INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

COMPUTER SCIENCE AND ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	**FUNDUMENTALS OF ELECTRICAL ENGINEERING**
Course Code	:	**AEEB01**
Program	:	**B.Tech**
Semester	:	**I**
Branch	:	**Computer Science and Engineering**
Section	:	**A, B, C & D**
Course Faculty	:	**Mr. A Naresh Kumar, Assistant Professor** **Mr. K Lingaswamy, Assistant Professor** **Dr. M Laxmidevi Ramanaiah, Associate Professor** **Mr. A Srikanth, Assistant Professor** **Mr. T Mahesh, Assistant Professor** **Mr. N Shiva Prasad, Assistant Professor**

COURSE OBJECTIVES:

The course should enable the students to:	
I	Understand the basic electrical circuits and circuit laws to study behavior of electrical networks.
II	Use different network reduction techniques to study characteristics of electrical networks.
III	Analyze series and parallel AC circuits using complex notation.
IV	State and use DC circuit theorems to determine unknown currents and voltages.

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-I						
1	Define Inductance.	The property of a conductor by which a change in current flowing through it induces a voltage in both the conductor itself (self-inductance) and in any nearby conductors (mutual inductance). Measured in Henry (H).	Remember	CO 1	CLO 1	AEEB01.01
2	Define Capacitance.	The ability of a body to store an electrical charge. Measured in Farads as the ratio of the electric charge of the object (Q, measured in Coulombs) to the voltage across the object (V, measured in Volts).	Remember	CO 1	CLO 1	AEEB01.01
3	What is Conductor.	Any material where electric current can flow freely. Conductive materials, such as	Remember	CO 1	CLO 1	AEEB01.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		metals, have a relatively low resistance. Copper and aluminum wire are the most common conductors.				
4	What is a Wattmeter.	The wattmeter is an instrument for measuring the electric power in Watts of any given circuit.	Remember	CO 1	CLO 1	AEEB01.01
5	What is an Inductance.	A coil of wire wrapped around an iron core. The inductance is directly proportional to the number of turns in the coil.	Remember	CO 1	CLO 1	AEEB01.01
6	Define Electromotive Force (EMF).	A difference in potential that tends to give rise to an electric current. Measured in Volts.	Remember	CO 1	CLO 1	AEEB01.01
7	Define electric current.	Electrical current is the flow of electrons from higher electric potential towards the lower electric potential.	Remember	CO 1	CLO 1	AEEB01.01
8	Define voltage.	The potential difference between two points in an electric circuit called voltage.	Remember	CO 1	CLO 4	AEEB01.04
9	Define power.	The rate of doing work by electrical energy per unit time is called the power.	Remember	CO 1	CLO 4	AEEB01.04
10	Define resistance.	Resistance is the property of a substance, which opposes the flow of electric current.	Remember	CO 1	CLO 4	AEEB01.04
11	State Kirchhoff's laws.	Kirchhoff's current law: The sum of currents flowing towards the junction is equal to the sum of the currents flowing away from it. Kirchhoff's voltage law: In a closed circuit, the sum of the potential drops is equal to the sum of the potential rises.	Remember	CO 1	CLO 4	AEEB01.04
12	Explain about the series and parallel circuits.	When the resistors connected in a circuit such that the current flowing through them is same is called as series circuit. When resistors are connected across one another so that same voltage applied to each, then they are said to be in parallel the circuit is called as parallel circuit.	Understand	CO 1	CLO 4	AEEB01.04
13	State Ohm's law.	When temperature remains constant, current flowing through a circuit is directly proportional to potential deference across the conductor. V= I*R (Volts)	Remember	CO 1	CLO 4	AEEB01.04
14	Why battery rated in Ah (Ampere hour) and not in VA (Volt-Ampere).	Battery stores charge in the form of chemical energy and then converts it into electrical energy to utilize for a specific time. The amount of available charge is the capacity of a cell or battery which may be expressed in Ah.	Understand	CO 1	CLO 4	AEEB01.04

