

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous) Dundigal, Hyderabad - 500 043

CIVIL ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Name	:	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
Course Code	:	AEEB04
Program	:	B.Tech
Semester	:	Ι
Branch	:	CIVIL Engineering
Section	:	A & B
Academic Year	:	2019 - 2020
Course Faculty	:	Mr. N Shivaprasad, Assistant Professor Mr. G Kranthi Kumar, Assistant Professor

COURSE OBJECTIVES:

The	course should enable the students to:
Ι	Understand Kirchhoff laws and their application in series and parallel circuits.
II	Discuss principle and operation of measuring instruments.
III	Analyze the characteristics of alternating quantities, electrical machines.
IV	Illustrate the V-I characteristics of various diodes and bi-polar junction transistor.

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	AEEB04.01
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	AEEB04.01
3	Define Ampere- Hour (Ah).	A unit of measure for battery capacity. It is obtained by multiplying the current (in amperes) by the time (in hours) during which current flows.	Remember	CO 1	CLO 1	AEEB04.01
4	What is Conductor.	Any material where electric current can flow freely.	Remember	CO 1	CLO 1	AEEB04.01

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
		Conductive materials, such as				
		metals, have a relatively low				
		resistance. Copper and				
		aluminum wire are the most				
		common conductors.				
5	What is a	The wattmeter is an instrument	Remember	CO 1	CLO 1	AEEB04.01
	Wattmeter.	for measuring the electric power				
		in Watts of any given circuit.				
6	What is an	A coil of wire wrapped around	Remember	CO 1	CLO 1	AEEB04.01
	Inductor.	an iron core. The inductance is				
		directly proportional to the				
7	Define	number of turns in the coll.	Dementer	CO 1		AEED04.01
/	Electromotive	A difference in potential that	Remember	COT	CLU I	AEED04.01
	Electromotive	ends to give fise to an electric				
0	Force (ENTF).	Devices that are used for	Domomhor	CO 1	CLO 4	
0	what is a	Devices that are used for measuring indicating	Kemember	COT	CLU 4	AEED04.04
	instrument	controlling and recording can				
	mstrument.	be considered as an instrument				
9	What is	These are generally used to	Remember	CO 1	CLO 4	AEEB04 04
	working	measure alternating voltages and	Remember	001	CLO I	TILLED 0 1.0 T
	principle	currents. In moving-iron				
	Moving-Iron	instruments the movable system				
	(MI)	consists of one or more pieces of				
	Instruments.	specially-shaped soft iron.				
		which are so pivoted as to be				
		acted upon by the magnetic field				
		produced by the current in coil.				
10	What is working	When a current carrying	Remember	CO 1	CLO 4	AEEB04.04
	principle	conductor is placed in a				
	Moving-	magnetic field, it experiences a				
	Coil(MC)	force and tends to move in the				
	Instruments.	direction as per Fleming's left-				100
		hand rule.				
11	Explain	If the first and the second finger	Remember	CO 1	CLO 4	AEEB04.04
	Fleming's left-	and the thumb of the left hand		· /		
	hand rule.	are held so that they are				
		at right angle to each other, then			-	
		the former on the conductor the	1		Sec. 1	
		first finger points towards the				
		direction of the magnetic field			h	
		and the second finger shows the		6		
		direction of the current in the		\sim		
		wire.		2		
12	What are	Advantages: i) The MC	Understand	CO 1	CLO 4	AEEB04.04
	advantages &	consumes less power and has		001		
	disadvantages of	great accuracy. ii) It has				
	MC instruments.	efficient damping characteristics				
		and is not affected by stray				
		magnetic field.				
		Disadvantages: i) Moving coil				
		instrument can only be used on				
		DC supply as the reversal				
		of current produces a reversal of				
		torque on the coil. ii) It's costly				
		as compared to moving iron				
		instruments.				
13	What are	Advantages: i) The MC	Remember	CO 1	CLO 4	AEEB04.04
	advantages &	consumes less power and has				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
	disadvantages of	great accuracy. ii) It has				
	MC instruments.	efficient damping characteristics				
		and is not affected by stray				
		magnetic field.				
		Disadvantages: i) Moving coil				
		instrument can only be used on				
		DC supply as the reversal				
		of current produces a reversal of				
		torque on the coil. ii) It's costly				
		as compared to moving iron				
		instruments.				
14	What are	Advantages: i)The moving iron	Remember	CO 1	CLO 4	AEEB04.04
	advantages &	instruments are cheap, robust				
	disadvantages of	and simple in construction. ii)				
	MI instruments.	These instruments can be used				
		on both AC and DC.)		
		Disadvantages: i) The moving				
		iron instruments have non-				
		uniform scale; crowded at the				
		beginning, therefore, accurate				
		readings are not possible at this				
		end. ii) These instruments are				
1.7	D C 1	not very sensitive.		GO 1		
15	Define electric	Electrical current is the flow of	Remember	COI	CLO I	AEEB04.01
	current.	electrons from higher electric				
		potential towards the				
16	D.C. Iter	Iower electric potential.	D	CO 1		A EED04.01
16	Define voltage.	The potential difference	Remember	COT	CLO I	AEEB04.01
		between two points in an				
17	Define neuron	The rate of doing work by	Domomhor	CO 1		
1/	Define power.	alastriasi anangu ner unit tima is	Kennennber	COT	CLU I	AEED04.01
	1	called the power				
10	Define	Registence is the property of a	Domombor	CO 1	CLO 1	AEED04.01
10	registance	substance, which opposes the	Kennennber	COT	CLU I	ALED04.01
	resistance.	flow of electric current				2
10	State	Kirchhoff's current law: The	Understand	CO 1	CLO 1	AEEB04.01
19	Kirchhoff's	sum of currents flowing towards	Understand	COT	CLUI	ALLD04.01
	laws	the junction is equal to the sum				
	laws.	of the currents flowing away			100	
	-7	from it			1.0	
		Kirchhoff's voltage law. In a				
		closed circuit the sum of the		Sec. 1		
		potential drops is equal to the		× .		
		sum of the potential rises.		×		
20	Explain about the	When the resistors connected in	Understand	CO 1	CLO 2	AEEB04.02
	series and parallel	a circuit such that the current	Charlotana	001	0202	11111110 0 1101
	circuits.	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.				
