

ANURAG Engineering College

(An Autonomous Institution)

I B.Tech II Semester Supplementary Examinations, June/July – 2024

BASIC ELECTRICAL ENGINEERING

(ELECTRICAL AND ELECTRONICS ENGINEERING)

Time: 3 Hours

Max. Marks: 75

Section – A (Short Answer type questions)

(25 Marks)

Answer All Questions

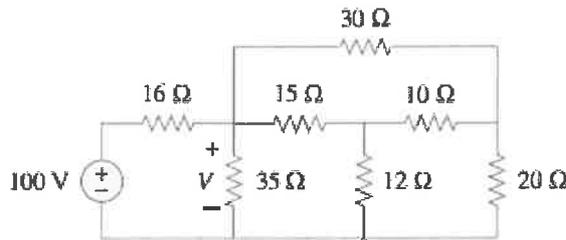
	Course Outcome	B.T Level	Marks
1. What is meant by unilateral and bilateral elements in a circuit?	CO1	L1	2M
2. State Ohm’s Law? Also write the limitations of Ohm’s Law?	CO1	L1	3M
3. Define Average Value, RMS value, Peak value and Form Factor of a AC waveform?	CO2	L1	2M
4. An AC voltage source $V(s)=120\sin(\omega t)$ is connected across a resistance of 10 Ohms. Find the RMS current through the resistance.	CO2	L1	3M
5. Define voltage regulation in transformer?	CO3	L1	2M
6. State and explain Faraday’s Laws of Electro Magnetic Induction	CO3	L2	3M
7. Calculate speed of rotating magnetic field in three phase induction motor having 4 poles and supplied at 50Hz.	CO4	L1	2M
8. How commutation takes place in DC motor?	CO4	L2	3M
9. Write the advantages of stationary armature in alternator?	CO5	L1	2M
10. Compare the differences between fuse and circuit breaker.	CO5	L1	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks.

(5 X 10M = 50M)

11. A) Solve the Voltage ‘V’ in the circuit shown below. CO1 L3 10M



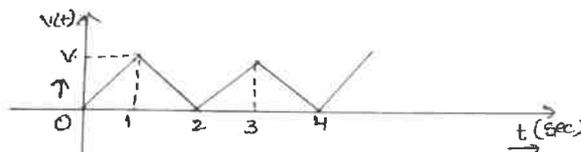
OR

B) State and explain Norton’s theorem. CO1 L3 10M

12. A) A $1K\Omega$ resistor is connected in series with an inductance of 50mH across a 230V, 50HZ AC Supply. Find i) Inductive reactance ii) Impedance iii) Current iv) Phase angle v) Voltage drop across resistance vi) Voltage drop across Inductance

OR

B) Find the form factor for the following waveform shown in figure below CO2 L3 10M



13. A) Derive the expression for equivalent inductance when the coupled inductors are connected in Parallel aiding and parallel opposition. CO3 L3 10M
- OR**
- B) Open circuit and short circuit tests on a 5 KVA, 220/400V, 50 Hz, single phase transformer gave the following results: OC Test: 220V, 2A, 100W (lv side) SC Test: 40V, 11.4A, 200W (HV side) Construct the equivalent circuit of a transformer. CO3 L3 10M
14. A) i) Explain the constructional features of the DC generator in detail. CO4 L2 5M
- ii) A 200V DC shunt motor runs at 600 rpm when the armature current is 30A. Calculate the speed if the torque is doubled. Given that $R_a = 0.18\Omega$. CO4 L3 5M
- OR**
- B) Explain the working principle of Three phase induction motor CO4 L2 10M
15. A) i) Explain the principle of operation of alternators. CO5 L2 5M
- ii) Draw the OCC and SCC of the alternator and write the procedure to determine the regulation of the alternator. CO5 L2 5M
- OR**
- B) Explain the characteristics of different types of Batteries. CO5 L3 10M