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		Moreover, in a charged battery, the numbers of molecules are limited to create a flow of electron in electric circuits, so, there must be a limited number of electrons in a cell/battery which they motivate through a circuit to fully discharge.				
15	Compare between practical sources and ideal sources.	An ideal voltage source is a power supply that can give you an infinite amount of current at a set voltage, without any voltage drop. It's independent of the load resistance or output current. However we live in a non-ideal world.	Understand	CO 1	CLO 1	AEEB01.01
16	Deduce voltage source from current source using source transformation.	Converting a practical current source connected with a resistor in parallel to a voltage source connected with a resistor in series follows the conditions for equivalent circuits: (1) The resistors must be equal in both circuits. (2) The source transformation must be constrained by Vs = Is R.	Understand	CO 1	CLO 1	AEEB01.01
17	Why ground is used in circuits.	A distribution system insulated from ground may attain a high potential due to transient voltages caused by arcing, static electricity, or accidental contact with higher potential circuits. A ground connection of the system dissipates such potentials and limits the rise in voltage of the grounded system.	Understand	CO 1	CLO 1	AEEB01.01
18	How do house circuits work.	Electricity arrives at your house from your local utility company by a power line or underground though a conduit. Most homes have three-wire service two hot wires and one neutral. This is the central distribution point for the electrical circuits that run to lights, receptacles, and appliances throughout the house.	Understand	CO 1	CLO 1	AEEB01.01
19	Where do we use parallel circuits.	The parallel circuit is the standard electrical circuit found in most homes and devices. Because it provides more than one way for a current to flow through to a device, it creates a much more stable and efficient power system than would otherwise be possible.	Understand	CO 1	CLO 1	AEEB01.01

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
20	Why voltage in parallel circuit is the same.	In parallel circuits, the electric potential difference across each resistor is the same. In a parallel circuit, the voltage drops across each of the branches is the same as the voltage gain in the battery. Thus, the voltage drop is the same across each of these resistors.	Understand	CO 1	CLO 2	AEEB01.02
21	What is difference between KVL and KCL.	KVL and KCL are the two laws given by Kirchhoff. KVL states that the algebraic sum of all potential differences and EMFs in closed path of electrical network is zero. KVL and KCL are one of the fundamental laws of electric circuit analysis. KVL states that the sum of all the voltages around a closed path (loop) is zero.	Understand	CO 1	CLO 1	AEEB01.01
22	Define loop in electrical circuit.	A loop is any closed path in a circuit. It is a closed path formed by starting at a node, passing through a set of nodes, and returning to the starting node without passing through any node more than once.	Remember	CO 1	CLO 4	AEEB01.04
23	Define active element.	The elements that supply energy to the circuit is called active element. Examples of active elements include voltage and current sources, generators, and electronic devices that require power supplies. A transistor is an active circuit element, meaning that it can amplify power of a signal.	Remember	CO 1	CLO 4	AEEB01.04
24	Why do homes use parallel circuits instead of series circuits.	When appliances are connected in a parallel arrangement, each of them can be put on and off independently. This is a feature that is essential in a house's wiring. Also, if the appliances were wired in series, the potential difference across each appliance would vary depending on the resistance of the appliance.	Understand	CO 1	CLO 4	AEEB01.04
25	What is the difference between series and parallel circuit.	In a series circuit, the current through each of the components is the same, and the voltage across the circuit is the sum of the voltages across each component. In a parallel circuit, the voltage across each of the components is the same, and the total current is the sum of the currents through each component.	Understand	CO 1	CLO 4	AEEB01.04