21	State Ohm's	When temperature remains	Understand	CO 1	CLO 1	AEEB04.01
	law.	constant, current flowing				
		through a circuit is directly				
		proportional to potential				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
		deference across the conductor. V= $I*R$ (Volts)				
22	Explain the Faraday's first law of electromagnetic induction.	Faraday's first Law of electromagnetic Induction state that whenever a conductor are placed in a varying magnetic field electromotive force(emf) are induced which is called induced electromotive force(emf), if the conductor circuit are closed current are also induced which is called induced current.	Understand	CO 1	CLO 4	AEEB04.04
23	Explain the Faraday's second law of electromagnetic induction.	Faraday's second law of electromagnetic induction states that, the magnitude of induced electromotive force is equal to the rate of change of flux linkages with the coil. The flux linkages is the product of number of turns and the flux associated with the coil.	Understand	CO 1	CLO 4	AEEB04.04
24	Explain about measuring instruments.	A measuring instrument is a device for measuring a physical quantity. In the physical sciences, quality assurance, and engineering, measurement is the activity of obtaining and comparing physical quantities of real-world objects and events	Understand	CO 1	CLO 4	AEEB04.04
25	Mention the basic requirements of measurement.	The basic requirements of measurement are . The standard used for comparison purpose must be accurately defined and should be commonly accepted. . The apparatus used and the method adopted must be provable.	Understand	CO 1	CLO 4	AEEB04.04
26	Define calibration.	Calibration is defined as the process by which comparing the instrument with a standard to correct the accuracy.	Remember	CO 1	CLO 4	AEEB04.04
27	Why calibration of instrument is important.	The calibration of all instruments is important since it affords the opportunity to check the instrument against a known standard and subsequently to errors in accuracy.	Understand	CO 1	CLO 4	AEEB04.04
28	List the functional elements of the measurement systems.	The three main functional elements of the measurement systems are: . Primary sensing element . Variable conversion element . Data presentation element	Remember	CO 1	CLO 4	AEEB04.04
29	Mention the functions performed by the measurement system.	The functions performed by the measurement system are Indicating function Recording function Controlling function	Understand	CO 1	CLO 4	AEEB04.04

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		MODULE-	Ш			
1	What is a	A device which converts	Remember	CO 2	CLO 5	AEEB04 05
-	Generator.	mechanical energy into	Remember	002	0205	
		electrical energy.				
2	Explain working	According to Farady's laws of	Understand	CO 2	CLO 5	AEEB04.05
	principle of a DC	electromagnetic induction,				
	generator.	whenever a moving conductor is				
		placed in a magnetic field, an				
		induced in the conductor				
3	What are the	Main Parts of DC machine: i)	Remember	CO 2	CLO 6	AEEB04 06
5	main parts of a	Armature, consists of	Remember	002	010 0	1122201.00
	D.C machine.	conductors ii) Field Circuit,	1.1			
		provides magnetic field.		\sim		
4	What are types of	Types: i) Separately excited DC	Remember	CO 2	CLO 7	AEEB04.07
	D.C generator.	generator and ii) Self-excited				
	****	DC generator.	D	~~ ~		
5	What is meant by	As the armature rotates, a	Remember	CO 2	CLO 8	AEEB04.08
	EMF of a DC	voltage is generated in its coils.				
	machine.	EME of rotation is called the				
		Generated EMF or Armature				
		EMF and is denoted as E_r		_		
		= E _g . In the case of a motor, the				
		EMF of rotation is known as	_			
		Back EMF or Counter EMF and				
		represented as $E_r = E_b$.				
6	What is motor	A motor is an electrical	Remember	CO 2	CLO 5	AEEB04.05
	and what is the	machine which converts				
	working	electrical energy into	_	_		
	DC motor	principle of working of a DC				
	De motor.	motor is that "whenever a			1	
		current carrying				1
		conductor is placed in a			~	
		magnetic field, it experiences a		× .		
	D 11 1	mechanical force".	XX 1 1		CT O O	
1	Explain about	The torque equation of DC	Understand	CO 2	CLO 9	AEEB04.09
	of a DC motor	motor varies with only flux ϕ			1. C	
8	Mention about	Each DC machine can act as a	Remember	CO 2	CLO 7	AFEB0/1.07
0	the classification	generator or a motor. Hence	Remember	002		ALLD04.07
	of DC machines.	this classification is valid for		· · · ·		
		both: DC generators and DC				
		motors. DC machines are				
		usually classified on the basis of				
		their field excitation method.				
		This makes two broad categories				
		OI dC				
		and ii) Self-excited				
9	What are the	Direct Current (DC) motors are	Remember	CO 2	CLO 5	AEEB04.05
	applications of	very commonly used as variable	Remember	002		11004.03
	DC motors.	speed drives and in				
		applications where severe torque				
		variations occur.				
10	Why do we need	Starters are used to protect DC	Understand	CO 2	CLO 6	AEEB04.06
	starter to start a	motors from damage that can be				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
	DC motor.	caused by very high current and				
		torque during startup. They do				
		this by providing external				
		resistance to the				
		motor, which is connected in				
		series to the motor's armature				
		winding and restricts the current				
		to an acceptable level.				
11	What is the main	In an AC generator the field is	Understand	CO 2	CLO 6	AEEB04.06
	difference	rotating and the armature is				
	between an AC	stationary whereas in DC				
	generator and DC	generator the field is stationary				
	generator.	and the armature is rotating.				
