

INSTITUTEOFAERONAUTICALENGINEERING

(Autonomous)
Dundigal, Hyderabad-500043

AERONAUTICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Title	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING					
Course Code	AEEB0	4				
Programme	B.Tech					
Semester	III	AE				
Course Type	Founda	tion				
Regulation	IARE -	R18	}			
			Theory		Practio	cal
Course Structure	Lectu	res	Tutorials	Credits	Laboratory	Credits
	3		1	4	-	-
Chief Coordinator	Ms. B.	Navo	othna, Assistant P	Professor		
Course Faculty			othna, Assistant F ogna, Assistant P			

COURSE OBJECTIVES:

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

COURSE OUTCOMES (COs):

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CO 1	Understand the basic concepts of electricity, application's of Kirchhoff laws and source
	transformation technique to complex circuits. Basic principles of indicating instruments.
CO 2	Explore to the working principle of dc machine, various types and determine the torque equation of
	dc motor, EMF equation of dc generator purpose of three-point starter.
CO 3	Summarize various alternating quantities and explain working principle of induction motor,
	alternators and transformers.
CO 4	Discuss the basic theory of semi-conductor diode, rectifier, zener diode and their characteristics.
CO 5	Explain the concept of transistor in various configurations and give its applications.

COURSE LEARNING OUTCOMES (CLOs):

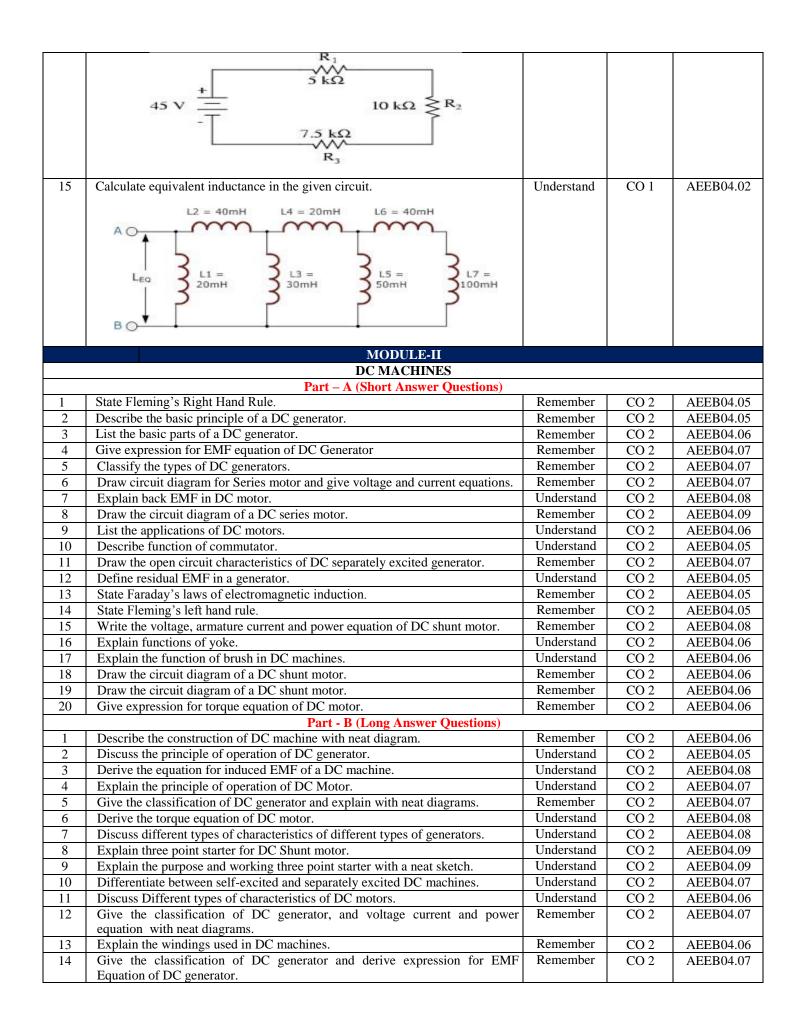
AEEB04.01	Analyze the circuits using Kirchhoff's current and Kirchhoff's voltage law.
AEEB04.02	Use of series-parallel concepts for simplifying circuits.
AEEB04.03	Use star delta transformation for simplifying complex circuits.
AEEB04.04	Generalize operation and principle ofmeasuring instruments.
AEEB04.05	Demonstrate the working principle of DCmotor, DC generator.
AEEB04.06	Describe the construction of DC motor and DC generator.
AEEB04.07	Classify the types of DC motor and generator with characteristics and voltage, current and power equations.
AEEB04.08	Derive the EMF equation of DC generator, and various problems on EMF equation.
AEEB04.09	Torque equation of DC motor and understand the purpose of three point starter.
AEEB04.10	List out various alternating quantities such as Sinusoidal AC voltage, average and RMS values, form and peak factor, and understand concept of three phase alternating quantity.
AEEB04.11	Discuss the principle of operation of induction motor.
AEEB04.12	Explain the construction and characteristics of alternator.
AEEB04.13	Explain the construction and characteristics of 3-phase induction motor.
AEEB04.14	Explain the principle and construction of Transformer.
AEEB04.15	Understand the working of semi-conductor diode and its V-I characteristics.
AEEB04.16	Discuss the operation of half wave, full waveand bridge rectifiers.
AEEB04.17	Summarize various alternating quantities of half wave, full waveand bridge rectifiers.
AEEB04.18	Apply the concept of diodes in converting ACto DC rectification process.
AEEB04.19	Compare the operation of half wave, full waveand bridge rectifiers.
AEEB04.20	Distinguish the different configurations of transistor.
AEEB04.21	Differentiate the operation of Diodes andtransistors.
AEEB04.22	Understand the concept of biasing and load line of transistor.
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TUTORIAL QUESTION BANK

