SRK/KW/14/6924

Faculty of Engineering & Technology

Second Semester B.E. (C.B.S.) Examination

ADVANCED ELECTRICAL ENGINEERING

Paper—V

Time : Two Hours] [Maximum Marks : 40

INSTRUCTIONS TO CANDIDATES

(1) All questions carry marks as indicated.

(2) Due credit will be given to neatness and adequate dimensions.

(3) Assume suitable data wherever necessary.

(4) Illustrate your answers wherever necessary with the help of neat sketches.

1. (a) Explain with neat block diagram the operation of Solar Power Plant. 6

(b) Explain single line diagram for generation transmission and distribution through different voltage levels. 4

OR

2. (a) Explain pipe type earthing with the help of neat sketch. 4

(b) What do you mean by Fuse ? Explain Rewirable and HRC fuses. 6

3. (a) Derive the emf equation of DC generator. 4

(b) An 8 pole armature has 96 slots with 08 conductors 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 :

(i) Lap connected

(ii) Wave connected. 6

OR

4. (a) Derive the torque equation of DC shunt motor. 5

(b) A 4 pole lap wound shunt motor consumes 20 A at a terminal voltage of 250 V. It has a field and armature resistance of 250 Ω and 0.05 Ω respectively. Neglect brush drop. Determine :

(i) Armature current

(ii) Back emf. 5

5. (a) What are different types of tariff ? Explain one part tariff. 5

(b) Explain the operation of sodium vapour lamp with the help of circuit diagram. 5

OR

6. (a) Determine the tariff for the following residential load, conected load for the month Jan., 2014 is as follows :

Sr. No.	Particulars	Nos.	Watt	Use in Hrs.
1	Tube Lights	4	40 W	06
2	Fan	4	60 W	3
3	Iron	1	750 W	0.5
4	Geyser	1	2000 W	0.5
5	Fridge	1	1000 W	24
6	Mixer	1	200 W	0.5
7	T.V.	1	150 W	04
8	Over	1	3000 W	0.25

Assume electricity charges as follows :

0 — 100 units — Rs. 2.82

101 — 300 units — Rs. 4.99

301 — 500 units — Rs. 7.15

501 — 1000 units — Rs. 8.29. 6

(b) Define the following terms :

(1) Luminous flux

(2) Illumination

(3) Luminance

(4) Luminous Efficiency. 4

7. (a) "Three phase induction motor can not run at synchronous speed." Justify. 3

(b) A 3 ϕ I.M. is wound for 6 pole and is supplied from 50 Hz supply system. Calculate :

(1) Synchronous speed

(2) Rotor speed when slip is 4%

(3) Rotor frequency when rotor runs at 600 rpm. 4

(c) Explain Torque-slip characteristic of 3 phase I.M. 3

OR

8. (a) Explain "why single phase I.M. is not self starting " ? 3

(b) Define :

(1) Slip

(2) Synchronous speed

(3) Rotor frequency. 3

(c) Explain shaded pole single phase I.M. 4