12	Define electric	An electrical machine, which	Remember	CO 2	CLO 5	AEEB04.05
	motor.	converts electrical energy into				
		mechanical energy, is				
		called as electric motor.				
13	What is meant by	It is the effect of armature	Understand	CO 2	CLO 6	AEEB04.06
	armature reaction.	magnetic field on the				
		distribution of flux under main				
		poles of a generator.				
		The armature magnetic field has				
		two effects				
		It demagnetizes or weakens the				
		main flux				
		It cross-magnetizes or distorts it.				
14	What is the use	A device is used in a DC	Understand	CO 2	CLO 6	AEEB04.06
	of commutator.	generator to convert the				
		alternating electromotive				
		force(emf) into unidirectional				
		electromotive force(emf) is				
	~ · · ·	called commutator.		~~~	<i></i>	
15	State that the	The rules states that outstretch	Understand	CO 2	CLO 5	AEEB04.05
	Fleming's left	the three fingers of the left hand				
	hand rule.	namely the first finger, middle			- C	
	1	finger and thumb such that they				
	0	are mutually perpendicular to				
	0	each other. Now point the first			-	
	- C .	finger in the direction of			Sec. 1	
	-0	finger in the direction of the				
		linger in the direction of the			h	
		direction of the force			0.005	
		allection of the force		~~		
		the conductor				
16	Define Lonz's	Lenz's law states the direction	Remember	CO^{2}	CLO 5	AFER04.05
10	low	of induced emf is always so as	Kemember	02	CLO J	ALLD04.05
	law.	to oppose the cause				
		producing it				
17	Explain the	To restrict high starting	Understand	CO 2	CLO 6	AEEB04 06
17	necessity of	armature current a variable	Onderstand	002	010 0	
	starter.	resistance is connected in series				
		with the e armature at start. This				
		resistance is called starter.				
18	What is meant by	Without actually loading the	Understand	CO 2	CLO 7	AEEB04.07
	Swinburne's test.	motor the losses and hence				
		efficiency at different loads				
		can be found out.				
19	What is meant	Practically though the generator	Understand	CO 2	CLO 5	AEEB04.05
	by residual	is not working, without any				
	magnetism.	current through field				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
	-	winding, the field poles posses				
		some magnetic flux. This is				
		called as residual magnetism.				
20	Explain the back	When the armature of a DC	Understand	CO 2	CLO 8	AEEB04.08
	emf or counter	motor rotates under the				
	emf.	influence of the driving torque,				
		the armature conductors move				
		through the magnetic field and				
		hence e.m.f. is induced in them				
		as in a generator. The induced				
		e.m.f. acts in opposite direction				
		to the applied				
		voltage V (Lenz's law) and in				
		known as back or counter emf				
		(E_b) . It is always less than the				
		applied voltage V, although this				
		difference is small when the				
		motor is running under normal				
		conditions.				
21	Why series	Series motor cannot be started	Remember	CO 2	CLO 6	AEEB04.06
	motor cannot be	without load because of high				
	started on no-	starting torque. Series motor are				
	load.	used in Trains, Crane etc.				
22	Which type of	DC series motor is used in the	Remember	CO 2	CLO 6	AEEB04.06
	motor is used in	trains to get high starting torque				
	trains.	while starting of the trains.				
23	How can you	We can reverse the direction of	Remember	CO 2	CLO 5	AEEB04.05
	reverse the	rotation of a DC motor by either				
	direction of	reversing the field current or				
	rotation of a DC	armature current. If both the				
	Motor.	currents are reversed the motor				
		will run in original direction.				
24	Explain the	Brake test	Understand	CO 2	CLO 7	AEEB04.07
	different tests	. Swinburne's test or No-load test				
	conducted on DC	. Regeneration test or			- C)
	Machines.	Hopkinson's test				
		. Retardation or Running down			A	
25	Montion the	Star delta starter Auto	Pomomhor	CO_2	CL O 13	AEEB0// 13
25	methods for	transformer starter Resistance	Kemember	02	CLO 15	ALLD04.15
	starting an	starter Series reactor starter			1.1	
	induction motor	Direct online starter (DOL).				
	induction motor.					
		MODULE-	III			
1	XX71			<u> </u>	CLO 10	A EED04 10
1	What is an	An electric current that reverses	Remember	CO 3	CLO 10	AEEB04.10
	Alternating	its direction many times a				
	Current	second at regular intervals.				
2	(AC).	The ratio of the actual electrical	Pomomhor	CO 3	CLO 10	AEEB04 10
2	Easter	nower dissipated by an AC	Kennennber	05	CLO 10	AEED04.10
	ractor.	circuit to the product of the				
		r m s values of current and				
		voltage.				
3	Define	The average value is defined as	Remember	CO 3	CLO 10	AEEB04 10
5	Average value	"the average of all instantaneous	Remember	005	01010	
	of an AC	values during one alternation"				
	signal.	That is, the ratio of the sum of				
	0	all considered instantaneous				
		values to the number of				
		instantaneous values in one				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
		alternation period. Whereas				
		the average value for the entire				
		cycle of alternating quantity is				
		zero.				
4	Define RMS	The Root Mean Square (RMS)	Remember	CO 3	CLO 10	AEEB04.10
	value of an	value is "the square root of the				
	AC signal.	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".		-		
5	Define a	A transformer consists of two	Remember	CO 3	CLO 14	AEEB04.14
	Transformer.	electrically isolated coils and	Second Contraction			
		operates on Faraday's principal				
		of "electromagnetic mutual				
		induction", in which an EMF is				
		induced in the transformers				
		secondary coil by the magnetic				
		flux generated by the voltages				
		and currents flowing in the				
		primary coil winding.				
