

BEE





	Gu	ru Nanak Dev Er	gineering College, Ludhia	na	-	
		Departmen	t of Applied Sciences			
Program	1	B.Tech	Semester	1		
Subject (Code	ESC-101	01 Subject Title Basic E			
Mid S• m No.	nester Test (MST)	2	Course Coordinator(s)	rdinator(s) Baljeet Singh Puneet Chandel Sukhpal Singh Ranjit Singh		
Max. Ma	arks	24	Time Duration	I hou	r 30 minutes	
Date of !	MST	22 December, 2022	Roll Number	72	1405	
Note: At	tempt all questions					
Q. No.					COs, RBT level	Mark
QD-	What do you understand by autotransformer?					2
	Differentiate wire a				CO5. 1.4	2
(22)	Briefly discuss dift	erent methods of c	harging battery	attery CO5. L3		
(1		g principle of 3 ph	ase induction motor? Explain	1	CO4, L1	4
(D5)	If a 4 pole induction rotor current f _r is 2 Find (i) synchrono	Hz	t 50Hz frequency and frequen	ncy of	CO4. 1.5	4
(06)	Explain construction equation of single	on and working of	transformer? Derive the cinf		CO3. 1.5	8
	Outcomes (CO) will be able to					
1			nd magnetic circuits.			
2	Inculcate the under	rstanding about the	AC fundamentals.			
3	Realize the require	ement of transform	ers in transmission and distri	bution o	of electric pov	ver and
	other applications.				- 1	
4 \	Analyze the	generator / motor re	equired for a particular applic	cation.		
5	Analyze the variou					
· ·	Recognize the vari	ous measuring inst	rument.			

RBT Classification	Lower Order	Thinking Levels	(LOTS)	Higher Order Thinking Levels (HOTS)		
RBT Level Number	LI	L2	L.3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

Ros

V WIT S THE WIND WHOS GUPPLE POPERATE

principl Onerator & genes a Eurstr

Transformer in which the of AT is again

Convential bons is basically work-on



	Gu	ru Nanak Dev En	gineering College, Ludhia	na		
Program		Department	of Applied Sciences	-		-
Subject		B.Tech	Semester	Ti		
Subject C	ode	ESC-101	Subject Title	Basic	Basic Electrical	
Mid Seme	ester Test (MST)				eering	
No.	ester Test (MST)	1	Course Coordinator(s)		et Singh	
			(.,)		t Chandel	
					oal Singh	
Max. Mar	ml				Singh	
Date of MST		24	Time Duration	1 hour	r 30 minutes	
Date of M	151	16 th November,	Roll Number	1 Hou	30 minutes	
Note: Au		2022	- Ton Humbel	22	14053	
Q. No.	empt all questions			C	3000	
Q. 140.		Questi	on		COs,	-
	C					Marks
02	State Ohm's law ar	RBT level				
X	Differentiate mesh	CO5, L1	2			
		CO5, L4	2			
	The current $I = 3$	35 36cin 211+ :- a	wing through R-L series		CO5, L2	4 *
	having $R = 15\Omega$	and $X_1 = 12\Omega$	Find (i) RMS Value of c	circuit	CO2, L5	4
	(ii)Average Value	of current (iii) Impe	Find (i) RMS Value of conduction (iv) Power Factor	urrent	18.5	
					CCC	
(6)	. The operation	Hy Difficinal and we	orking of permanent magnet		CO2, L5	4
	moving coil instrum	ments.	or permanent magnet		CO6, L4	8
1						
		Or			100	
*	What is Power fact	or and explain its e	ignificance? Classify various			
(*)	The district ps in in	or and explain its e	ignificance? Classify various	S		
Course O	Outcomes (CO)	or and explain its si inproving the power	ignificance? Classify various factor	S	in the	ally ex-
Course O Students v	The district ps in in	or and explain its e	ignificance? Classify various	S	THE SHE	ariyar ariyar
Students v	Outcomes (CO) will be able to	or and explain its single proving the power	Tactor	S	in the	Original
Students v	Outcomes (CO) will be able to Analyze the behave Inculcate the under	or and explain its sinproving the power	d magnetic circuits	4	19 29 29 29 29 29 29 29 29 29 29 29 29 29	ally an
Students v	Outcomes (CO) will be able to Analyze the behave Inculcate the under	or and explain its sinproving the power	d magnetic circuits	4	19 29 29 29 29 29 29 29 29 29 29 29 29 29	ariska ariska ariska ariska
Students v	Outcomes (CO) will be able to Analyze the behave Inculcate the under Realize the require other applications.	or and explain its sinproving the power iour of electrical and standing about the ment of transformer	d magnetic circuits AC fundamentals. rs in transmission and distrib	oution o	19 29 29 29 29 29 29 29 29 29 29 29 29 29	rer and
Students v	Outcomes (CO) will be able to Analyze the behave Inculcate the under Realize the require other applications.	or and explain its sinproving the power iour of electrical and standing about the ment of transformer	d magnetic circuits AC fundamentals. rs in transmission and distrib	oution o	19 29 29 29 29 29 29 29 29 29 29 29 29 29	er and
Students v	Analyze the behavior Inculcate the under Realize the require other applications. Select the type of general results and the select the type of general results are required to the select the type of general results are required to the select the type of general results are required to the select the type of general results are required to the select the type of general results are required to the select t	or and explain its sinproving the power iour of electrical and standing about the ment of transformer	d magnetic circuits AC fundamentals. rs in transmission and distrib	oution o	19 29 29 29 29 29 29 29 29 29 29 29 29 29	er and

