hours a day.
   Find the bill for a month of 31 days for Block rate tariff.
        Rs. 3 per kwh for first 20 units
        Rs. 5 per kwh for next 30 units
        Rs. 7.5 per kwh for remaining units.

OR

6. a) Define : **4**

       1)   Luminous flux   2)   Illumination

       3)   Light Intensity   4)   Candle Power

    b) Explain the construction and operation of mercury vapour lamp and it's applications. **6**

7. a) Give the difference between squirrel cage and slip ring rotor type Induction motor. (five points each). **5**

    b) A 415 V, 50 Hz, $3-\phi$ Induction motor has 4 poles. Calculate : **5**
       1)   Synchronous speed
       2)   % Slip if it runs at 1420 rpm
       3)   Frequency of rotor current for above slip.
       4)   Frequency of rotor current at standstill.
       5)   Motor speed if slip is 3%.

OR

8. a) Why 1ϕ Induction motor is never self starting? How to make it self starting? **5**

    b) Write short note on capacitor start capacitor run induction motor with neat circuit diagram. **5**

****