6	How an EMF is	Actually in electrical power	Remember	CO 3	CLO 14	AEEB04.14
	induced in a	transformer, one alternating				
	transformer.	electrical source is applied to the				
		primary winding and due to this,				
		magnetizing current flowing				
		through the primary winding				
		in the same of transformer. This				
	1	in the core of transformer. This				
	60	nux ninks with both primary and				
	-	flux is alternating in natura			1.00	
		there must be a rate of change of				2
	1	flux According to Faraday's				
	~	law of electromagnetic			A	
	0	induction if any coil or				
		conductor links with any			100	
	-7	changing flux there must be an				
		induced EMF in it.				
7	What are the	In any electrical machine, 'loss'	Remember	CO 3	CLO 14	AEEB04.014
	losses in a	can be defined as the difference		5 T .		
	transformer.	between input power and output				
		power. An electrical transformer	· · · ·			
		is a static device, hence				
		mechanical losses (like windage				
		or friction losses) are absent in				
		it. A transformer only consists				
		of electrical losses (iron losses				
		and copper losses).				
8	Explain about	In a D.C motor, supply is	Understand	CO 3	CLO 13	AEEB04.013
	working	needed to be given for the stator				
	principle of	winding as well as the rotor				
	three-phase	winding. But in an induction				
	Induction motor.	motor only the stator winding is				
		ted with an AC supply.				
		Alternating flux is produced				
		around the stator winding due				

Image: 10 AC supply. This alternating flux revolves with synchronous speed. The revolving flux is called us "Rotating Magnetic Field" (RMF). The relative speed between stator RMF and notor conductors causes an induced EMF in the rotor conductors, according to electromagnetic induction. The rotor conductors according to electromagnetic induction. The rotor conductors are short critical, and hence rotor current is produced due to induced EMF in the rotor conductors are short critical, and hence rotor eurent is produced due to induced EMF in the rotor conductors are short critical, and hence rotor eurent is produced due to induced EMF. That is why such hence induction motors are short critical as rotating transformers. hence induction motors are widely used in industrial and commercial applications. These actor are of two types, squirrel cage and ship ring motors. Squirrel cage motors are widely used to their rugged construction and simple design. Slip ring motors require external revisions to have high starting principle of Alternator.RememberCO 3CLO 12AEEB04.1210What is working mprinciple of Alternator.The machine which produces 3 principle of alternator.Remember scheck condition torque.CO 3CLO 10AEEB04.01011What do you understand by eo. squares according to its singed and is quarking a singlitad wave is obland. It is duced in the principle of alternator.RMS value of an alternating transplated by the singlitad by the scheck of an alternating current or voltage.CO 3CLO 10AEEB04.01011What do you understand by eo. singlitade.RMS value of an alternating tenter to voltage is used to <th>S.No</th> <th>QUESTION</th> <th>ANSWER</th> <th>Blooms Level</th> <th>СО</th> <th>CLO</th> <th>CLO Code</th>	S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
10 What are the applications of induction motors. Chin scutture is sundanced due to induced due to induced and is sundary used in a motors. Chin scutture is sundanced due to induced EMF. That is why such motors are short circuited, and hence rotor current is produced due to induced EMF. That is why such motors are short circuited, and hence rotor induces in itransformers, hence induction motors. Chin scutture is sundanced due to induced EMF. That is why such motors are widely used in motors. Chin scutture is sundanced for three-phase AC induction motors. Chin scutture is not concentration is sune as a phileations of induced to their rugged construction and simplications. Signified cage motors are widely used in induction. Signified cage motors are widely used in induced in a motors. Squired cage motors are widely used in induction motors. Signified cage motors are widely used in induction motors. Signified cage motors are widely used in induction motors. Signified cage motors are widely used in induced to their rugged construction and simple design. Signified and alternator or synchronous generator. The working of an alternator is based on the principle to the principle to the principle doil by the time period, angular were is obtained. It is denoted by on and is expressed in radians period angular were is obtained. It is denoted by on and is expressed in radians period angular were is obtained. It is denoted by the time period, angular were is obtained. It is denoted by the time period, angular were is obtained. It is denoted by and alternator or voltage. CO 3 CLO 10 AEEB04.010 11 What RMS RMS value of an alternator or voltage. amplitude because it is used to denote its amplitude because it is adding the rute or voltage is used to denote its amplitude because it is work with or oth age is used to denote its amplitude because it is work with the reflective va			to AC supply. This alternating				
speed. The revolving flux is called as "Notating Magnetic Field" (RMF).speed. The revolving flux is called as "Notating Magnetic 			flux revolves with synchronous				
Image: second			speed. The revolving flux is				
Field" (RMF).The relative speed between stator RMF and rotor conductors causes an induced EMF in the rotor conductors according to electromagnetic induction. The rotor conductors are short criticited, and hence rotor eurrent is produced due to induced EMF that is why such motors are called as induction motors. Chis action is same as that occurs in transformers, hence induction motors can be called as rotating transformers, hence induction motors are of two types, squirel cage and slip ring motors. These are of two types, squirel cage and slip ring motors. These are of two types, squirel cage and slip ring motors. Super squire external regime external regime external regime external regime external motors are widely used in applications. These are of two types, squirel cage and slip ring motors. Squirel cage and slip ring motors. Squirel cage and slip ring motors are widely used the their rugged construction and simple design. Slip ring motors require external regime external regime.RememberCO 3CLO 12AEEB04.1210What is working and resistors to have high starting regime.The machine which produces 3 phase power from mechanical phase power from mechanical phase power from mechanical phase source from synchronous generator. The working of an alternator is based on the principle that when the flux tinking a conductor changes, an erm is induced in the time period, angular value of an alternating current or voltage.UnderstandCO 3CLO 10AEEB04.01011What do you understand by o. value of an alternating current or voltage is used to denote its amplitude.Define effective that steady current or voltage.CO 3CLO 10			called as "Rotating Magnetic				
Image: 13 Section 13 Section 13 Section 13 Section 13 Section 13 Section 14 Section			Field" (RMF).				
