

Advanced Electrical Engineering

P. Pages : 2

Time : Two Hours



NKT/KS/17/7206

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. Assume suitable data whenever necessary.
 8. Illustrate your answers whenever necessary with the help of neat sketches.
 9. Use of non programmable calculator is permitted.

1. a) Explain with neat block diagram, the operation of Nuclear power generation. Give any 3 differences between Non-conventional and Conventional system. **6**
b) What are the different types of fuse. Explain in brief with neat sketch of HRC Fuse. **4**
OR
2. a) Draw and explain the single line diagram for generation, transmission and distribution. **5**
b) Explain the necessity of Earthing. **5**
3. a) Derive Emf equation of DC generator. **4**
b) An 8 pole armature has 96 slots with 8 conduction 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) A 250 V, DC shunt motor runs at 1000 RPM at No Load and takes 8A. The total armature and shunt field resistance are 0.2Ω and 250Ω respectively. Calculate the speed when loaded and taking 50 A. Assume flux to be constant. **6**
b) What is the need of starter in DC motor what are the types of starter. **4**
5. a) What are the different types of tariff. Explain simple Rate Tariff. **3**
b) A Residential Consumer has the following Load Schedule for a day. **7**
 - 1) from midnight 12 AM to 4 AM = 100 W.
 - 2) from 4 AM to 8 AM = 500 W
 - 3) from 8 AM to 12 PM noon = 500W
 - 4) from 12 PM noon to 5 PM = 4000 W.
 - 5) from 5 PM to 9 PM = 2500 W
 - 6) from 9 PM to midnight 12 AM = No load due to Load Shedding

If the block rate tariff is :

- 0 - 100 unit's → 3 Rs/kwh
- 101 - 200 unit's → 5.5 Rs/kwh
- 201 - 300 units → 7.5 Rs/kwh
- 301 and above → 10 Rs/kwh

Find the Electric Bill for the month of August, the consumer has to pay.

OR

6. a) Explain the construction and working of sodium vapour Lamp. **5**
- b) A Hall of 25×40 m is to be illuminated using two fluorescent lamp fitting consisting of two 40 watts tubes. The luminous efficiency of lamp is 60 lumen. Assume depreciation factor of 0.8 and coefficient of utilisation as 0.75. Calculate total number of lamps required for an illumination of 250 lux on working plane. **5**
7. a) Give the differences between squirrel cage rotor and Slip ring rotor type Induction Motor. **6**
- b) A three phase Induction Motor is running at 900 RPM whose stator has 6 poles and is operated from 50 Hg power supply. **4**

Calculate :

1. Speed of R.M.F.
2. Relative Speed
3. % Slip
4. Frequency of Rotor Current.

OR

8. a) Why 1ϕ I.M. is never self starting. What provision is made to make it self starting. **5**
- b) Explain with neat labelled diagram the working of capacitor start - capacitor Run Induction Motor. **5**
