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

Advanced Electrical Engineering

P. Pages : 2 **NIR/KW/18/3291/3939**

Time : Two Hours * 1 1 7 2 * Max. Marks : 40

Notes : 1. Solve Question 1 OR Questions No. 2.
2. Solve Question 3 OR Questions No. 4.
3. Solve Question 5 OR Questions No. 6.
4. Solve Question 7 OR Questions No. 8.
5. Assume suitable data whenever necessary.
6. Illustrate your answers whenever necessary with the help of neat sketches.
7. Use of non programmable calculator is permitted.

1. a) Explain with neat diagram the operation of Hydro Power Plant. State its advantages & disadvantages. **5**

b) Explain Online & Off line UPS. **5**

OR

2. a) Draw and Explain with single line diagram the generation, Transmission & distribution of power system. **5**

b) Define earthing. Explain Pipe earthing. **5**

3. a) Why is it necessary to use a starter for starting a d.c motor. **5**

b) A 4 pole, lap wound shunt motor consumes 20 A at a terminal voltage of 250 V. It has a field & armature resistance of 250 Ω & 0.05 Ω respectively. Neglect brush drop. Determine: **5**
i) Armature current ii) Back emf

OR

4. a) Derive the emf equation of dc generator. **5**

b) A 4 pole, 1200 rpm DC generator has a lap wound armature having 60 slots & 12 conductors per slot. If flux per pole is 0.02 Wb, determine the emf induced in the armature. Also calculate emf generated for wave wound armature. **5**

5. a) Name different tariffs. Explain one part tariff. **4**

b) A domestic consumers daily consumption of electricity can be approximated as: **6**
Light load: 5 tube lights, 40w each working for 3 hours.
Fan load : 3 Fans, 100W each working for 5 hours.
Refrigerator load: 1 kW for 1 hour.
Miscellaneous load: 1.5 Kw for 1 hour
Find the bill amount of January 2018 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 per month.

OR

6. a) Explain working & construction of mercury vapour lamp. **5**

b) Define: **5**

i) Luminous flux ii) Luminous efficiency

iii) Candle Power iv) Illumination

v) Maintenance factor.

7. a) Compare slip ring induction motor & squirrel cage induction motor. **5**

b) Write short note on capacitor start run Induction motor. **5**

OR

8. a) Why single phase induction motor is not self starting. **5**

b) A 4 pole, 3ϕ induction motor operates from 400V, 50 Hz supply. Calculate: **5**

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.

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