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Value of an alternating denote its amplitude because it current or is related to the power voltage is used developed in a resistance by the to denote its alternating current or voltage. amplitude. developed in a resistance by the alternating current or voltage. The effective value of an alternating current is given by that steady current which when flows through a given resistance Remember CO 3 CLO 10 AEEB04.010	12	Why the RMS	RMS value of an alternating	Understand	CO 3	CLO 10	AEEB04.010
alternating current or voltage is used to denote itsdenote its amplitude because it is related to the power developed in a resistance by the alternating current or voltage. amplitude.developed in a resistance by the alternating current or voltage. amplitude.13Define effective value of an sinusoidal wave.The effective value of an alternating current is given by that steady current which when flows through a given resistanceRememberCO 3CLO 10AEEB04.010		value of an	current or voltage is used to				
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voltage is used developed in a resistance by the alternating current or voltage. amplitude. alternating current or voltage. 13 Define effective value of an alternating current is given by sinusoidal wave. that steady current which when flows through a given resistance		current or	Is related to the power				
amplitude.anternating current of voltage.13Define effective value of an sinusoidal wave.The effective value of an alternating current is given by that steady current which when flows through a given resistanceRememberCO 3CLO 10AEEB04.010		to denote its	alternating current or voltage				
13Define effective value of an sinusoidal wave.The effective value of an alternating current is given by that steady current which when flows through a given resistanceRememberCO 3CLO 10AEEB04.010		amplitude	and maning current of voltage.				
value of an alternating current is given by that steady current which when flows through a given resistance	13	Define effective	The effective value of an	Remember	CO 3	CLO 10	AEEB04 010
sinusoidal wave. that steady current which when flows through a given resistance	15	value of an	alternating current is given by	Remember	005		1122007.010
flows through a given resistance		sinusoidal wave	that steady current which when				
			flows through a given resistance				
for a given time produces the			for a given time produces the				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
		same amount of heat as when				
		the alternating current is flowing				
		through the same resistance for				
		the same time				
		duration.				
14	Explain the	Form factor is a mean of relating	Understand	CO 3	CLO 10	AEEB04.010
	significance of	the mean value with the				
	form factor.	effective value of alternating				
		quantity and it is useful in				
		determination of effective				
		values of the alternating				
		quantities whose mean or				
		average values over half a				
		period can be determined				
		conveniently.				
15	Explain the	Peak factor of an alternating	Understand	CO 3	CLO 11	AEEB04.011
	significance of	voltage is very essential in				
	peak factor.	connection with determining				
		the dielectric strength since the				
		dielectric stress developed in an				
		insulting material is proportional				
		to the peak value of the voltage				
		applied to it.		2 20.0	CT 0.40	
16	Define phase	The phase of an alternating	Remember	CO 3	CLO 10	AEEB04.10
	and phase	quantity (voltage or current) at				
	difference.	any instant is defined as the				
		fractional part of a cycle through				
		which the quantity has advanced				
		while the phase difference may				
		dianlagement between the				
		maximum positive values of the				
		two phasor's representation the				
		two quantities having the same				C
		frequency			1	
17	Why are	Copper losses (I ² R) depend on	Understand	CO 2	CLO 14	AEEB04 14
17	transformers	current which passing through	Chacistana	002	CLO II	TILLE 0 III I
	rated in KVA.	transformer winding while Iron			- A-	
		losses or core losses or	1		-	
		Insulation losses depend on			100	
		Voltage. That's why the			1. T	
		transformer rating may be			- C - C - C - C - C - C - C - C - C - C	
		expressed in VA or kVA, not in				
		W or kW.		0		
18	Explain if DC	If DC supply is given to the	Understand	CO 3	CLO 14	AEEB04.14
	supply is applied	primary of Transformer then DC				
	to the	current flows through primary				
	transformer.	winding which is constant(time				
		invariant).For production of emf				
		in any winding the current				
		flowing through that must be				
		sinusoidal since $e=L^*(dI/dt)$.So				
		in the given case ie, for DC				
		input, no emt produced in				
10	W71	primary winding.	I Instant 1	<u> </u>	CL 0 12	AEED04.12
19	wny an	An induction motor is	Understand	003	CLU 13	AEEB04.13
	sometimes	transformer because the stater				
	called rotating	(stationary part) is accontially				
	transformer	the primary side of the				
	aunorormor.	and primary side of the				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
		transformer and the rotor				
		(rotating part) is the secondary				
		side.				
20	Define slip.	This difference between the	Remember	CO 3	CLO 11	AEEB04.11
		speed of the rotor and speed of				1
		the rotating magnetic field in the				1
		stator is called slip. It is unit less				1
		relative speed of the				1
		magnetic field as seen by the				
		rotor to the speed of the rotating				1
		field. Due to this an induction				
		motor is sometimes referred to				
		as an asynchronous machine.				1
21	What is a	Cogging torque of electrical	Understand	CO 3	CLO 12	AEEB04.12
	cogging torque.	motors is the torque due to the				
		interaction between the				
		permanent magnets of the rotor				1
		and the stator slots of a				1
		Permanent Magnet (PM)				
		or 'no current' torque it is an				
		undesirable component for the				1
		operation of such a motor. It is				
		especially prominent at lower				
		speeds, with the				1
		symptom of jerkiness.				
22	Explain the	The damper winding is useful in	Understand	CO 3	CLO 12	AEEB04.12
	advantages of	preventing the hunting				1
	providing	(momentary speed fluctuations)				1
	damper winding.	in generators.				