MODULE- I ELECTRIC CIRCUITS, ELECTROMAGNETISM AND INSTRUMENTS				
	Part - A (Short Answer Questions)	INSTRUMI	TINIS	
S No	QUESTIONS	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes (CLOs)
1	State and explain the potential difference.	Remember	CO 1	AEEB04.01
2	Define current.	Remember	CO 1	AEEB04.01
3	Define resistance.	Remember	CO 1	AEEB04.01
4	Give the expression for voltage in terms of W and Q.	Understand	CO 1	AEEB04.01
5	Give the charge of an electron.	Understand	CO 1	AEEB04.01
6	State OHM's law.	Remember	CO 1	AEEB04.01
7	State Kirchhoff's current and Kirchhoff's voltage laws.	Remember	CO 1	AEEB04.01
8	Define the power and energy.	Remember	CO 1	AEEB04.01
9	Describe the active elements.	Remember	CO 1	AEEB04.01
10	Describe passive elements.	Remember	CO 1	AEEB04.01
11	Calculate the equivalent resistance of the circuit if applied voltage is 23V and	Understand	CO 1	AEEB04.02
12	current flowing through circuit is 4A, receiving a power of 92W. If the charge developed between two plates is 2C and capacitance is 4.5 F, calculate the voltage across the plates.	Understand	CO 1	AEEB04.02
13	If three capacitors are connected in series which are 2F, 3.2F and 6F calculate equivalent capacitance.	Understand	CO 1	AEEB04.02
14	If the three inductors are in parallel with 20mH, 25mH and 50mH, calculate the equivalent inductance.	Understand	CO 1	AEEB04.02
15	Define the inductance.	Remember	CO 1	AEEB04.01
16	Define the capacitance.	Remember	CO 1	AEEB04.01
17	Draw the symbols of different controlled sources.	Remember	CO 1	AEEB04.01
18	Describe measuring instrument.	Understand	CO 1	AEEB04.04
19	Write different types of torques in measuring instruments.	Understand	CO 1	AEEB04.04
20	Define controlling torque.	Remember	CO 1	AEEB04.04
21	Write short notes on spring control mechanism.	Remember	CO 1	AEEB04.04
22	Classify the types of measuring instruments.	Understand	CO 1	AEEB04.04
23	Define controlling torque.	Remember	CO 1	AEEB04.04
24	Define damping torque.	Remember	CO 1	AEEB04.04
	Part - B (Long Answer Questions)			
1	Write short notes on voltage-current relations in RLC parameters.	Remember	CO 1	AEEB04.01
2	Explain the Kirchhoff's laws with example and neat diagrams.	Understand	CO 1	AEEB04.01
3	Classify types of elements and explain in detail.	Understand	CO 1	AEEB04.01
4	Distinguish between ideal and practical energy sources.	Understand	CO 1	AEEB04.01
5	State Ohm's law and give its applicability to electrical network. Explain convention current direction and voltage across an element.	Remember	CO 1	AEEB04.01
6	Write the conventions to study any electrical circuit.	Remember	CO 1	AEEB04.01
7	Define the terms voltage, current, power, energy, node and degree of the node.	Remember	CO 1	AEEB04.01
8	State voltage and current division rules and explain with neat example.	Remember	CO 1	AEEB04.01
9	Derive the V-I relationship, power and energy stored in inductor.	Understand	CO 1	AEEB04.01
10	Derive the V-I relationship, power and energy stored in capacitor.	Understand	CO 1	AEEB04.01
11	Derive the equivalent resistance equations when they are connected in series and	Understand	CO 1	AEEB04.02
12	parallel. Derive the equivalent inductance and capacitance equations when they are connected in series and parallel.	Understand	CO 1	AEEB04.02
13	Derive the expressions for equivalent resistances while transforming from star to delta and delta to star.	Understand	CO 1	AEEB04.03
14	Describe eddy current damping in measuring instruments.	Remember	CO 1	AEEB04.04
15	Explain gravity control in measuring instruments.	Understand	CO 1	AEEB04.04
16	Explain spring control in measuring instruments.	Understand	CO 1	AEEB04.04

17	Discuss different typ	oes of torques prod	uced in indication	ng instruments		Understand	CO 1	AEEB04.04
18	Describe working pr					Remember	CO 1	AEEB04.04
19	Describe air friction					Remember	CO 1	AEEB04.04
20	Explain working pri				ment with	Understand	CO 1	
	neat diagram.	• •	•					AEEB04.04
21	Describe working pr	rinciple of moving	iron attraction ty	ype instrument	t with neat	Remember	C0 1	AEEB04.04
	diagram.							
1	01111		oblem Solving				00.1	4 EED 04 04
1	Calculate the equiv	alent resistance and	i source current	for the given	data.	Understand	CO 1	AEEB04.01
	Г	element	From node	To node	1			
		30 V source	a	0				
		4 ohms	a	b				
		5 ohms	b	0				
		2 ohms	b	С				
		3 ohms	С	0				
		5 ohms	С	d				
	T 1 1	6 ohms	d	0	. 1 6 1	XX 1 . 1	~~.	. ==== 0.1.01
2	In a network consist	ting of AB termina	ls, firstly a bran	ich across AB	is defined	Understand	CO 1	AEEB04.01
	as 20V in series with 5	ohm second branc	ch 7 ohm and th	ird branch 10V	I in series			
	with 4 ohm. Calcula				v III series			
3	Use network reduction				ach	Understand	CO 1	AEEB04.01
	element.	on teeninque una e		response in ee	.011	Chacistana	COT	71EEB04.01
		element	From node	To node				
		25 V source	a	0				
		6 ohms	a	b				
		8 ohms	b	0				
	_	2 ohms	b	С				
	_	3 ohms 5 ohms	b	0 0				
4	In a circuit branch A		c	•	- 0 ohm	Understand	CO 1	AEEB04.01
4	and $DA = 5$ ohm and					Understand	COT	AEEDU4.U1
	A and C. Calculate							
	across DA.	equivalent resist	ince, source ea	incin una voi	auge urop			
5	In an circuit branch	AB = 1 ohm, BC	= 2 ohm, CD	= 1 ohm ,BD	O = 8 ohm	Understand	CO 1	AEEB04.01
	and $DA = 5$ ohm and							
	Aand C. Calculate	equivalent resista	nce, source cu	irrent and vol	ltage drop			
	across DA.		2					
6	Consider an coil allo	U	` '			Understand	CO 1	AEEB04.01
	power absorbed and						00.1	4 EED 0 4 02
7	Calculate the equiva transformation.	ient resistance bety	veen A and B te	erminais using	star delta	Understand	CO 1	AEEB04.03
	transformation.	. 809						
	,	4Ω						
			}					
		4Ω <	\$ \$°	Ω				
			6Ω					
		Į	>					
		8Ω ≥	\$	4Ω				
		В —						
8	Calculate equivaler		rce current, vo	oltage drop a	and power	Understand	CO 1	AEEB04.1
	dissipated in each re		Г. 1					
		element	From node	To node				
	-	20 V source 4 ohms	a	0 b				
		5 ohms	a b	0				
	-	2 ohms	b	c				
		3 ohms	c	0				
			-	-				1