RBT Classification	Lower Order	Thinking Levels	(LOTS)	Higher Or	der Thinking	g Levels (H
RBT Level Number	L1	L2	L3	L4	1.5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

3.14

3536x 1/414 100 100

353671111

2 3536

	Departmen	Engineering College,	ring			
Program	B.Tech.	nt of Electrical Enginee	ring			
Subject Code	ESC-18101	Semester/	<u>Z</u>	2-1-51		
Mid Semester Test	1	Subject Title	Basic Electric	al Engineer	ing	
(MST) No.	h	Course Coordinator(s)	Er. Amrinder	Kaur Gill		
Max. Marks	24	Time Duration	1 hour 30 mi	nut a		
Date of MST	13/12/11/20	Roll Number	19141			
Note: Attempt all ques	tions	Non Number		0.5		
Q.		estions		Oc. DDm		
No	· ·	C3(10112		Os, RBT	Marks	
01 What is active	and reactive	name		evel		
The equation	of alternation	power.		02, L1	2	
Determine:	or atternating	voltage $v = 42.42 \sin 628 t$. C	.01,	2	
and the second s				02, L5		
	ige value	ii. r.m.s. value				
III. forr	n factor	iv. peak factor				
Q3 Derive the n	ecessary equa	tions for converting delta	to star	02, L2	4	
THETWOIK.		-		.02, 52	4	
Define the K	irchhoff's curr	ent law and Kirchhoff's v	oltage	CO1, L1		
ICITY.			1	JO1, L1	4	
Calculate th	e current I in t	he circuit shown in Figure	2 1 hrs. 1	205.5		
using super	position theor	em.	c r by	CO5, L5	4	
		-W				
The state of the s	20	10 Iv 20-	and the same of the same of the	2 10 10 10 10	the state of the	
2,	ν 兰	2Ω $\geq 2\Omega$ \perp	5,123			
	F	²¹¹		•		
		Figure 1				
Q6 Discuss	roconones in D			000	1	
(a. 0.3cu33	resonance in R	LC series circuit.		CO2, L4	8	
b) Reduce	an expression	for-current, impedance a	and nower			
			aplied and		1	
		n	ophed and			
Course Outcome	es (CO)	4.45				
Students will be a						
1 Analyze th	e behavior of elec	ctrical and magnetic circuits.				
[7] [1	are understanding	allout the a-c				
L Incincate	0.400	transformer in transmission of	nd distribution	ofalasi		
L Incincate	e requirement of					
3 Realize the	c requirement of	transformer in transmission a	id distribution	or electric	power ar	
3 Realize the other app 4 Select the	lication. type of generator	motor required s	lar application	. or electric	power ar	
3 Realize the other app 4 Select the 5 Analyze t	lication. type of generator he various electri	motor required s	ar application		power a	