		The damper winding also used				
		to maintain balanced 3 phase				
	-	conditions			1	
23	Define turbo	High speed alternators are called	Remember	CO 3	CLO 12	AEEB04 12
23	alternators.	as Turbo alternators.	Remember	005	CL0 12	11LLD0 1.12
		As it runs at very high speed,			-	
	C	salient pole rotors are not used.			- C	1
	-0	Smooth cylindrical type rotor is				1
		suitable for turbo alternators.				L
24	How is a direct-	The armature of the exciter is	Understand	CO 3	CLO 14	AEEB04.14
	connected	mounted on the shaft of the		~		1
	exciter arranged	alternator close to the spider				1
	in an alternator.	hub. In some cases, it is				1
		to permit a padastal and basring				1
		to be placed between the exciter				1
		and the hub				1
		MODULE-1	IV			
1	What is a diode.	A semiconductor device with	Remember	CO 4	CLO 15	AEEB04.15
		two terminals, typically				1
		allowing the flow of current in				1
		one direction only. Diodes allow				1
		is positive in relation				1
		to the cathode				1

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
2	What is meant by	A solid substance that has	Remember	CO 4	CLO 15	AEEB04.15
	semiconductor.	conductivity between that of an				
		insulator and that of most				
		metals. Devices made of				
		semiconductors, notably silicon,				
		are essential components of				
		most electronic circuits.		~~ .	~ ~ ~ ~ ~ ~	
3	What is a	An electrical device that	Remember	CO 4	CLO 16	AEEB04.16
	Rectifier.	converts an alternating current				
		into a direct one by allowing a				
		direction only				
4	What is half	The helf wave restifier is a type	Domomhor	CO 4	CL 0 16	AEED04.16
4	what is half-	of reatifier which converts helf	Remember	CO 4	CLU 10	AEED04.10
	wave recurrer.	of the AC input signal (positive				
		balf avala) into pulsating DC				
		output signal and the remaining	Second Contraction	-		
		balf signal (negative half avala)				
		is blocked or lost. In helf wave				
		ractifier circuit, we use only a				
		single diede				
5	What is full -	The full wave rectifier is a type	Remember	CO 4	CL 0 16	AFFR04 16
5	wave rectifier	of rectifier which converts the	Remember	004	CLO IO	ALLD04.10
		full AC input signal (positive				
		half cycle and negative half				
		cycle) to pulsating DC output				
		signal. Unlike the				
		half wave rectifier, the input				
		signal is not wasted in full wave	and the second s			
		rectifier. The efficiency of full				
		wave rectifier is high as				
		compared to the half wave				
		rectifier.				-
6	What is full-	Another, more popular full-	Remember	CO 4	CLO 16	AEEB04.16
	wave Bridge	wave rectifier design exists, and		_	0	· · · · · · · · · · · · · · · · · · ·
	rectifier.	it is built around a four-		7		
		diode bridge configuration. For				
		obvious reasons, this design is			-	
7	What is ringle	The empount of AC weltage	Domomhor	CO 4	CL 0 16	AEED04.16
/	voltage	mixed with the rectifier's DC	Kemennee	CU 4	CLO 10	AEED04.10
	voltage.	output is called 'ripple voltage'			h.,	
		In most cases, since "pure" DC		63	6.000 E	
		is the desired goal rinnle		~~		
		voltage is				
		undesirable.				
8	Define Filter.	A filter is a circuit capable of	Remember	CO 4	CLO 17	AEEB04.17
		passing (or amplifying) certain				
		frequencies while attenuating				
		other frequencies. Thus, a filter				
		can extract important				
		frequencies from				
		signals that also contain				
		undesirable or irrelevant				
		frequencies.		a a i	a a b b	
9	Define	A graphical representation of	Remember	CO 4	CLO 15	AEEB04.15
	waveform.	electrical cycles which shows				
		amplitude over some period of				
		time				
		tine.				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
10	Explain about	Diode is a two terminal p-n	Understand	CO 4	CLO 17	AEEB04.17
	Diode as a	junction that can be used in				
	Switch.	various applications. One of				
		such applications is an electrical				
		switch. The p-n junction, when				
		forward biased acts as close				
		circuited and when reverse				
		biased acts as open circuited.				
		Hence the change of forward				
		and reverse biased states makes				
		the diode work as a switch, the				
		forward being				
		ON and the reverse being OFF				
		state.			CT 0 1 7	
11	What is a zener	A zener diode is a special type	Remember	CO 4	CLO 15	AEEB04.15
	diode.	of device designed to operate in		\sim		
		the zener breakdown region.				
		Zener diodes acts like normal p-				
		n junction diodes under forward				
		biased condition. When forward				
		biased voltage is applied to the				
		zener diode it allows large				
		blocks only a small amount of				
		electric current				
12	Explain about	Zener diode is a silicon	Understand	CO 4	CLO 15	AEEB04 15
12	zener diode as a	semiconductor with a p-n	Chaelbhand	001	010 10	1122001110
	voltage	junction diode which operates				
	regulator.	under reverse biased condition.	and the second sec			
		It is used as a voltage regulator				
		in DC circuit. The primary				
		objective of the zener diode as a				
	-	voltage regulator is to maintain		_		
	· · · ·	a constant voltage.		-		
13	Define what a p-n	The contact surface between the	Remember	CO 4	CLO 15	AEEB04.15
	junction.	layers of p-type and n-type		_		2
		semiconductor pieces			-	
14	Explain space	The region around the junction	Understand	CO 4	CLO 15	AEEB04.15
	region called the	is completely ionized on		· .		