9	Calculate a) the equivalent resistances across the terminals of thesupply,b) total current supplied by the source and c) power delivered to 16 ohm resistor in the circuit shown in the figure shown below.	Understand	CO 1	AEEB04.02
10	Calculate the power consumed by each resistor.	Understand	CO 1	AEEB04.02
11	Calculate the equivalent capacitance of the combination shown figure below across X and Y. $ 2\mu \mathbf{F} $ $ 2\mu \mathbf{F} $ $ 2\mu \mathbf{F} $ $ 2\mu \mathbf{F} $	Understand	CO 1	AEEB04.02
12	A capacitor having capacitance of $5\mu F$ is charged to a voltage of 10V. Calculate the stored energy in joules.	Remember	CO 1	AEEB04.01
13	Determine the current through 800 ohm resistor in the network shown in figure.	Understand	CO 1	AEEB04.02
14	Calculate power across each element in the given circuit.	Understand	CO 1	AEEB04.02



15	Explain the open circuit characteristics of DC series generator.	Understand	CO 2	AEEB04.09
16	Explain the open circuit characteristics of DC compound generator.	Understand	CO 2	AEEB04.09
17	Explain the open circuit characteristics of DC shunt generator.	Understand	CO 2	AEEB04.09
18	Explain single loop generator with commutator.	Remember	CO 2	AEEB04.06
19	Give the classification of DC motors and explain with neat diagrams.	Understand	CO 2	AEEB04.07
20	Explain lap winding in DC machines with neat sketch.	Understand	CO 2	AEEB04.07
	Part - C (Problem Solving and Critical Thinking Q	uestions)		
1	Calculate the EMF by 4 pole wave wound generator having 65 slots with 12	Understand	CO 2	AEEB04.08
	conductors per slot when driven at 1200 rpm the flux per pole is 0.02 Wb.			
2	A 6 pole lap wound DC generator has 600 conductors on its armature flux per	Understand	CO 2	AEEB04.08
	pole is 0.02 Wb. Calculate			
	1. The speed at which the generator must be run to generate 300V			
	2. What would be the speed if the generated were wavewound.	TT 1 . 1	GO 2	4 EED 0 4 00
3	An 8-pole, lap wound armature rotated at 350 rpm is required to generate 260v.	Understand	CO 2	AEEB04.08
	The useful flux per pole is 0.05Wb if the armature has 120 slots, calculate			
	the number of conductors per slot.	I I adamata a d	CO 1	AEED04.00
4	A 440V DC shunt generator has Ra=0.25 ohm and Rsh= 220 ohm while delivering a load current of 50 amps, it has a terminal voltage of 440v	Understand	CO 2	AEEB04.08
	determined the generated EMF and power developed.			
5	A DC series generator has armature resistance of 0.5 ohm and series	Understand	CO 2	AEEB04.08
J	field resistance of 0.03 ohm it drives a load of 50 amps. if it has 6 turns/coil and	2.1.3015tuild	202	7122507.00
	total 540 coils on the armature and is driven at 1500 rpm calculate the terminal			
	voltage at the load. Assume 4-poles, lap type winding, flux pole as 2mWb			
	and total brush drop as 2V.			
6	A 4-pole lap wound DC shunt generator has a useful flux per pole of 0.07Wb	Understand	CO 2	AEEB04.08
	The armature winding consists of 220 turns, each of 004ohm resistance.			
	Calculate the terminal voltage when running at 900 rpm if the armature current			
	is 50amps.			
7	A shunt generator supplies 96amps at a terminal voltage of 200volts the	Understand	CO 2	AEEB04.08
	armature and shunt field resistances are 0.10hm and 500hm respectively. The			
	iron and frictional losses are 2500 watts. Find i) EMF generated ii) copper			
0	losses.	Understand	CO 2	A EED 04 00
8	A250vshuntmotortakesatotalcurrentof20ampstheshuntfieldandarmature resistances are 200ohm and 0.3ohm respectively determine i) Value of	Understand	CO 2	AEEB04.08
	backEMF ii) gross mechanical power in the armature.			
9	Calculate the value of torque established by the armature of a 4 pole motor	Understand	CO 2	AEEB04.09
	having 774 conductors, two paths in parallel, 24mWb flux per pole, when the		002	11222009
	total armature current is 50amps.			
10	A 230V DC shunt motor takes a current of 40 amps and runs at 1100 rpm if	Understand	CO 2	AEEB04.09
	armature and shunt field resistances are 0.25 ohm and 230 ohm respectively.			
	Find the torque developed byarmature.			
11	Calculate the EMF by 6 pole wave wound generator having 75 slots with 6	Understand	CO 2	AEEB04.09
	conductors per slot when driven at 1200 rpm the flux per pole is 0.03 Wb.			
12	An 8-pole, lap wound armature rotated at 450 rpm is required to generate 250v.	Understand	CO 2	AEEB04.09
	The useful flux per pole is 0.06 Wb if the armature has 100 slots, calculate the			
	number of conductors per slot.			
13	A 220v DC shunt generator has Ra=0.35 ohm and Rsh= 200 ohm while	Understand	CO 2	AEEB04.09
	delivering a load current of 50 amps, it has a terminal voltage of 220V			
	determine the generated EMF and power developed.			
14	A6-polelapwoundDCshuntgeneratorhasausefulfluxperpoleof0.06Wb. The	Understand	CO 2	AEEB04.09
	armature winding consists of 220 turns, each of 0.06 ohm resistance. Calculate			
	the terminal voltage when running at 1000 rpm if the armature current is 40			
1.5	amps. A 220v DC shoot motor takes a correct of 20 cmps and runs at 1200 rpm if	I Indoneta 4	COA	AEEDO4 00
15	A 220v DC shunt motor takes a current of 20 amps and runs at 1200 rpm if	Understand	CO 2	AEEB04.09
	armature and shunt field resistances are 0.35 ohm and 200 ohm respectively			
1.6	Find the torque developed by armature.	Understand	CO 2	A EEDO4 OO
16	A 6-pole, lap wound armature rotated at 550 rpm is required to generate 250v.	Onderstand	CO 2	AEEB04.09
	The useful flux per pole is 0.05 wb if the armature has 100 slots, calculate the number of conductors per slot.			
	MODULE -III	HINES		
	ALTERNATING QUANTITIES AND AC MAC	шиеэ		
	Part - A (Short Answer Questions)			