RBT Classification	Lower Order T	hinking	F.			
RBT Level Number	L1	hinking Levels (LOTS)	Higher Ord	er Thinking I	evels (HOTS)
RBT Level Name	Remembering	Understanding		L4	L5	L6
		stanting	Applying	Analyzing	Evaluating	Creating

	Gu	ru Nanak Dev E		L. Lange of		
Menara	Marie San Control of the Control of	ru Nanak Dev Engir Department of El	tering College, Ludi Strical Engineering	manu		
圣 z ogran	The state of the s	B.Tech.(ME-C) ESC-18101	Surical Engineering	And the same of th	and the second second	
eubject	Loge	ESC-18101	Acmester	AND DESCRIPTION OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO IS NAMED I	and the second of the second o	
= In ou	mester Test (MST)	The state of the s	Subject Title	BEE		the same of the sa
	7.		Course	Karan	bir Singh	
Fax. M		24	Coordinator(s)			
e te of	MST	Mark and the contract of the c	Time Duration	1 hour	30 minutes	The second secon
	Street and the street of the s	18 ² September, 2019	Roll Number			
o Lie: VI	ttempt all questions	AMI 3	(VIIII) , ,	- manager to the Committee of the Commit		
€ No.	and the state of t	the state of the s	law manufacture from the control of	Live opposite the same of the		
100		Question	A section of the sect	and the same of th	COs,	Marks
	Define power factor	The state of the s			RBT level	
(Q2)	Define power factor A star connected in	in relation with the V	Value and current.		CO2, L2	2
	would be the recierar	non of	Precisiance in each 1	imb,what	CO5, L5	2
Q3	would be the resistar Explain the difference	ace of each limb of d	cha connection?			
75)	Sillusonal function	THE !	Masor and fime de	omain of	CO2, L2	4
/Q4	Obtain the power di	and the same of th	7			*
	me poner dis	ssipation in 10 ohm re	esistor using KVL.	and the second s	CO5, L3	4
EVI	1	S. S	1 1511-552:	=0-0	=	0.4
	10v (2)	L / \$50/	E in D		0	1/2V1
	Obtain the power dis	£52 24	1012-511=1	0-48)	PIRP	20.10/
Q5	Explain Nortania		1		TP	=1.6 W
	Explain Norton's theorem.	heorem, write the s	teps of solving cire	uit using	CO5, L6	4
Q6	Find the current flow	A second				
	Find the current flow theorem.	Ning through the 3 of	um resistor using Sup	erpostion	CO5, L5	8
	2×3	42 J 4A			-	
Course Or	utcomes (CO)	The second secon	and the section regard regard and provided and provided and the section in the section of the section of the section of	Manager and the second section in the second		
Students w	ill be able to					And the second s
1	Analyze the behavior	of planting all and	to a communication of the control of			
	war was a land a sale a sale a		april or many plant and	A STATE OF THE PARTY OF THE PAR	Production in the second party of the production of the second se	-
3	neuleate the understa Realize the requirement other applications.	inding about the At-	fundamentals	Andrew Comments Street, Sound of the	which was desired to the same of the same	A particular and the same of the same
,	teanze me requireme	int of transformers in	transmission and di	stribution	of alasti	
1 C	ther applications.	The second secon		The manager	or electric po	wer and
1 3	select the type of gene	erator / motor require	d for a particular apr	lication	The state of the s	
					The state of the s	
5 U	Inderstand the compo	onents of low voltage	electrical installation	The Control of the Co	Marie Control of the	The state of the s

Lower Order	Thinking Lev	s (LOTS)	Higher Ord	ler Thinkin	I Lovels (III
LI	L2	Pala D	L4		s Levels (HO
Remembering	Understandg	Applying	Analyzing	Fyalustina	L.G
		L1 L2	Remembering Understand, April	L1 L2 L3 L4 Remembering Understander Applying 1	L1 L2 L3 L4 L5

