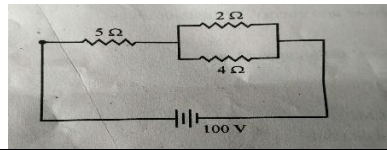


CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

SI No.	Questions	Marks	Year
UNIT – 1 [ELECTRIC CIRCUIT FUNDAMENTALS]			
1.	Define the following and write their SI units: a. Electric current b. EMF c. Voltage Define Ampere, volt and potential difference.	5/4 5	Dec 2016/ May 2016/ May 2017/ May 2018 May 2019
2.	State and Kirchoff's laws Define KCL.Explain with an example.	5 5	Dec 2016/ Dec 2017/ May 2017/ May 2018/Dec 2018/May 2019/Nov 2019
3.	A resistance of 6Ω is connected in series with a parallel combination of 30Ω and 20Ω resistance. This combination is connected across 36V supply. Calculate: a. Total resistance b. Branch currents c. Total current	7	Dec 2016
4.	Explain open, close and short circuit conditions	3/5/6	Dec 2016/ May 2016/ May 2017/May 2019
5.	State and explain Ohm's law. Mention its limitations and applications. What are the three forms of Ohm's law State the Ohm's law and write its equation. List the applications and limitations of Ohm's law	5	May 2016/ May 2017/ May 2018/Dec 2018/May 2019/Nov 2019
6.	Define electrical power and energy and the meters used to measure them	5	May 2016/ Nov 2019
7.	Define electric current, voltage and resistance. Write their SI units	5	Dec 2017/Dec 2018
8.	Distinguish between series and parallel resistor circuits	5	Dec 2017
9.	Two resistors of 10Ω (25Ω) and 20Ω (30Ω) are connected in series across 20V (50V) supply. Find: a. Effective resistance of circuit b. Total current in circuit	5	Dec 2017/ May 2018
10.	Compute total resistance of parallel combination of resistors	5	Dec 2017
11.	Three resistance of 2Ω , 4Ω and 16Ω are connected parallel across 50V supply. Calculate total resistance and total current	5	Dec 2017
12.	Deduce an expression for effective resistance of two resistors connected in parallel	5	May 2017
13.	A 100watt lamp is used for 6 hours a day. Calculate a. Energy consumed per month b. Cost of energy, if each unit cost is Rs2.00	5	May 2017
14.	Compute the total effective resistance of two resistors connected in series	5	May 2018/Dec 2018
15.	Mention the meters to measure electric current, voltage and resistance	5	May 2018
16.	A resistance of 10Ω is connected in series with a parallel combination of 20Ω and 20Ω . The total combination is connected across 100V supply. Find (a) Effective resistance (b)Total current drawn from the supply.	5	Dec 2018
17.	An electric stove consumes a current of 10A when connected to 230V power supply. Find the power consumed by the stove.	5	Dec 2018
18.	Derive an expression for the equivalent resistance when 3 resistors are connected in series.	5	May 2019
19.	Two resistances 20Ω and 40Ω are connected in parallel across 20V supply.Find: (a) Effective resistance across of circuit (b) Total current in the circuit (c) Current through each branch	5	May 2019
20	Derive total resistance of three resistors connected in series.	5	Nov 2019
21	A 5Ω resistance is connected in series with a parallel combination of two resistors of 2Ω and 4Ω . A 100v supply is		

connected across this combination. Find the effective resistance and total current.