1	Mention the difference between core and shell type transformers.	Understand	CO 3	AEEB04.14
2	State working principle of transformer.	Remember	CO 3	AEEB04.14
3	Give the EMF equation of a transformer and define each term.	Remember	CO 3	AEEB04.14
4	Define voltage regulation of a transformer.	Understand	CO 3	AEEB04.14
5	Classify various transformers based on voltages.	Understand	CO 3	AEEB04.14
6	Classify various transformers based on construction.	Understand	CO 3	AEEB04.14
7	Define transformation ratio.	Remember	CO 3	AEEB04.10
8	Define form factor of a sinusoidal signal.	Remember	CO 3	AEEB04.10
9	Define average value of a sinusoidal signal.	Remember	CO 3	AEEB04.10
10	Define RMS Value of a sinusoidal signal.	Remember	CO 3	AEEB04.10
11	Define peak factor of a sinusoidal signal.	Remember	CO 3	AEEB04.10
12	Describe the functions of transformer	Understand	CO 3	AEEB04.14
13	Define efficiency of a transformer.	Remember	CO 3	AEEB04.14
14	Define various alternating quantities.	Remember	CO 3	AEEB04.10
15	Give expression for RMS and Average value.	Remember	CO 3	AEEB04.10
16	Give expression for Form factor and peak factor.	Remember	CO 3	AEEB04.10
10	The state of the s	тешешее	000	TIEEE
17	Classify induction motors based on construction.	Understand	CO 3	AEEB04.13
18	Define voltage regulation of an alternator.	Understand	CO 3	AEEB04.12
19	Classify the losses of transformer.	Understand	CO 3	AEEB04.14
20	Write the expression for eddy current losses and define each term.	Remember	CO 3	AEEB04.14
21	Write the expression for hysteresis losses and define each term.	Remember	CO 3	AEEB04.14
22	Write the EMF equation of alternator.	Understand	CO 3	AEEB04.12
	Part – B (Long Answer Questions)	Chacistana		1122001112
1	Describe the construction details of single phase transformer.	Understand	CO 3	AEEB04.14
2	Explain the principle of operation of transformer.	Understand	CO 3	AEEB04.14
3	Derive the EMF equation of a transformer.	Remember	CO 3	AEEB04.14
4	Discuss about different types of losses in transformer.	Understand	CO 3	AEEB04.14
5	Describe the method to perform OC and SC test on a transformer.	Understand	CO 3	AEEB04.14
6	Derive maximum torque condition under running condition.	Understand	CO 3	AEEB04.13
7	Draw torque slip characteristics of three phase induction motor.	Understand	CO 3	AEEB04.11
8	List the types of Alternator based on rotor construction.		CO 3	AEEB04.11
9	Derive average, RMS, form and peak factors of a sinusoidal signal.	Understand	CO 3	
	Explain concept of three phase alternating quantity.	Understand		AEEB04.10 AEEB04.10
10	Explain concept of three phase alternating quantity.	Understand	CO 3	AEEB04.10
11	Discuss the principle and operation of three phase induction motor.	Understand	CO 3	AEEB04.11
12	Discuss about Different types of Induction motors depends upon the rotor construction.	Understand	CO 3	AEEB04.13
13	Derive maximum torque condition under running and standstill condition of induction motor.	Understand	CO 3	AEEB04.13
14	Describe the construction of alternator depends upon rotor construction.	Understand	CO 3	AEEB04.12
15	Discuss synchronous impedance method to find regulation of an alternator.	Understand	CO 3	AEEB04.12
16	Explain briefly about various types of alternator.	Understand	CO 3	AEEB04.12
17	Explain construction of salient pole rotor.	Understand	CO 3	AEEB04.12
18	Explain construction of cylindrical pole rotor and give its advantages.			
19	Draw the torque slip characteristics of induction motor.	Understand	CO 3	AEEB04.13
20	Explain the working principle of alternator.	Remember	CO 3	AEEB04.12
	Part – C (Problem Solving and Critical Think			
1	A transformer supplied a load of 32A at 415V. If the primary voltage is 3320V,	Understand	CO 3	AEEB04.14
	find the following: (a) Secondary volt ampere (b) Primary current (c) Primary volt ampere. Neglect losses and magnetizing current.			
2	A 125 KVA transformer having primary voltage of 2000V at 50 Hz has 182	Understand	CO 3	AEEB04.14
	primary and 40 secondary turns. Neglecting losses, calculate i) The full load			
	primary and secondary currents. ii) The no-load secondary induced emf. iii)			
1	Maximum flux in the core.		<u> </u>	
3	A single phase transformer has 50 primary and 1000 secondary turns. Net cross sectional area of the core is 500 cm2. If the primary winding is	Understand	CO 3	AEEB04.14

4	connected to 50 Hz supply at 400 V, Calculate the value of Maximum flux			
4				
4	density on core and the emf induced in the secondary.			
'	A transformer with 40 turns on the high voltage winding is used to step down	Understand	CO 3	AEEB04.14
1	the voltage from 240V to 120V. Find the number of turns in the low voltage			11225 0 111 1
	winding.Opencircuitandshortcircuittestsona5KVA,220/400V,50Hz,			
	single phase transformer gave the following results: OC Test: 220V, 2A,			
	100W (lv side), SC Test: 40V, 11.4A, 200W (hv side) Obtain the equivalent circuit.			
5	The efficiency of a 400 kva single phase transformer is 98.77% when	Understand	CO 3	AEEB04.14
	delivering full-load at 0.8 pf lagging and 99.13% at half load atunity power			11225 0 111 1
	factor calculate i) iron losses and full load copper losses.			
6	A 440/110 v transformer has a primary resistance of 0.03 ohms and secondary resistance of 0.02 ohms if iron losses at normal input is 150 watts determine	Understand	CO 3	AEEB04.14
	the secondary current at which maximum efficiency will occur and the value			
	of this			
	maximum efficiency at a unity power factor load.			
7	A single phase transformer has 50 primary and 1000 secondary turns. Net	Understand	CO 3	AEEB04.14
	cross sectional area of the core is 400 cm2. If the primary winding is connected to 50 Hz supply at 400 V, Calculate the value of Maximum flux			
	density on core and			
	the emf induced in the secondary.			
8	A 125 KVA transformer having primary voltage of 2200V at 50 Hz has 180	Understand	CO 3	AEEB04.14
	primary and 40 secondary turns. Neglecting losses, calculate i) The full load			
	primary and secondary currents. ii) The no-load secondary induced emf. Iii) Maximum flux in the core.			
9	A transformer supplied a load of 20A at 230V. If the primary voltage is	Understand	CO 3	AEEB04.14
	2300V, find the following: (a) Secondary volt ampere (b) Primary current (c)			
	Primary volt ampere. Neglect losses and magnetizing current.			
10	A 4 – pole 3 phase star connected alternator armature has 12 slots with 24	Understand	CO 3	AEEB04.12
10	conductors per slot and the flux per pole is 0.1 Wb. Calculate line emf	Chacistana	CO 3	ALLDO4.12
	generated at 50 Hz. Calculate the distribution factor of a 36 slot, 4 pole single			
	layer winding of an alternator.	** 1	~~	
11	A part of an alternator winding consists of six coils in series, each coil having an emf of 10V rms Induced in it. The coils are placed in successive slots and	Understand	CO 3	AEEB04.12
	between each slot and the next; there is an Electrical phase displacement of 30			
	degrees. Calculate the emf of the six coils in series.			
12	In case of an 8-pole induction motor the supply frequency was 50 Hz and the	Understand	CO 3	AEEB04.13
	shaft speed was 735 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip.			
13	A 6-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of	Understand	CO 3	AEEB04.13
	970 rpm. Calculate i) Percentage slip ii) The frequency of the induced current			11225010
	in			
	the rotor.			
1.4	In case of an 6 pole industion motor the supply frequency was 50 Hz and the	Understand	CO 2	AEED04.12
14	In case of an 6-pole induction motor the supply frequency was 50 Hz and the shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit	Understand	CO 3	AEEB04.13
14	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip.		CO 3	AEEB04.13
14	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of	Understand Understand	CO 3	AEEB04.13 AEEB04.13
	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 1440 rpm. Calculate i) Percentage slip ii) The frequency of the induced current			
	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 1440 rpm. Calculate i) Percentage slip ii) The frequency of the induced current in the rotor.			
	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 1440 rpm. Calculate i) Percentage slip ii) The frequency of the induced current	Understand		
15	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 1440 rpm. Calculate i) Percentage slip ii) The frequency of the induced current in the rotor. MODULE -IV SEMICONDUCTOR DIODE AND APPLICATI Part – A (Short Answer Questions)	Understand IONS	CO 3	AEEB04.13
15	shaft speed was 925 rpm. Compute i) Synchronous speed ii) Slip speed per unit slip iii)Percentage slip. A 4-pole, 50Hz squirrel cage induction motor runs on load at a shaft speed of 1440 rpm. Calculate i) Percentage slip ii) The frequency of the induced current in the rotor. MODULE -IV SEMICONDUCTOR DIODE AND APPLICATI Part – A (Short Answer Questions) Define terms conductor, insulators and semiconductors.	Understand		
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	4	A HWR circuit supplies 100mA DC current to a 250Ω load. Calculate the DC	Understand	CO 4	AEEB04.17