	depletion region.	formation of p-n junction. As a			100	
	- Y	result, there are neither free		- 0	h	
		electrons on the n-side nor the		2.7	100 C	
		holes on the p-side. Since the				
		region around the junction is		0		
		depleted of mobile charges, it is	1.1.1.1			
15	Define out in	The forward voltage of which	Domomhou	CO 4	CL 0 15	AEED04.15
15	Define cut-in	the current through the p p	Kemember	CO 4	CLO 15	ALEDU4.13
	iunction diodo	iunction starts increasing				
	junction aloue.	rapidly is called the cut-in				
		voltage				
16	Define peak	Peak inverse voltage is the	Remember	CO 4	CLO 15	AEEB04 15
10	inverse voltage	maximum voltage that can be	Remember	004	CLO 15	MEED 04.15
	miterse tonage.	applied to the p-n junction				
		without damaging the junction				
		If the reverse voltage across the				
		junction exceeds its peak inverse				
		voltage (PIV), the junction may				
		get destroyed owing to				
		excessive heat.				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
17	Define	Breakdown voltage is defined as	Remember	CO 4	CLO 15	AEEB04.15
	breakdown	the reverse voltage at which p-n				
	voltage.	junction breaks down				
		with sudden rise with reverse				
10		current.		~~ .	~ ~ ~ ~ ~	
18	Explain about	Constant voltage regulator is a	Understand	CO 4	CLO 15	AEEB04.15
	the constant	p-n junction diode specially				
	voltage	designed for operation in the				
	regulator.	breakdown region in reverse				
10	What is the	Dias condition.	I In denotorial	CO 4	CL 0 15	AEED04.15
19	what is the	working As stated above the	Understand	CO 4	CL0 15	AEEB04.15
	working principle of	hasic principle behind the				
	zener diode	working of a zener diode lies in		_		
	zener uloue.	the cause of breakdown for a				
		diode in reverse biased		_		
		condition. Normally there are				
		two types of breakdown- zener				
		and avalanche. This type of				
		breakdown occurs for a reverse				
		bias voltage between 2 to 8v.				
20	Explain how	Zener diode has the property of	Understand	CO 4	CLO 15	AEEB04.15
	zener diode	behaving like a dc battery in				
	maintains	'on' state. If the zener diode is				
	constant voltage	shunted across the load RL and		_		
	across the load	the voltage across zener diode is				
	deross the fold.	more than the zener voltage VZ				
		then zener diode is on 'on' state				
		, and any variation in voltage				
		across the zener diode due to		_		
		variations either in supply				
	1	voltage of in load resistance is		-		
	60	to change the output voltage				
	-	Thus zener diode maintains		_	1.00	
		voltage constant across the load		_		
21	Define AC to	A rectifier is a device which	Remember	CO 4	CLO 17	AEEB04.17
	DC power	converts alternating current (or)		001	02017	
	converter.	voltage into unidirectional		· ·		
		current (or) voltage.			100	
22	Define why	The type of supply available	Remember	CO 4	CLO 16	AEEB04.16
	half-wave	from half-wave rectifier is not		2.7		
	rectifiers	satisfactory for general power		1		
	are generally	supply. That is defining why it		0		
	not used in dc	is generally not used in dc				
	power supply.	power supply.			67 0 1 1	
23	What is	Transformer utilization factor is	Understand	CO 4	CLO 16	AEEB04.16
	transformer	defined as the ratio of power				
	utilization factor.	delivered to the load and ac				
		rating of secondary of supply				
24	Which dowigo	Filter is a device that converte	Understand	CO 4	$CI \cap 16$	AFEB0/ 16
24	which device	pulsating output of rectifier into	Understand	CU 4	CLU 10	AEEDU4.10
	the harmonics of	a steady de level				
	DC signal					
25	Why canacitor	In capacitor input filter, the de	Understand	CO 4	CLO 16	AEEB04 16
25	input filter is	output is much larger and	Chaerstand	00 -		1007.10
	preferred to	ripples are less in comparison to				
	choke input	those in choke input filter. So.				
	filter.	· · · · · · · · · · · · · · · · · · ·				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
	-	capacitor input filter is preferred				
		to choke input filter.				
26	Explain π -filters	Voltage regulation in case of π -	Understand	CO 4	CLO 16	AEEB04.16
	are not suitable	filters is very poor and,				
	for varying	therefore, π -filters are not				
	loads.	suitable for varying loads.		~~ /	~ ~ ~ ~ ~ ~	
27	Why series	Series inductor and L-section	Understand	CO 4	CLO 16	AEEB04.16
	inductor and I-	filters cannot be used with half-				
	cannot be used	operation of series inductor				
	with half- wave	depends upon the current				
	rectifiers.	through it and needs a minimum				
		current to flow at all times.				
		MODULE	·V			
	ſ		1 1			
1	Define Bipolar	A semiconductor device with	Remember	CO 5	CLO 20	AEEB04.020
	Junction	three connections, capable of				
	Transistor (BJT).	amplification in addition to				
		diodos produços a threa lavor				
		two junctions three				
		terminal device forming the				
		basis of a Bipolar Junction				
		Transistor, or BJT for short.				
2	What is Solid	Electronic (integrated) circuits	Remember	CO 5	CLO 20	AEEB04.20
	State Circuit.	which utilize semiconductor				
		devices such as transistors,				
		rectifiers				
3		Bipolar transistors have the	Understand	CO 5	CLO 20	AEEB04 020
5		ability to operate within three	Chacistana	005	010 20	11220 1.020
		different regions:				
	Explain shortly	Active Region – the transistor				10 m
	about operation	operates as an amplifier and $I_c =$				
	OI DJ1.	$\beta * I_b$				
	0	Saturation – the transistor is			-	
	0	Fully-ON operating as a switch and $I = I(saturation)$				
		Switch and $I_c = I(saturation)$ Cut-off – the transistor is			10 million	
	-7	"Fully-OFF" operating as a			1.1	
	· · · · · · · · · · · · · · · · · · ·	switch and $I_c = 0$				
4		In the Common Base or	Remember	CO 5	CLO 20	AEEB04.020
	What is	grounded base configuration, the				
	Common Base	base connection is common to				
	(CB)	both the input signal and the	· · · · · · · · · · · · · · · · · · ·			
	configuration.	output signal. The input signal is				
		applied between the transistors				
		while the corresponding output				
		signal is taken				
		from between the base and the				
		collector terminals				
5	What is the main	CB bipolar transistor	Remember	CO 5	CLO 20	AEEB04.020
	feature of CB	configuration has a high ratio of				
	configuration.	output to input resistance or				
		more importantly "load"				
		resistance (R_L) to "input"				
		resistance (K _{in}) giving it a				
		value of Resistance Gam.				