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
26	How does current flow in a circuit.	The direction of an electric current is by convention the direction in which a positive charge would move. Thus, the current the external circuit is directed away from the positive terminal and toward the negative terminal of the battery. Electrons would actually move through the wires in the opposite direction.	Understand	CO 1	CLO 4	AEEB01.04
27	Why do we need to study electricity.	Electricity and magnetism electrical current because it is very easy to connect and disconnect energy-using devices and because there are many physical effects involving electrical energy which make possible conversion into light, sound, motion, force, heat, cooling, and rapid transmission of information.	Understand	CO 1	CLO 4	AEEB01.04
28	Define dynamic electricity in simple words.	Electricity is the presence and flow of electric charge. Its best known form is the flow of electrons through conductors such as copper wires. The word "electricity" is sometimes used to mean "electrical energy". When the charges are moving they are electric current, sometimes called 'dynamic electricity'.	Remember	CO 1	CLO 4	AEEB01.04
		MODULE-II				
1	What is difference between mesh and nodal analysis.	Main difference in both analyses is the choice of variable. Mesh analysis we assume "i" loop current as variable. Nodal analysis we assume "v" node potential as variable.	Remember	CO 2	CLO 5	AEEB01.05
2	What is the difference between loop and mesh.	A mesh is a closed path in a circuit with no other paths inside it. In other words, a loop with no other loops inside it. A loop is a closed path in a circuit where two nodes are not traversed twice except the initial point, which is also the final one. But in a loop other paths can be included inside.	Understand	CO 2	CLO 5	AEEB01.05
3	Define reference node.	The voltage drop from a node to the reference node (ground) is called the node voltage. To keep definition simple, node voltages are usually defined with positive polarities. Let's find	Remember	CO 2	CLO 6	AEEB01.06

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		label node voltages in the following circuit: The circuit has 5nodes: Two of the nodes have 4 elements connected to them.				
4	Define branch current.	In electric circuit's analysis, nodal analysis, node-voltage analysis, or the branch current method is a method of determining the voltage (potential difference) between "nodes" (points where elements or branches connect) in an electrical circuit in terms of the branch currents.	Remember	CO 2	CLO 7	AEEB01.07
5	What is meant by mesh analysis.	Mesh analysis is a method that is used to solve planar circuits for the currents at any place in the circuit. Planar circuits are circuits that can be drawn on a plane surface with no wires crossing each other.		CO 2	CLO 8	AEEB01.08
6	Why do we need source transformation.	Shifting of current source within the network is undertaken so as to make the given electrical circuit suitable for current-to-voltage source transformation.		CO 2	CLO 5	AEEB01.05
7	How can voltage source be converted into current source.	The current source connected in parallel with a resistor to a voltage source connected in series with a resistor.		CO 2	CLO 9	AEEB01.09
8	What is a Delta Star.	A delta-wye transformer is a type of three-phase electric power transformer design that employs delta-connected windings on its primary and star connected windings on its secondary.		CO 2	CLO 7	AEEB01.07
9	What is junction in electrical circuit.	A junction is a point where at least three circuit paths meet. A branch is a path connecting two junctions.		CO 2	CLO 5	AEEB01.05
10	How do you find nodes in nodal analysis.	Identify all nodes. Choose a reference node. Identify it with reference (ground) symbol. Assign voltage variables to the other nodes (these are node voltages)Write a KCL equation for each node (sum the currents leaving the node and set equal to zero). Solve the system of equations.		CO 2	CLO 6	AEEB01.06
11	What is principal node in circuit.	A branch is any path in the circuit that has a node at each end and contains at least one voltage source or resistor but contains no other nodes.		CO 2	CLO 6	AEEB01.06
12	What are the applications of Thevenin's	Useful in the circuit analysis of power or battery systems and other interconnected resistive	Remember	CO 2	CLO 5	AEEB01.05

