

B.E. Second Semester (Fire Engg.) (C.B.S.)
Advanced Electrical Engineering Paper – V

P. Pages : 2

Time : Two Hours



TKN/KS/16/7294

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 the help of neat diagram the operation of Nuclear power plant. State its advantages and disadvantages also. 5
b) Explain the working of ON line and off line UPS with the help of block diagram. 5
- OR**
2. a) Write a short note on necessity of equipment Earthing. 5
b) Explain the various stages of Electrical power system with the help of single line diagram. Also mention voltage level of each stage. 5
3. a) Derive an Emf equation for a DC Generator. 5
b) What are the different parts of dc machine? 3
c) A 4 pole lap connected dc shunt generator is required to supply a load current of 30A at 250V. The armature and field resistances are 0.2Ω and 250Ω respectively. Allow 1 volt per brush as a contact drop, and find flux per pole and armature current per parallel path if speed is 1000rpm and there are 120 conductors in the generator. 4
- OR**
4. a) Derive torque equation of a d.c. motor. 4
b) A 500V dc shunt motor runs at 250 rpm when the armature current is 200 amp The armature resistance is 0.12Ω . Calculate the speed when armature current reduces to 100 Amp and flux is reduced to 80% & the normal value. 6
5. a) Define tariff and explain flat rate tariff. 3
b) The daily electricity consumption of a residence is as given below: 7
Light load: 5 Tube lights 40w each for 3 hours.
Fan load: 3 fans of. 100w for 5 hours.
Refrigerator load: 1kw for one hour.
Miscellaneous load: 1.5kw for one hour.
Find the bill amount of January' 2016 electricity bill at the following tariff rates:
First 15 units: Rs 2.50 Per kwh.
Next 25 units: Rs 3.00 Per kwh.
Remaining units: Rs 3.50 Per kwh.
Constant charge: Rs 10.00 Per month.

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OR

6. a) Explain the construction and working of sodium Vapour lamp. **4**
- b) Define: **2**
- i) Illumination. ii) Lamp efficiency.
- c) A hall of 20 M x 12.5m is to be illuminated by 10 fluorescent lamps of 60w each. The illumination on working place is observed to be equal to 100 Lux. Calculate the luminous efficiency of the lamps. Assume utilization factor of 0.68 and depreciation factor of 0.75 **4**
7. a) Write comparison between slip ring motor and squirrel cage induction motor. **4**
- b) A 4 pole, 3d induction motor operates from 400v 50Hz supply. Calculate. **6**
- i) Speed of motor when slip is 0.04.
- ii) Frequency of rotor current when slip is 3%.
- iii) Slip when motor speed is 1490 rpm.

OR

8. a) Explain the working of capacitor start induction run single phase induction motor. **4**
- b) Draw and explain Torque-slip characteristics of 3 phase induction motor showing stable and unstable operating regions. **4**
- c) Why single phase induction motor is not self starting? **2**