Question Bank – Unit Wise
Department of Computer Science and Engineering, Jain Polytechnic Belagavi

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UNIT – 2 [ELECTROMAGNETISM]			
1.	State Faraday's laws of electromagnetic induction	5	Dec 2016/ May 2017/ May 2018/Dec 2018 /Nov 2019
2.	Explain self induced EMF	5	Dec 2016
3.	Define magnetic field and flux density. What is the unit of flux density	5	May 2016
4.	Explain self induced emf and mutually induced emf	5	May 2016/ May 2017/Dec 2018/Nov 2019
5.	Define inductive reactance and capacitive reactance and mention their units.	5	May 2016
	Define inductive reactance and capacitive reactance. Write the formula.	5	May 2019
6.	Define MMF and Reluctance	5	Dec 2017
	Define : (a) m.m.f. (b) flux density and mention their units.	5	May 2019

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

7.	Distinguish between electric circuit and magnetic circuit	5	Dec 2017
8.	Two resistances of 15Ω and 10Ω are connected in series, across a 50V supply. Calculate effective resistance and total current in the circuit	5	May 2017
9.	Define statically induced EMF and Dynamically induced EMF	5	May 2018/May 2019
10.	Write the applications of Brushless DC motor and Spindle Motor.	5	Nov 2019
UNIT – 3 [AC FUNDAMENTALS]			
1.	Define the following with SI units: a. Amplitude b. Time period c. Cycle d. Peak to peak value	5	Dec 2016/ May 2017/ May 2018
2.	List out the differences between single phase and three phase AC supply	5	Dec 2016/ May 2016/ May 2018/May 2019
3.	Explain generation of alternating current	5	Dec 2016
4.	If an alternating current is given by $i=100 \sin 314 t$ find, a. Maximum value b. Frequency c. RMS value d. Average value e. Form factor	5/6	Dec 2016/ May 2016/ May 2017/ May 2018
	Calculate RMS value, average value and form factor of alternating voltage $V=20 \sin 30t$.	6	May 2019
5.	Define: a. RMS value b. Average value of an alternating current	5	Dec 2016/ Dec 2017
6.	For a series RC circuit connected across AC supply. Write the sketch of circuit diagram and vector diagram. Also write the expression for voltage, current, impedance and power factor	6	Dec 2016
7.	For series RLC circuit with $L = 60\text{mH}$, $C = 50\mu\text{F}$ and $R = 6\Omega$. Calculate the impedance of the circuit. Assume $f = 50\text{Hz}$	4	Dec 2016
8.	A series RL circuit with $R = 20\Omega$ (30Ω), $L = 20\text{mH}$ (0.5H) is connected across 230V, 50Hz AC supply. Determine the values of: a. Impedance b. Current c. Power factor d. Power	8/(6)	Dec 2016/ May 2016
9.	Define power factor, form factor, frequency	5	Dec 2016/Dec 2018
10.	Sketch AC voltage waveform and mark the parameters given below: a. Instantaneous value b. Amplitude c. Time period d. Cycle e. frequency	5	May/Nov 2019
11.	Bring out the comparison between DC and AC supply	4/5	May 2016/May 2019/Nov 2019
12.	Explain pure inductive AC circuit with waveform and vector diagram	4/5	May 2016/May 2019 Nov 2019
13.	An AC voltage is given by $v = 100 \sin 314 t$, what is the maximum voltage and frequency	5	May 2016
14.	Define impedance and power factor with respect to AC and write their units	5	May 2016/Nov 2019
15.	An alternating current has maximum value of current is 25A. Find RMS value, average value, form factor and crest factor	5	Dec 2017
	An alternating current has maximum value of current is 20A. Find RMS value, average value, form factor	5	May 2019
16.	Define the following terms with respect to sinusoidal wave: a. Phase difference b. In phase c. Out of phase	6	Dec 2017
17.	Calculate capacitive reactance and power factor in RC series circuit with $C = 10\mu\text{F}$, $R = 100\Omega$ and $f = 50\text{Hz}$	4	Dec 2017

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

18.	Define power factor and impedance with respect to AC. Write their units	5	Dec 2017
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19.	Compute the expression that, the current I leads the voltage V by 90° ($\pi/2$), when AC flows through capacitor	5	Dec 2017
20.	Analyze the behaviour of series RLC circuit for AC input	10	Dec 2017 Nov 2019
	Derive an expression for the impedance of the circuit when R,L and C are connected in series.	5	May 2019
21.	Explain series R-L circuit	5	May 2017
22.	Explain pure resistive circuit connected to A.C source with waveform	5	May 2017
23.	A circuit of a coil of $R=20 \Omega$ and inductance of 0.4 H. Find (i) Inductive Reactance (ii) Impedance of circuit at 50 Hz frequency.	5	May 2019