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	theorem.	circuits where it will have an effect on the adjoining part of the circuit.				
13	State Thevenin's Theorem.	Any linear circuit containing several voltages and resistances can be replaced by just one single voltage in series with a single resistance connected across the load.	Remember	CO 2	CLO 6	AEEB01.06
14	What are the theorem limitations of Thevenin's theorem.	a) Thevenin's is not applicable to the circuits consists of unilateral elements or non linear elements b) not applicable to the circuits consists of load in series or parallel with controlled or dependent sources.	Remember	CO 2	CLO 6	AEEB01.06
15	State Norton's Theorem.	It is possible to simplify any linear circuit, no matter how complex, to an equivalent circuit with just a single current source and parallel resistance connected to a load	Remember	CO 2	CLO 5	AEEB01.05
16	What are the theorem limitations of Norton's theorem.	a)Norton's theorem is not applicable to the circuits consists of unilateral elements or non linear elements b) not applicable to the circuits consists of load in series or parallel with controlled or dependent sources.	Remember	CO 2	CLO 5	AEEB01.05
17	What are the theorem applications of Norton's theorem.	Norton's theorem is valid only for linear elements.	Understand	CO 2	CLO 6	AEEB01.06
18	What is mesh analysis used for.	Mesh analysis is a method that is used to solve planar circuits for the currents at any place in the electrical circuit. Planar circuits are circuits that can be drawn on a plane surface with no wires crossing each other.	Understand	CO 2	CLO 7	AEEB01.07
19	Is mesh analysis the same as loop analysis.	Loop analysis is a special application of KVL on a circuit. We use a special kind of loop called a 'mesh' which is a loop that does not have any other loops inside of it. A mesh starts at a node and traces a path around a circuit, returning to the original node without hitting any nodes more than once.	Understand	CO 2	CLO 5	AEEB01.05
20	What is the difference between node and Junction.	Node is refers to any point on a circuit where two or more circuit elements meet. whereas junction is any point where electrical conductors are joined electrically. or two nodes to be		CO 2	CLO 8	AEEB01.08

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		different, their voltages must be different.A node usually corresponds to a junction physically.				
MODULE-III						
1	What is an Alternating Current (AC).	An electric current that reverses its direction many times a second at regular intervals.	Remember	CO 3	CLO 10	AEEB01.10
2	What is Susceptance in circuit.	In electrical engineering, susceptance is the imaginary part of admittance, where the real part is conductance.	Remember	CO 3	CLO 10	AEEB01.10
3	Define Average value of an AC signal.	The average value is defined as the average of all instantaneous values during one alternation. That is, the ratio of the sum of all considered instantaneous values to the number of instantaneous values in one alternation period. Whereas the average value for the entire cycle of alternating quantity is zero.	Remember	CO 3	CLO 10	AEEB01.10
4	Define RMS value of an AC signal.	The Root Mean Square (RMS) value is "the square root of the sum of squares of means of an alternating quantity. It can also express as the effect that produced by a certain input of AC quantity which is equivalent to an effect produced by the equal input of D.C quantity.	Remember	CO 3	CLO 10	AEEB01.10
5	How is an AC waveform generated.	Waveforms. AC can come in a number of forms, as long as the voltage and current are alternating. The most common type of AC is the sine wave. The AC in most homes and offices has an oscillating voltage that produces a sine wave.	Understand	CO 3	CLO 14	AEEB01.14
6	Why do we need form factor.	Although little used these days, both form factor and crest factor can be used to give information about the actual shape of the AC waveform. Form factor is the ratio between the average value and the RMS value and is given as. For a pure sinusoidal waveform the Form Factor will always be equal to 1.11.	Understand	CO 3	CLO 14	AEEB01.14
7	Define peak factor.	Peak Factor is defined as the ratio of maximum value to	Remember	CO 3	CLO 14	AEEB01.014

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		the R.M.S value of an alternating quantity. The alternating quantities can be voltage or current.				
8	Define cycle in AC current.	AC frequency is the number of cycles per second in an alternating current (ac) sine wave. Hertz (Hz): One hertz is equal to one cycle per second. Cycle: One complete wave of alternating current or voltage.	Remember	CO 3	CLO 13	AEEB01.013
9	Define alternation.	One half of a cycle of alternating quantity is known as alternation.	Remember	CO 3	CLO 13	AEEB01.13
10	Define period.	The time required to produce one complete cycle of a waveform.	Remember	CO 3	CLO 12	AEEB01.12
11	Why do we need AC current.	High voltages are more efficient for sending electricity great distances; AC electricity has an advantage over DC. This is because the high voltages from the power station can be easily reduced to a safer voltage for use in the house. Changing voltages is done by the use of a transformer.	Understand	CO 3	CLO 10	AEEB01.010
12	Why AC power is better than DC.	DC requires expensive electronic circuit to change voltage levels, making high voltage transmission impractical. DC is unquestionably better for long-distance power lines because the losses are less than AC lines. The line construction is less complicated - due to skin effect.	Understand	CO 3	CLO 10	AEEB01.010
13	What is the difference between i and j.	The actual difference between i and j is in the place where they are used but the numerical value of both are same that is root of minus one. The i is used by mathematician to represent an imaginary quantity such as complex number and j is uses by electrician to represent imaginary quantity such as impedance.	Understand	CO 3	CLO 10	AEEB01.010
14	What is the difference in Polar form and rectangular form.	The length r of the vector is the absolute value or modulus of the complex number and the angle O with the positive x-axis is called the direction angle or argument of x + yi. Conversions between rectangular and polar form follows the same rules as it does for vectors.	Understand	CO 3	CLO 10	AEEB01.010

