Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, June 2021

Course: Basic Electrical and Electronics Engineering **Semester: II**
Program: B.Tech. Food Technology **Time : 03 hrs.**
Course Code: ECEG 1005 **Max. Marks: 100**

SECTION A

S. No.	MCQs or Fill in the blanks (1.5 marks each)	**30 Marks**	**CO**
1	In Thevenin's theorem, to find Z (A) All independent current sources are short circuited and independent voltage sources are open circuited (B) All independent voltage sources are open circuited and all independent current sources are short circuited (C) All independent voltage and current sources are short circuited (D) All independent voltage sources are short circuited and all independent current sources are open circuited	**1.5**	**CO3**
2	In a parallel RLC circuit, smaller reactance determines the net reactance of the circuit. (A) True (B) False	**1.5**	**CO3**
3	A series resonant circuit is commonly called a tank circuit. (A) True (B) False	**1.5**	**CO3**
4	In a series RLC circuit, the current is minimum at resonance. (A) True (B) False	**1.5**	**CO3**
5	All _____ are loops but _____ are not meshes (A) Loops, Meshes (B) Meshes, loops (C) Branches, loops (D) Nodes, Branches	**1.5**	**CO3**
6	In Kirchhoff's first law $\Sigma i = 0$ at the junction is based on the conservation of (A) Energy (B) Charge (C) Momentum (D) Speed	**1.5**	**CO3**
7	Kirchhoff's voltage law is concerned with (A) IR drop (B) Battery emfs (C) Both (a) and (b) (D) None of these	**1.5**	**CO3**
8	When a source is delivering maximum power to the load, the efficiency will be (A)Maximum (B)Below 50% (C) Above 50% (D) 50%	**1.5**	**CO3**
9	Ohm's law is not applicable to (A) DC circuits (B) high currents (C) small resistors (D) semi-conductors.	**1.5**	**CO3**
10	A resistance of 5 ohms is further drawn so that its length becomes double. Its resistance will now be (A) 5 ohms (B) 7.5 ohms (C) 10 ohms (D) 20 ohms.	**1.5**	**CO3**

11	In energy meter which coil carries the current proportional to supply voltage (A) Current coil (B) Pressure coil (C) Both pressure and current coil (D) None of these	**1.5**	**CO4**
12	It is possible to extend the range of an A.C ammeter by using (A) Current transformer (CT) (B) Shunt (C) Capacitor (D) Inductor coil	**1.5**	**CO4**
13	An ideal voltmeter has _____ equivalent resistance and ideal ammeter has _____ equivalent resistance. (A) Unity, Unity (B) Zero, infinite (C) Infinite, Zero (D) Zero, Zero	**1.5**	**CO4**
14	The function of the commutator in a D.C machine is (A) To change alternating current to a direct current (B) To improve commutation (C) To improve efficiency of motor (D) To change alternating voltage to direct voltage	**1.5**	**CO4**
15	Which of the following rule is used to determine the direction of rotation of D.C motor? (A)Columb's Law (B) Lenz's Law (C) Fleming's Right-hand Rule (D) Fleming's Left-hand Rule	**1.5**	**CO4**
16	The efficiency of a transformer is usually of the order of (A) 33 % (B) 50 % (C) 75 % (D) 98 %	**1.5**	**CO4**
17	The main purpose of performing short circuit test in a transformer is to measure its (A) Copper loss (B) Core loss (C) Insulation Resistance (D) Total loss	**1.5**	**CO4**
18	Lamination of the transformer core is made of (A)Cast Iron (B) Silicon Steel (C) Aluminum (D) Cast Steel	**1.5**	**CO4**
19	Which of the following losses varies with the load in the transformer? (A)Core loss (B) Copper loss (C) Both core & copper loss (D) None of the above	**1.5**	**CO4**
20	In a transformer the primary flux is _____ secondary flux. (A)Greater than (B) Smaller than (C) Either 1 & 2 (D) Equal to	**1.5**	**CO4**
SECTION B			
Q	Short Answer Type Question (5 marks each) Scan and Upload	**20 Marks**	**CO**
1	Describe your understanding on intrinsic and extrinsic semiconductors.	**5**	**CO1**
2	Discuss the behavior of a pn junction under forward and reverse biasing.	**5**	**CO1**
3	Discuss the effect of temperature on semiconductors.	**5**	**CO1**
4	Explain various current components in PNP transistor.	**5**	**CO1**
SECTION C			
Q	**Long Answer type Questions Scan and Upload (15 marks each)**	**30 Marks**	**CO**
1	With the help of diagram, discuss the construction of Single phase Transformer.	**15**	**CO4**

2	State and Explain Thevenin's theorem. **OR** A series RLC circuit containing a resistance of 12Ω, an inductance of 0.15H and a capacitor of 100μF are connected in series across a 100V, 50Hz supply. Calculate the total circuit impedance, the circuit current, power factor and voltage across each component.	**15** **3+3+3+ 2+2+2**	**CO3**
	SECTION- D		
Q	Long Answer type Questions Scan and Upload (10 marks each)	**20 Marks**	**CO**
1	Explain the operation of transistor as an amplifier with the help of block diagram.	**10**	**CO2**
2	Describe the base resistor method used for transistor biasing. State their advantage and disadvantage. **OR** With the help of connection diagram, describe Common Emitter configuration of npn transistor. Also, state and give expression for current amplification factor and collector current.	**6+4** **3+3+2 +2**	**CO2**