5 A full wave rectifier circuit uses two silicon diodes with a forward resistance of 200 cach. A DC volunter connected across the load of 1KD reads 55 4 volts. Calculate i) Irms ii) Average voltage across each diode iii) ripple factorivy Transformer secondary voltage rating.		supplying the rectifier.			Ι
2012 each. A DC voltmeter connected across she load of 1ΚΩ reads 55.4 volts. Calculate i) Irms ii) Average voltage across cach diode iii) ripple factor iv) Transformer secondary voltage rating. 6 What is the ripple factor if a power supply of 220 V, 50 Hz is to be Full Wave rectified and filtered with a 220µF capacitor before delivering to a resistive load of 120µP Calculate the value of the capacitor for the ripple factor to be less than15%. 7 A bridge rectifier uses four identical diodes having forward resistance of 5Ω each. Transformer secondary resistance is 5Ω and the secondary voltage of 30V (rms). Calculate the de output voltage for IDC=200mA and the value of the ripple voltage. 8 In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz= 15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. 9 Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse subtruition current, I _c = 25µA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current, I _c = 25µA and at an applied voltage of 10.2V across the diode. 11 The reverse saturation current of a sificon p = n junction diode at an operating temperature of 27°C is 50 AC. Aclculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8V and -0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz= 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 1000 and 10Ω respectively. Calculate the average voltage, de output prower, ac input power, rectifications efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge prectifier and show that its ripple factor is 0.48. 14 Design Zener voltage, count to tra	5		Understand	CO 4	AEEB04.17
Calculate i) Irms ii) Average voltage across each diode iii) ripple factorivy Transformer secondary voltage rating. 6 What is the tipple factor if a power supply of 220 V, 50 Hz is to be Full Wave rectified and filtered with a 220µF capacitor before delivering to a resistive load of 12002 Calculate the value of the capacitor for the ripple factor to be less than 15%. 7 A bridge rectifier uses four identical diodes having forward resistance of 5Ω each. Transformer secondary resistance is 5Ω and the secondary voltage of 30V (rms). Calculate the de output voltage of 10C=200mA and the value of the ripple voltage. 8 In a Zener diode regulator, the supply voltage = 300V, V₂=220V, I₂=15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zeneriodo. 9 Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, I₂=25µA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current of a silicon p −n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and 0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, V₂=220V, I₂=15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, a cinput power, rectification efficiency and percentage regulation and percentage regulation of the following specifications: Input Voltage=10V±20%. Output Voltage=5V, I₂=20mA, I₂=3mA	5		Understand	CO 4	AEEBU4.17
Transformer secondary voltage rating. What is the ripple factor if a power supply of 220 V, 50 Hz is to be Full Wave rectified and filtered with a 220µF capacitor before delivering to a resistive load of 120ΩC Calculate the value of the capacitor for the ripple factor to be less than 15%. A bridge rectifier uses four identical diodes having forward resistance of 5Ω cach. Transformer secondary resistance is 5Ω and the secondary voltage of 30V cmms). Calculate the de output voltage for IDC −200mA and the value of the ripple voltage. In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz= 15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. Calculate the value of D.C. resistance and A.C. resistance of a Germanium and production dood at 25°C with reverse saturation current, I _a = 25µA and at an applied voltage of 0.2V across the diode. The reverse saturation current of a silicon p − n junction diode at an operating temperature of 27°C is 0 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. The last accurrent = 25mA. Determine the value of resistor required to be connected in series with the Zenerdiode. In a full wave rectifier, the input is from 30-30V transformer. The load and diode forward resistances are 100d and 10Ω respectively. Calculate the average voltage, de output power, as input power, rectification efficiency and percentage regulation. With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. Design Zener voltage, gregalator for the following specifications: Input Voltage-10V=20%, Output Voltage-5V, I _a -20					
What is the ripple factor if a power supply of 220 V, 50 Hz is to be Full Wave rectified and filtered with a 220 M; capacitor before delivering to a resistive load of 12002 Calculate the value of the capacitor for the ripple factor to be less than 15%. A bridge rectifier uses four identical diodes having forward resistance of 5Ω understand code (ach. Transformer secondary rositance is 5Ω and the secondary voltage of 30V (rms). Calculate the dc output voltage for IDC=200mA and the value of the ripple voltage. In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz=15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. Code (ach. Transformer seaturation current). The value of resistor required to be connected in series with the Zenerdiode. Code (ach. Transformer seaturation current). The value of resistor required to be connected in series with the Zenerdiode. Code (ach. Transformer seaturation current). The value of resistor required to be connected in series with the Zenerdiode. Code (ach. Transformer seaturation current). The value of resistor required to be connected in series with the Zenerdiode. Code (ach. Transformer the load and and load current = 25mA. Determinodiages of 0.8 V and 0.4 V respectively. In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz=15mA and load current = 25mA. Determinodiage of 0.8 V and 0.4 V respectively. Calculate the average voltage, de output power, and input power, and of the value o					
rectified and filtered with a 220µF capacitor before delivering to a resistive load of 120ΩC Calculate the value of the capacitor for the ripple factor to be less than 15%. 7 A bridge rectifier uses four identical diodes having forward resistance of 5Ω each, 17ans/6rmer secondary resistance is 5Ω and the secondary voltage of 30V (rms), Calculate the de output voltage for IDC=200MA and the value of the ripple voltage. 8 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. 9 Calculate the value of DC. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, I _s = 25µA and at an applied voltage of DC. acosts the diode. 10 The reverse saturation current of a silicon p – n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Lz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the avcrage voltage, de output power, as imput power, rectification efficiency and percentage regulation. 13 With a near circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V-20%, Output Voltage=5V, I ₁ =20mA, I _{mme} =5mA and I _{mme} =80mA. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V-20%, Output Voltage=5V, I ₁ =20mA, I _{mme} =5mA and I _{mme} =80mA. 15 Define transistor on 6 BT and its types. 16 Define transistor on 6 BT and its types. 17 Describe how a tran	6		Understand	CO 4	AEEB04.17