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
15	Define admittance.	Admittance is a measure of how easily a circuit or device will allow a current to flow. It is defined as the reciprocal of impedance. The SI unit of admittance is the Siemens (symbol S).	Remember	CO 3	CLO 11	AEEB01.011
16	What is difference between reactance and reluctance.	Reluctance is a unit measuring the opposition to the flow of magnetic flux within magnetic materials and is analogous to resistance in electrical circuits. For electronic circuits, the following is true: Z = R + jX In this equation, Z is the impedance, R is the resistance, and X is the reactance.	Understand	CO 3	CLO 10	AEEB01.10
17	Why do we need reactance.	Reactance, denoted X, is a form of opposition that electronic components exhibit to the passage of alternating current (alternating current) because of capacitance or inductance. In some respects, reactance is like an AC counterpart of DC (direct current) resistance.	Understand	CO 2	CLO 14	AEEB01.14
18	How do you calculate AC RMS.	The RMS voltage (VRMS) of a sinusoidal waveform is determined by multiplying the peak voltage value by 0.7071, which is the same as one divided by the square root of two (1/√2).	Understand	CO 3	CLO 14	AEEB01.14
19	What do you mean by reactance and impedance in AC circuit.	An A.C. circuit may contain resistor, inductor and capacitor. Thus besides the resistance, the circuit has reactance. The combined effect of the resistance and reactance is called impedance (Z) of the circuit. The impedance of a circuit is defined as the ratio of r.m.s.	Understand	CO 3	CLO 13	AEEB01.13
20	What is difference between admittance and impedance.	In electrical engineering, admittance is a measure of how easily a circuit or device will allow a current to flow. Resistance is a measure of the opposition of a circuit to the flow of a steady current, while impedance takes into account not only the resistance but also dynamic effects.	Understand	CO 3	CLO 11	AEEB01.11
MODULE-IV						
1	Define Power Factor.	The ratio of the actual electrical power dissipated by an AC circuit to the product of the r.m.s. values of current and voltage.	Remember	CO 4	CLO 15	AEEB01.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
2	Define wattless current.	A wattless current can be defined in following way: The current in an AC circuit is said to be wattless current when the average power consumed in such circuit corresponds to Zero. Such current is also called as idle current.	Remember	CO 4	CLO 15	AEEB01.15
3	What is the use of reactive power.	If voltage on the system is not high enough, active power cannot be supplied. Reactive power is used to provide the voltage levels necessary for active power to do useful work. Reactive power is essential to move active power through the transmission and distribution system to the customer.		CO 4	CLO 16	AEEB01.16
4	Define impedance triangle.	Impedance triangle - is used to calculate impedance when resistance (R), inductance (L) and capacitance (C) are all present in the circuit, and the total reactance (X) is the difference between the inductive reactance (XL) and capacitive reactance (XC).	Remember	CO 4	CLO 16	AEEB01.16
5	Define voltage triangle.	When each component of the current that is the active component (Icosϕ) or the reactive component (Isinϕ) is multiplied by the voltage V, The power which is actually consumed or utilized in an AC Circuit is called True power or Active Power or real power.	Remember	CO 4	CLO 16	AEEB01.16
6	Define power triangle.	Real power is represented as a horizontal vector and reactive power is represented as a vertical vector. The apparent power vector is the hypotenuse of a right triangle formed by connecting the real and reactive power vectors. This representation is often called the power triangle.	Remember	CO 4	CLO 16	AEEB01.16
7	What is the cause of reactive power.	Positive reactive power is caused by inductive loads such as motors and transformers (especially at low loads). Negative reactive power is caused by capacitive loads. This can include lighting ballasts, variable speed drives for motors, computer equipment, and inverters.	Understand	CO 4	CLO 16	AEEB01.16
8	How reactive power is produced.	Reactive power is simply energy that is being stored in the load by any capacitors or inductors	Remember	CO 4	CLO 17	AEEB01.17

