RVK/KW/13/6558

Faculty of Engineering & Technology

Second Semester B.E. (Electrical Engg.) Examination

ADVANCE ELECTRICAL ENGINEERING

Time—Two Hours] [Maximum Marks—40

INSTRUCTIONS TO CANDIDATES

(1) All questions carry equal marks.

(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.

(5) Use of calculator is permitted.

1. (a) Explain with neat block diagram the operation of thermal generating station. 5

(b) Explain single line diagram for generation transmission and distribution through different voltage levels. 5

OR

2. (a) What is requirement of Earthing ? Explain pipe type earthing. 5

(b) Explain basic operation of UPS. 5

3. (a) Explain the functions of following DC machine parts :

(1) Commutator

(2) Yoke

(3) Armature Winding. 6

(b) A 4 pole, 1200 rpm dc generator has a lap wound armature having 60 slots and 12 conductors per slot. If the flux per pole is 0.02 Wb. Determine EMF induced in armature. 4

OR

4. (a) A 4 pole lap wound shunt motor consumes 20 A at terminal voltage of 250 V. It has a field and armature resistance of 50 Ω and 0.05 Ω respectively. Neglecting brush drop. Determine :

(1) Armature Current

(2) EMF induced. 4

(b) What is the necessity of starter in DC Shunt Motor ? Explain the function of No Volt Coil in case of 3 point starter. 6

5. (a) What are different types tariff ? Explain one part tariff. 4

(b) Determine the tariff for the following residential load. Connected load for the month Jan 2013 is as follows :

Sr. No.	Particulars	Nos.	Wattage	Uses in Hrs
1.	Tubelights	4	40 W	6
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	4
8.	Oven	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
above 1000 Units	Rs. 8.55 ; 6

OR

6. (a) Define :
   (1) Luminous Flux
   (2) Solid Angle
   (3) Illumination. 3

   (b) Explain the principle of operation of Fluorescent lamp. 4

   (c) A small assembly shop 15 m × 9 m is to be illuminated to a level of 200 lux. The coefficient of utilization is 0.75 and depreciation factor is 0.8. The whole area is to be illuminated by lamps having individual output as 3000 lumens. Calculate the No. of lamps required. 3

7. (a) Explain the principle of 3 phase Induction Motor. 4

   (b) Compare squirrel cage and slip ring Induction Motor. 3

   (c) Define :
   (1) Slip
   (2) Synchronous speed
   (3) Rotor frequency. 3

OR

8. (a) Why single phase Induction Motor is not self starting ? 3

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

   (c) List the applications of :
   (1) Split phase I,M.
   (2) Capacitor start capacitor run I.M.
   (3) Squirrel Cage I.M. 3