load of 120Ω? Calculate the value of the capacitor for the ripple factor to be less than 15%.					
A bridge rectifer uses four identical diodes having forward resistance of \$Ω each transformer secondary resistance is \$Σ0 and the secondary voltage of 30V (rms). Calculate the dc output voltage for IDC=200mA and the value of the ripple voltage. In a Zener diode regulator, the supply voltage = 300V, Vz= 220V, Iz= 15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. Galculate the value of D.C. resistance and A.C resistance of a Germanium planction diode at 25°C with reverse saturation current, Iz= 25µA and at an applied voltage of 0.2V across the diode. The reverse saturation current of a silicon p -n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. In a full wave rectifier, the input is from 30-30V transformer. The load and diode forward resistances are loudo. and 100 respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation.					
each. Transformer secondary resistance is \$Ω and the secondary voltage of 30V (rms). Calculate the dc output voltage for IDC=200mA and the value of the ripple voltage. In a Zener diode regulator, the supply voltage = 300V, Vz=220V, Iz=15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, I _c = 25µA and at an applied voltage of 0.2 vacross the diode. The reverse saturation current of a silicon p = n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. In a Zener diode regulator, the supply voltages = 300V, Vz=220V, Iz=15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, dc output power, a input power, rectification efficiency and percentage regulation. With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. Design Zener voltage regulatior for the following specifications: Input Voltage=10V±20%. Output Voltage=5V, I _L =20mA, I _{min} =5mA and I _{min} =5mA and I _{min} =5mA. MODULE-V		<u> </u>			
SOV (rms). Calculate the dc output voltage for IDC=200mA and the value of the ripple voltage.	7	A bridge rectifier uses four identical diodes having forward resistance of 5Ω	Understand	CO 4	AEEB04.17
the ripple voltage					
In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. 9 Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, I _a = 25µA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current of a silicon p – n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and 0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications; Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{2min} =5mA and I _{2min} =5mA and I _{2min} =5mA. MODULE-V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - 4 (Short Answer Questions)		30V (rms). Calculate the dc output voltage for IDC=200mA and the value of			
and load current = 25mA. Calculate the value of resistor required to be connected in series with the Zenerdiode. 9 Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, 1,0 = 25μA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current of a silicon p = n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and 0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications; Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{zeno} =5mA and I _{zeno} =80mA. 15 Part - A (Short Answer Questions) 1 Define transistor. 1 Define transistor. 1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the breakdown in transistor. 5 Define transistor current. 5 Explain the breakdown in transistor. 5 Define transistor current. 6 Define transistor current. 7 Describe how a transistor acts as a switch. 8 Define active region. 9 Define active region. 10 Write the relation between I _C , β, I _B and I _{CBQ} in a BIT. 11 Define amplifier. 12 Define Biasing. 13 Define active region in transistor construction. 14 Explain about the various regions in a transistor. 15 Define authority region in transistor construction. 16 Define authority regi					
connected in series with the Zenerdiode.	8		Understand	CO 4	AEEB04.15
Calculate the value of D.C. resistance and A.C resistance of a Germanium junction diode at 25°C with reverse saturation current, I,= 25µA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current of a silicon p –n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, V.z = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V+20%, Output Voltage=5V, I ₁ =20mA, I _{2mm} =5mA and I _{2mm} =80mA. MODULE V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions) 1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the operation of BJT and its types. 5 Explain the breakdown in transistor. 4 Explain the operation of BJT and its types. 5 Explain the breakdown in transistor. 5 Define transistor current. 6 Define transistor current. 7 Describe how a transistor acts as a switch. 8 Define active region. 8 Remember CO 5 AEEB Define active region. 9 Define active region. 10 Define and transistor acts as a switch. 11 Define active region. 12 Define aliange. 13 Define active region in transistor. 14 Explain about the various regions in a transistor. 15 Define authority region in transistor. 16 Define active region in crassistor construction. 17 Describe how					
junction diode at 25°C with reverse saturation current, I _n = 25µA and at an applied voltage of 0.2V across the diode. 10 The reverse saturation current of a silicon p –n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, dc output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{min} =5mA and I _{zmax} =80mA. MODULE-V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS					
applied voltage of 0.2V across the diode.	9		Understand	CO 4	AEEB04.15
The reverse saturation current of a silicon p —n junction diode at an operating temperature of 27°C is 50 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. The proof of the diode for applied voltages of 0.8 V and -0.4 V respectively.					