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		inside it. An AC voltage source will provide real power to a resistor; the voltage is in phase with the current and this means "real watts" are produced by the resistor and you are billed for the energy usage.				
9	What Happens When reactive power is zero.	Reactive power exists when there is a phase difference between voltage and current, so this type of energy cannot exist when the current and voltage are in phase.	Understand	CO 4	CLO 15	AEEB01.15
10	Why DC has no reactive power.	n case of DC system we do not convert any kind of power so no need of reactive power. Or in DC system V and I are in phase so power factor is 1.	Understand	CO 4	CLO 17	AEEB01.17
11	Why power factor correction is necessary.	Improving the p.f can maximize current-carrying capacity, improve voltage to equipment, reduce power losses, and lower electric bills. p.f. correction capacitors act as reactive current generators. They help offset the non working power used by inductive loads, thereby improving the power factor.	Understand	CO 4	CLO 15	AEEB01.15
12	Define bad power factor.	A system designer considers the following: A low p.f draws a higher internal current and the excessive heat generated will damage and shorten equipment life. Increased reactive loads can reduce output voltage and damage equipment sensitive to reduced voltage.	Remember	CO 4	CLO 15	AEEB01.15
13	Does power factor correction save energy.	Power factor correction is not an energy saving measure (real power remains the same). However, it is a cash saving measure. Given that one of the main purposes of energy efficiency is to save money, power factor correction is typically carried out along with energy efficiency retrofits.	Understand	CO 4	CLO 15	AEEB01.15
14	What is apparent power.	In an AC circuit, the product of the rms voltage and the rms current is called apparent power. When the impedance is a pure resistance, the apparent power is the same as the true power. But when reactance exists, the apparent power is greater than the true power.	Understand	CO 4	CLO 15	AEEB01.15
15	What is the difference between active	The reactive power is the useless power. The active power is the product of the voltage,	Understand	CO 4	CLO 15	AEEB01.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	power reactive power and apparent power.	current and the cosine of the angle between them. Whereas, the reactive power is the product of voltage and current and the sine of the angle between them. The active power is the real power, and it is measured in watts.				
16	What is meant by kVAR.	Actual Power consumed by loads is called Kilo Watt Power. All the Power given to the load is not utilized as useful power, some power is being wasted. The power which is not consumed is called Reactive power i.e KVAR.	Understand	CO 4	CLO 15	AEEB01.15
17	What is kVA rating.	kVA stands for Kilovolt-Ampere and is the rating normally used to rate a transformer. ... In many circumstances the power required by the load is equivalent to the rating of the transformer expressed in either VA or kVA.	Understand	CO 4	CLO 15	AEEB01.15
18	How do you know if power factor is leading or lagging.	When the power factor is 1, all the energy supplied by the source is consumed by the load. Power factors are usually stated as "leading" or "lagging" to show the sign of the phase angle. Capacitive loads are leading (current leads voltage), and inductive loads are lagging (current lags voltage).	Understand	CO 4	CLO 15	AEEB01.15
19	Why capacitor is rated in kVAR.	Capacitor banks designed for power factor correction are rated in kVAr (kilo-volt-ampere reactive) because it's convenient. One will typically know the reactive power required by some load, then it's simply a matter of selecting a capacitor of the equal but negative reactive power to improve the power factor.	Understand	CO 4	CLO 15	AEEB01.15
20	What is real power and apparent power.	The combination of reactive power and true power is called apparent power, and it is the product of a circuit's voltage and current, without reference to phase angle. Apparent power is measured in the unit of Volt-Amps (VA) and is symbolized by the capital letter S.	Understand	CO 4	CLO 15	AEEB01.15