S.No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
6	What is	In the common emitter or	Remember	CO 5	CLO 20	AEEB04.020
	Common	grounded emitter configuration,				
	Emitter (CE)	the input signal is applied				
	configuration.	between the base and the				
		from between the collector and				
		the emitter. This type of				
		configuration is the most				
		commonly used circuit for				
		transistor based amplifiers and				
		which represents the "normal"				
		method of bipolar transistor				
	XX 71	connection.	D 1	<u> </u>	GL 0. 20	
1	What is the main	The CE amplifier configuration	Remember	CO 5	CLO 20	AEEB04.020
	reature of CE	produces the highest current and				
	configuration.	bipolar transistor configurations	· · · · ·			
		This is mainly because the input				
		impedance is low as it is				
		connected to a forward biased				
		PN-junction, while the output				
		impedance is high as it is taken				
		from a reverse biased PN-				
0	W/L	Junction.	Develo	00.5		A EED04.020
8	What is	In the common collector or	Remember	05	CLO 20	AEEB04.020
	Collector (CC)	configuration the collector is				
	configuration	now common through the	_			
	configuration.	supply. The input signal is				
		connected directly to the base,				
		while the output is taken from				
	XX71	the emitter.	D 1	00.5	CLO 20	
9	What is the main	The Common Collector or	Remember	CO 5	CLO 20	AEEB04.020
	configuration	very useful for impedance				10 C
	configuration.	matching applications because				
		of the very high input				1. C.
		impedance, in the region of	Contraction of the second		-	
		hundreds of thousands of Ohms			-	
		while having relatively low	1		Sec. 1	
	-0	output impedance.				
10	What is meant by	The transistor raises the strength	Remember	CO 5	CLO 21	AEEB04.021
	the word	of a weak signal and hence acts		Sec. 1		
	amplifier?	an amplifier				
11	Why is transistor	The output voltage, current or	Remember	CO 5	CLO 21	AEEB04.021
	called current	power is controlled by the input			21	0021
	controlled	current in a transistor. So it is				
	device.	called the current controlled				
		device.				
12	Why silicon	Silicon transistor has smaller	Remember	CO 5	CLO 20	AEEB04.020
	types are more	cut-off current ICBO, small				
	used than	variations in ICBO due to				
	germanium type	variations in temperature and				
	u ansistor.	angle operating temperature as				
		compared to mose in case of germanium type				
13	Why collector is	Collector is made nhysically	Remember	CO 5	CLO 20	AEEB04 020
15	made larger that	larger than emitter and base	remember	205	210 20	112200 1.020
	base and emitter.	because collector is to dissipate				
		much power.				

S.No	QUESTION	ANSWER	Blooms Level	СО	CLO	CLO Code
14	How α and β are	α and β are related as below:	Understand	CO 5	CLO 21	AEEB04.021
	related to each	$\alpha = \beta/(1+\beta)$ or $\beta = \alpha/(1-\alpha)$				
	other.	Q14. Define beta of a transistor.				
		The β factor transistor is the				
		common emitter current gain of				
		that transistor and is defined as				
		the ratio of collector current to				
		the base current :				
		B = IC/IB				
15	Why CE	CE configuration is mainly used	Understand	CO 5	CLO 21	AEEB04.021
	configuration	because its current, voltage and				
	more popular in	power gains are quite high and				
	amplifier circuits.	the ratio of output impedance				
		and input impedance are quite				
		moderate.				
16	What is collector	When input current (IE in case	Understand	CO 5	CLO 20	AEEB04.020
	reverse	of CB configuration and IB in				
	saturation.	case of CE configuration) is				
		zero, collector current IC is not				
		zero although it is very small. In				
		fact this is the reverse leakage				
		current of collector reverse				
		simply ICO in CB configuration				
		and ICEO in CE configuration				
17	What is operating	Quiescent point is a point on	Understand	CO 5	CL 0.22	AEEB04.022
17	noint	the dc load line which represents	Onderstand	05		ALLD04.022
	point.	VCE and IC in the absence of ac				
		signal and variations in				
		VCE and IC take place around				
		this point when ac signal is				
		applied.			· · · ·	
18	How is BJT used	A transistor operates as an	Understand	CO 5	CLO 21	AEEB04.021
	as amplifier.	amplifier by transfer of the			1.00	
		current from low impedance				2
	1	loop to high impedance loop.		_		
19	Why ICEO >>	The collector cut-off current	Understand	CO 5	CLO 22	AEEB04.022
	ICBO.	denoted by ICBO is much larger				
		than ICBO. ICEO is given as :			100	
		$ICEO = ICBO/(1-\alpha)$				
		Because α is nearly equal to				
		unity (slightly less than unity),		~~		
20	William in the second	ICEU >> ICBU.	Un de net e u d	CO 5	CI O 20	AEED04.020
20	with is there a	practically independent of	Understand	05	CLO 20	AEED04.020
	of collector	collector supply voltage over the	· · · ·			
	supply voltage to	transistor operating range but if				
	transistor	VCB is increase beyond a				
	transistor.	certain vale collector current				
		IC is eventually increases				
		rapidly and possibly destroys the				
		device.				
21	Why is ordinary	Because the transistor operation	Understand	CO 5	CLO 23	AEEB04.023
	junction	is carried out by two types of				
	transistor called	charge carriers (majority and				
	bipolar.	minority carriers), an ordinary				
		transistor is called bipolar.				
22	Can a transistor	No. Because in case of two	Understand	CO 5	CLO 23	AEEB04.023
	be formed by	discrete back-to-back connected				
	connecting two	diodes there are four doped				

S.No	QUESTION		I	ANSWER	Blooms Level	СО	CLO	CLO Code
	diodes	back	to	regions instead of three and				
	back.			there is nothing that resembles a				
				thin base region between an				
				emitter and a collector.				

Signature of the Faculty

HOD, CE