temperature of 27°C is \$0 nA. Calculate the dynamic forward and reverse resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. 11 In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, actification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{smin} =5mA and I _{sman} =80mA. MODULE -V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions) 1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the operation of BJT and its types. 5 Explain the breakdown in transistor. 1 Define transistor current. 2 Describe how a transistor acts as a switch. 3 Define saturation region. 4 Define saturation region. 5 Define applifier. 1 Define amplifier. 1 Understand 1 CO 5 AEEB 1 Define applifier. 1 Understand 1 Understand 1 Understand 1 Understand 1 Understand 1 Understand 2 Describe how a transistor acts as a switch. 2 Describe active region. 3 Define applifier. 4 Define applifier. 5 Define applifier. 6 Define applifier. 7 Define applifier. 8 Define cut-off region in transistor. 9 Define applifier. 1 Understand 1 Understand 1 Understand 1 Understand 2 Define cut-off region in transistor. 1 Understand 2 Define cut-off region in transistor characteristics. 1 Understand 2 Define cut-off region in transistor character			** 1		
resistances of the diode for applied voltages of 0.8 V and -0.4 V respectively. In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. Voltage=10V±20%, Output Voltage=5V, I₁=20mA, I₂min=5mA and I₂mas=80mA. **MODULE -V** **BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS* Part - A (Short Answer Questions) 1 Define transistor. 1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the operating of BIT and its types. 5 Explain the breakdown in transistor. 4 Define transistor current. 5 Define transistor current. 7 Describe how a transistor acts as a switch. 8 Define saturation region. 8 Define saturation region. 9 Define active region. 10 Write the relation between I _C , β, I _B and I _{CRO} in a BJT. 11 Define amplifier: 12 Define amplifier: 13 Define current amplification factor. 14 Explain about the various regions in a transistor. 15 Understand 16 O 5 AEEB 17 Describe how a transistor acts as a switch. 18 Understand 19 Define amplifier: 10 Understand 10 Understand 10 Victe the relation between I _C , β, I _B and I _{CRO} in a BJT. 10 Understand 11 Define amplifier: 12 Define amplifier: 13 Define current amplification factor. 14 Explain about the various regions in a transistor. 15 Draw and explain the ac load line. 16 Discuss why biasing is necessary in BJT amplifiers. 17 Describe the relation between the hope of DC load line with the help of neat diagram. 18 Write a short note on transistor character	10		Understand	CO 4	AEEB04.15
In a Zener diode regulator, the supply voltage = 300V, Vz = 220V, Iz = 15mA Understand and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode.					
and load current = 25mA. Determine the value of resistor required to be connected in series with the Zener diode. 12 In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, dc output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%. Output Voltage=5V, I _L =20mA, I _{zmin} =5mA and I _{zmax} =80mA. MODULE -V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions) 1 Define transistor. Understand CO 5 AEEB CS Explain the operating point of transistor. Understand CO 5 AEEB Explain the operation of BJT and its types. Remember CO 5 AEEB CS Explain the breakdown in transistor. Understand CO 5 AEEB Describe how a transistor racts as a switch. Understand CO 5 AEEB Define transistor racts as a switch. Understand CO 5 AEEB Define transistor racts as a switch. Understand CO 5 AEEB Define transistor racts as a switch. Understand CO 5 AEEB Define transistor racts as a switch. Understand CO 5 AEEB Define transistor racts as a switch. Understand CO 5 AEEB Define saturation region. Remember CO 5 AEEB Define amplifier. Understand CO 5 AEEB Define amplification between I _C , β, I _B and I _{CBO} in a BJT. Understand CO 5 AEEB Define amplifier. Understand CO 5 AEEB Define amplifier. Understand CO 5 AEEB Define amplification factor. Understand CO 5 AEEB Define amplification factor. Understand CO 5 AEEB Define amplification factor. Understand CO 5 AEEB Define current amplification factor. Understand CO 5 AEEB Define current amplification factor. Understand CO 5 AEEB Define Current amplification factor	1.1		Undanstand	CO 4	AEED04 15
Connected in series with the Zener diode.	11		Understand	CO 4	AEEB04.15
In a full wave rectifier, the input is from 30-0-30V transformer. The load and diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. 13					
diode forward resistances are 100Ω and 10Ω respectively. Calculate the average voltage, de output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{rmin} =5mA and I _{rmin} =80mA. MODULE -V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions) 1 Define transistor. Understand CO 5 AEEB Coperation of BJT and its types. 4 Explain the operation of BJT and its types. Explain the peakdown in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor. Understand CO 5 AEEB Coperation of BJT and its types. Explain the preadom in transistor current. Understand CO 5 AEEB Coperation of BJT Define active region. Remember CO 5 AEEB CO 5	12		Understand	CO 4	AEEB04.17
average voltage, dc output power, ac input power, rectification efficiency and percentage regulation. 13 With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{min} =5mA and I _{Jmax} =80mA. MODULE -V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions) 1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the operation of BJT and its types. 5 Explain the breakdown in transistor. 6 Define transistor current. 7 Describe how a transistor acts as a switch. 8 Define saturation region. 8 Define saturation region. 9 Define active region. 10 Write the relation between I _C , β, I _B and I _{CBO} in a BJT. 11 Define amplifier. 12 Define Biasing. 13 Define current amplification factor. 14 Explain about the various regions in a transistor. 15 Define amplifier. 16 Define current amplification factor. 17 Define active region in transistor. 18 Define amplifier. 19 Define active region in transistor. 10 Understand 11 Define amplifier. 11 Define amplifier. 12 Define Biasing. 13 Define current amplification factor. 14 Explain about the various regions in a transistor. 15 Draw and explain the ac load line. 16 Discuss why biasing is necessary in BJT amplifiers. 17 Define cut-off region in transistor characteristics. 18 Write a short note on transistor construction. 19 Design a circuit and explain the working of a transistor as a switch. 19 Design a circuit and explain the working of a transistor as a switch. 19 Design a circuit and explain the working of a transistor as a switch. 19 Design a circuit and explain the working of a transistor as a switch. 10 Define cut-off region in transistor construction.	12		Chacistana	CO 1	ALLEO-1.17
percentage regulation.					
With a neat circuit diagram and waveforms explain the working of full wave bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, IL=20mA, Izmin=5mA and Izmin=80mA. MODULE -V					
bridge rectifier and show that its ripple factor is 0.48. 14 Design Zener voltage regulator for the following specifications: Input Voltage=10V±20%, Output Voltage=5V, I _L =20mA, I _{zmin} =5mA and I _{zmax} =80mA. MODULE-V	13	With a neat circuit diagram and waveforms explain the working of full wave	Understand	CO 4	AEEB04.17
Voltage=10V±20%, Output Voltage=5V, I_L=20mA, I_zmin=5mA and I_zmax=80mA.					