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23.	Explain series R-C circuit	5	May 2017
24.	Explain pure inductive circuit with waveform	5	May 2017/Dec 2018
25.	Explain series R-L-C circuit and derive an expression for impedance	6	May 2017/Dec 2018
26.	A circuit consists of resistance of 10Ω and inductances of $0.2H$ are connected across $30V$, $50Hz$ AC supply.	4	May 2017/ May 2018
	Find a. Inductive reactance b. Impedance of circuit, at $50Hz$ frequency		
27.	An AC voltage is given by $V = 100 \sin 314 t$, what is the maximum voltage and frequency	5	May 2018
28.	Define inductive reactance and capacitive reactance	6	May 2018
29.	Draw a sinusoidal wave form and mark the following: a. Amplitude b. Time period	5	Dec 2018
30.	Analyze the behaviour of series RLC circuit for AC input	10	May 2018
31.	Calculate the RMS and average value of an AC voltage $e=20 \sin 30t$	5	Dec 2018
32.	A coil and inductance $10H$ is connected in series with resistance of 100Ω . This series circuit is connected to $230V$, $50Hz$ supply. Find (a) Impedance (b) Current (c) Power Factor (d) power (e) form factor	10	Dec 2018
33.	Explain the terms capacitive reactance and inductive reactance with expression and unit.	5	Dec 2018
34.	Define a) RMS Value b) Form Factor for Sine-wave	5	Nov 2019
35.	An alternating current is represented as $i= 30 \sin 100t$. Find the Maximum value, RMS value , Average value, frequency and time.	5	Nov 2019
36.	A RL series circuit has values of $R=10\Omega, L=2H$. If this is connected to $250V, 50Hz$ supply. Calculate inductive reactance, impedance and current.	5	Nov 2019sss
UNIT – 4 [TRANSFORMERS & STEPPER MOTORS]			
1.	A $10kVA$, $2200/220$ volts, single phase transformer has 60 turns on secondary. Determine the a. No. of turns on primary b. Secondary current	5	Dec 2016
2.	Explain: a. Current ratio b. Voltage ratio of single phasetransformer Define : (a) Turns ratio (b) Voltage transformation ratio (c) Current ratio	5	Dec 2016
		5	May 2019
3.	List the types of transformers and write their applications OR Explain types of transformers based on core and frequency.	5	May 2016/ May 2017/ May 2018/ Nov 2019
4.	Explain the working principle of stepper motor	5	May 2016
5.	Explain the construction of transformer	5	Dec 2017
6.	Write the applications of the stepper motor	5	Dec 2017/ May 2017/ May 2018
7.	Explain the working principle of transformer	5	May 2017
8.	Explain the construction of step-up and step-down transformers.	5	Dec 2018

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

9.	A power transformer has 100 primary turns and 600 secondary turns. If a primary voltage is 120V and full load primary current is 12A. Find (a) Secondary voltage (b) Secondary current.	5	Dec 2018
	A transformer has 240 turns on primary and 30 turns on secondary, draws 0.6 A from 240V line. Find secondary current.	5	May 2019
UNIT – 5 [PROTECTIVE DEVICES]			
1.	Explain the method of protecting computer from power transients	5	Dec 2016
2.	What is an earthing? Explain its necessity. List the types	5/6	Dec 2016/ May 2016/ Dec 2017/ May 2017/May 2019

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

3.	Explain the necessity of antistatic device and write the types of antistatic devices for protection of computers.	5	Dec 2016/Nov 2019
4.	What do you mean by switch? Classify the switches based on their operation	5	May 2016/ May 2017 /Nov 2019
5.	Explain working principle of a relays.	5	May 2016/ Dec 2017/ May 2018/Dec 2018/May 2019/Nov 2019