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-V						
1	Define co-tree.	A set of links removed from a network graph to form a treeconstitute a co-tree.	Remember	CO 5	CLO 20	AEEB01.020
2	What is a graph.	The electric network in which all the elements are represented by line segments with dots at the ends, irrespective of their nature and value.	Remember	CO 5	CLO 20	AEEB01.20
3	Define tree.	A tree of electric network is set of branches which is a set of branches which contains all the nodes of the network but does not form any closed path.	Understand	CO 5	CLO 20	AEEB01.020
4	What is oriented graph.	A graph is said to be oriented when all its nodes are named ,all its branches are numbered and arbitrary directions are assigned to the branches.	Remember	CO 5	CLO 20	AEEB01.020
5	What is a path in a graph.	A sequence of branches traversed while going from one node to another node is called a path.	Remember	CO 5	CLO 20	AEEB01.020
6	Define connected graph.	If there exists atleast one path from each node of a graph to every other node of the graph.	Remember	CO 5	CLO 20	AEEB01.020
7	What is planar graph.	When a graph can be drawn on a plane surface without crossover of the branches then it is called planar graph.	Remember	CO 5	CLO 20	AEEB01.020
8	What is non-planar graph.	When a graph can be drawn on a plane surface with crossover of the branches then it is called non-planar graph.	Remember	CO 5	CLO 20	AEEB01.020
9	What is dual graph.	Two graphs are said to be dual if the tie-sets of one graph is the same as that of cut- sets of the other graph.	Remember	CO 5	CLO 20	AEEB01.020
10	What is single loop circuit.	A single loop circuit is one which has only one closed path.	Remember	CO 5	CLO 21	AEEB01.021
11	What is single node pair circuit.	A single node pair circuit is one which has only one independent node and a reference node.	Remember	CO 5	CLO 21	AEEB01.021
12	Define the terms twigs, links.	The branches of a tree is called twig and the branches of co-tree is called links of the graph	Remember	CO 5	CLO 20	AEEB01.020
13	Define loop in graph.	A loop is a closed path in a circuit where two nodes are not traversed twice except the initial point, which is also the final one. But in a loop other paths can be included inside.	Remember	CO 5	CLO 20	AEEB01.020
14	Define Tie-set in network topoloy.	A tie-set is the set of branches contained in a loop such that each loop contains one link or chord and the remaining are tree branches.	Understand	CO 5	CLO 21	AEEB01.021

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
15	Write the properties of incidence matrix.	A degree of 1 for a row means that there is one branch incident away from node. A degree of -1 for a row means that there is one branch incident into the node.	Understand	CO 5	CLO 21	AEEB01.021
16	Define co-tree.	A set of links removed from a network graph to form a tree constitute a co-tree.	Understand	CO 5	CLO 20	AEEB01.020
17	What is a graph.	The electric network in which all the elements are represented by line segments with dots at the ends, irrespective of their nature and value.	Understand	CO 5	CLO 22	AEEB01.022
18	What is a fundamental cut set.	One minimal cut sets, one for each. branch, in which each cut set includes exactly one branch of T.	Understand	CO 5	CLO 21	AEEB01.021
19	What is cut set matrix.	A cut set matrix is a minimal set of branches of a connected graph such that the removal of these branches causes the graph to be cut into exactly two parts. A cut-set consists of one and only one branch of the network tree, together with any links which must be cut to divide the network into two parts.	Understand	CO 5	CLO 22	AEEB01.022
20	What is Network Matrix.	Network matrices show how objects in a system are related to one another. Compared to other network diagrams like force-directed graphs, network matrices are more structured and can be easier to read.	Understand	CO 5	CLO 20	AEEB01.020

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