MODULE -V BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS	14	Design Zener voltage regulator for the following specifications: Input	Understand	CO 4	AEEB04.15
BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS					
BIPOLAR JUNCTION TRANSISTOR AND APPLICATIONS Part - A (Short Answer Questions)					
Define transistor.			CATIONS		
1 Define transistor. 2 Describe the operating point of transistor. 3 Draw the symbols of NPN and PNP transistor. 4 Explain the operation of BJT and its types. 5 Explain the breakdown in transistor. 6 Define transistor current. 7 Describe how a transistor acts as a switch. 8 Define active region. 9 Define active region. 10 Write the relation between I _C , β, I _B and I _{CBO} in a BJT. 11 Define amplifier. 12 Define Biasing. 13 Define current amplification factor. 14 Explain about the various regions in a transistor. 15 Draw and explain the ac load line. 16 Discuss why biasing is necessary in BJT amplifiers. 17 Design a circuit and explain the ac load line with the help of neat diagram. 18 Write a Remember 19 Design a circuit and explain the working of a transistor as a switch. 10 Understand 11 Understand 12 Design a circuit and explain the working of a transistor as a switch. 16 Design a circuit and explain the working of a transistor as a switch. 17 Design a circuit and explain the working of a transistor as a switch. 18 Write a short note on transistor construction. 19 Design a circuit and explain the working of a transistor as a switch. 20 Explain the concept of DC load line with the help of neat diagram. 20 S AEEB 20 Explain the concept of DC load line with the help of neat diagram. 20 S AEEB 20 Explain the concept of DC load line with the help of neat diagram. 20 Explain the concept of DC load line with the help of neat diagram. 20 S AEEB 20 Explain the concept of DC load line with the help of neat diagram.					
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2	Illustrate with a diagram, how the BJT transistor acts as an amplifier.	Understand	CO 5	AEEB04.21
3	Explain the working of a transistor as an amplifier.	Remember	CO 5	AEEB04.21
4	Explain the term α and β current gains and their relationship for N-P-N transistor.	Remember	CO 5	AEEB04.20
5	Draw the input and output characteristics of a transistor in common emitter configurations.	Understand	CO 5	AEEB04.20
6	Explain the constructional details of Bipolar Junction Transistor.	Understand	CO 5	AEEB04.20
7	Describe the significance of the terms, α and β . Establish a relation between them.	Understand	CO 5	AEEB04.21
8	Derive the relation among α , β and γ in CE configuration.	Understand	CO 5	AEEB04.21
9	Determine the significance of operating point, DC and AC load lines to ensure active region operation of a BJT in CE amplifier.	Understand	CO 5	AEEB04.22
10	Explain the concept of biasing and dc load line.	Understand	CO 5	AEEB04.22
11	Explain the concept of biasing and ac load line with neat sketch.	Understand	CO 5	AEEB04.22
12	Explain the concept of ac and dc load line with the help of neat diagram.	Remember	CO 5	AEEB04.22
13	Draw the common emitter circuit and sketch the input and output characteristics Also explain active region, cutoff region and saturation region by indicating them on the characteristiccurve.	Understand	CO 5	AEEB04.20
14	Give the relationship between α , β and γ of a transistor in CC configuration.	Understand	CO 5	AEEB04.21
15	Give the relationship between α , β and γ of a transistor in CB configuration.	Understand	CO 5	AEEB04.21
16	Give the relationship between α , β and γ of a transistor in CE configuration.	Understand	CO 5	AEEB04.21
17	Design a circuit and explain the working of a transistor as a switch.	Understand	CO 5	AEEB04.21
18	Explain the input and output characteristics of a transistor in CB configuration.	Remember	CO 5	AEEB04.20
19	Explain the input and output characteristics of a transistor in CE configuration.	Remember	CO 5	AEEB04.20
20	Explain the input and output characteristics of a transistor in CC configuration.	Remember	CO 5	AEEB04.20
	Part – C (Problem Solving and Critical Think			
1	Calculate the values of I_C and I_E for a transistor with α_{dc} = 0.99 and I_{CBO} =5 μA , if I_B is measured as 20 μA ?	Understand	CO 5	AEEB04.20
2	Determine the collector current and emitter current for a transistor with $\alpha = 0.99$	Understand	CO 5	AEEB04.20
	and I _{CBO} = 490μA when the base current is 19μA	TT 1 4	~~ -	
3	The reverse leakage current of the transistor when connected in CB configuration is $0.2\mu A$ while it is $18\mu A$ when the same transistor is connected in CE configuration. Calculate α and β of the transistor?	Understand	CO 5	AEEB04.20
4	For an NPN transistor with α_N = 0.98, I_{CO} = 2 μ A and I_{EO} = 1.6 μ A connected in Common Emitter Configuration, Determine the minimum base current for which the transistor enters into saturation region. VCC and load resistance are given as 12 V and 4.0 K Ω respectively.	Understand	CO 5	AEEB04.22
5	If the base current in a transistor is $20\mu A$ when the emitter current is 6.4mA, what are the values of α_{dc} and β_{dc} ? Also determine the collector current.	Understand	CO 5	AEEB04.20
6	In a certain transistor, the emitter current is 1.02 times as large as the collector current. If the emitter current is 12 mA, Calculate the base current.	Understand	CO 5	AEEB04.20
7	A) Calculate α_{dc} , For each of the following values of β_{dc} =50 and 190. B) Calculate β_{dc} for each of the following values of α_{dc} =0.995 and 0.9765.	Understand	CO 5	AEEB04.20
8	In a certain transistor, the emitter current is 1.09 times as large as the collector current. If the emitter current is 10 mA, Calculate the base current.	Understand	CO 5	AEEB04.20
9	In a Common Emitter transistor circuit if β = 100 and IB = 50 μ A, compute the values of α , I _E and I _C .	Understand	CO 5	AEEB04.20
10	Find the value of β if $\alpha = 0.9$.(where α and β are current amplification factor in Common Emitter configuration.	Understand	CO 5	AEEB04.20
11	Derive the relationship between α and β . Calculate the value of Ic, Ie for a transistor that has = 0.98 and Ib = 100μ A.	Understand	CO 5	AEEB04.20
12	Explain Input and output characteristics. Derive $\alpha = \beta / \beta + 1$. Draw the circuit of CE configuration of transistor.	Understand	CO 5	AEEB04.20
13	Determine the collector current and emitter current for a transistor with $\alpha = 0.98$ and $I_{CBO} = 640 \mu\text{A}$ when the base current is 25Ma.	Understand	CO 5	AEEB04.20
14	Calculate the values of I_C and I_E for a transistor with $\alpha_{dc} = 0.99$ and $I_{CBO} = 2.5 \mu A$, if I_B is measured as 25 μA .	Understand	CO 5	AEEB04.21
	-2.3μ A, II I _B is illeasured as 23 μ A.			

15	If the base current in a transistor is $40\mu A$ when the emitter current is 3.5 mA,	Understand	CO 5	AEEB04.21
	what are the values of α_{dc} and β_{dc} ? Also determine the collector current.			

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