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

6.	Explain the need of spike busters for protection of computers	5	Dec 2017/ May 2018
7.	List different types of switches and write their symbols	5	May 2018
8.	Explain the need of fuse as a protective device in a circuit.	5	Dec 2018
9.	Explain with a neat diagram pipe earthing.	5	Dec 2018
10.	Define : (i) Fuse (ii) Switch	4	May 2019
UNIT – 6 [BASICS OF ELECTRONICS & UPS]			
1.	Differentiate conductors, insulators and semiconductors. Give one Example for each. OR Define Conductor, Semiconductor and Insulator.	5	Dec 2016/ May 2016/ Dec 2017/ May 2018/ Nov 2019
2.	Explain UPS with a block diagram	5	Dec 2016/ Dec 2017/ May 2017/ May 2018/Nov 2019
3.	Explain the criteria for selection of UPS	5	Dec 2016/Dec 2018
4.	Explain VI characteristics of (forward biased) PN junction diode Explain VI characteristics of PN junction diode	5 5	Dec 2016/ May 2016/ Dec 2017/ May 2018/May 2019
5.	What is transistor? List the types of transistors. Write their symbols and mention applications	5	Dec 2016/ Dec 2017/ May 2018
6.	Explain with neat sketch the operations of Bridge rectifier. Also, draw the input and output waveforms	6	Dec 2016
7.	What is an Op-Amp? List out the ideal characteristics of Op-Amp	5	Dec 2016/ May 2016/ Dec 2017/ May 2018/Dec 2018/Nov 2019
8.	Explain with neat sketch the operation of transistor as a switch	6	Dec 2016/Dec 2018
9.	Explain the procedure to maintain a battery	4	Dec 2016
10.	Explain intrinsic and extrinsic semiconductor	4/5	May 2016/ May 2017/ May 2019
11.	With a neat diagram show how a diode can be used as a half wave rectifier.	5	Dec 2018
12.	Explain the block diagram of an Op-Amp circuit.	5	Dec 2018
13.	Explain how Op-Amp can be used as a Non-inverting Amplifier.	5	Dec 2018
14.	List different types of switches with their symbols.	5	Dec 2018
11.	What is rectifier? Explain half wave rectifier with circuit and waveforms	5	May 2016/ May 2017/ May 2018/Nov 2019
12.	Explain transistor as a switch	5	May 2016/ May 2017/May 2019
13.	What are filter? List the types of filters OR Define filter. Explain 'C' type filter. OR Explain necessity of filter. List the types of filter.	5	May 2016 May 2019 Nov 2019
14.	Explain working of SMPS with block diagram	5/6	May 2016/May 2019
15.	Name different type of batteries and write their applications	4	May 2016/ Dec 2017
16.	Explain the working of C-filter	5	Dec 2017
17.	With neat circuit diagram, explain the working of Op-Amp inverting amplifier.	5	Dec 2017
18.	Write the block diagram Op-Amp	5	May 2017

CONCEPTS OF ELECTRICAL AND ELECTRONICS ENGINEERING [15EC01T]

19.	Explain the operation of diode and draw VI characteristics	6	May 2017
20.	Explain Op-Amp as inverting amplifier	5	May 2017/ May 2018
21.	What are the precautions to be taken in maintenance of lead acid battery	5	May 2017
22.	Explain the maintenance of battery.	5	May 2018/May 2019 /Nov 2019
23.	Explain p-type and n-type semiconductors.	5	Dec 2018
24.	Explain conductor, semiconductor and insulator with examples.	6	May 2019
25	With neat circuit diagram, explain the working of Op-Amp non inverting amplifier.	5	Nov 2019
26	Define a)Intrinsic semiconductor b)Extrinsic semiconductor c)Dopings	5	Nov 2019