- Annie Carlotte Carl	Gu	ru Nanak Dev En	gineering College, Ludhia	-			
Prograv		ocha men	of Applied Sciences	na	Control of the second s		
		1 B. Tech	Semester		The state of the s		
Subject		ESC-101	Subject Title	Basic	Basic Electrical Engineering		
NO.	nester Test (MST)	2	Course Coordinator(s)	Balje Puned Sukh	et Singh et Chandel pal Singh		
Max. M		24	Time Duration		t Singh		
Date of	MST	22 December,	The state of the s		r 30 minutes		
2		2022	Roll Number	22	1606	52	
Mote: At	tempt all questions						
Q. No.	When d	Quest			COs, Mark RBT level		
022	What do you under	stand by autotrans!	CO3, L2	2			
1	Differentiate wire and cable?					2	
	Briefly discuss diffi	erent methods of c	harging battery		CO5, L4	4	
(C)4)	Squiffer cage and w	ound rotor induction	ase induction motor? Explain on motor		CO4, L1	4	
Q5	Find (i) synchronou	s speed (ii) Slip	50Hz frequency and frequen	cy of	CO4, L5	4	
Q6)	Explain construction equation of single p	n and working of the hase transformer	ransformer? Derive the emf		CO3, L5	8	
	Outcomes (CO) will be able to						
1	Analyze the behavio	our of electrical an	d magnetic circuits.				
2	Inculcate the unders	tanding about the	AC fundamentals.	-			
3	Realize the requiren other applications.	ent of transformer	rs in transmission and distrib	ution o	f electric pow	er and	
4		nerator / motor red	quired for a particular applies	ation.	And which the country of the state of the st		
5	Analyze the various	electrical network	S.				
6.	Recognize the various	is measuring instr	ument,				

RBT Classification	Lower Order	Thinking Levels	(LOTS)	Higher Order Thinking Levels (HOTS			
RBT Level Number	LI	1.2	L3	L4	L5	1.6	
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	

parameter de la company de la	The same of the sa	ru Nanak Dev En	gineering College, Ludhia	nit			
Program		Department	of Applied Sciences				
Subject C		B. Lech	Semester	11		the services	
Subject	oae	ESC-101	Subject Title	Busic	Electrical	- Art Sentence of	
Mid Sem		Photo index property and the party of the pa		1			
No.	ester Test (MST)	The state of the s	Course Coordinator(s) Balje		igineering iljeet Singh		
			(4)		t Chandel		
				1	oal Singh		
Max. Ma	THE STATE OF THE PROPERTY OF T	1928 - Callengario Carlos Callengario (1924) (c. 1928) (c. 1924) (Singh		
Date of A		24 management of the second	Time Duration		r 30 minutes	Page 1 of Page 10 in the page 10	
	101	16 th November.	Roll Number	1	A CONTRACTOR OF THE PARTY OF TH	A service of the serv	
Note: Au	empt all questions	2022		22	16062		
Q. No.	Management Authorities and Aut		The second secon	A year our stormanion		and a property of the second of the second	
		Questi	On	COs, Mar			
QL	State Ohm's law or	THE STATE OF THE PARTY OF THE P	can describe the control profession and the cont		RBT level	Mark	
(02)	State Ohm's law and its limitation? Differentiate mesh and leaves					2	
Q3).	Differentiate mesh and loop in an electric circuit with example State and prove Thevenin's Theorem					2	
Q4)						4	
	having $R = 150$	and V. = 120	wing through R-L series	circuit	CO5, L2 CO2, L5	4	
	(ii) Average Value	of current (iii) Imm	Find (i) RMS Value of conduction (iv) Power Factor	urrent			
Q5/	Evaluate the condi	tion of resonance for	r series R-L-C circuit				
Q6)	The operation	THE DESIGNATION OF THE PARTY OF	or series R-L-C circuit orking of permanent magnet	W. M. collision of the state of	CO2, L5	4	
	moving coil instru	ments.	orking of permanent magnet		CO6, 1.4	8	
		On					
(- XI)	What is Power fac	for and explain its a	ignificance? Classify various				
		mproving the power	factor	5			
Course (Darcomes (CO)	(a. er de lumingly - Marigue) - Qualité pués	Committee of the second	*		None than philipped	
Students	will be able to						
1	Analyze the behav	iour of electrical an	d magnetic circuits	that distribution in departure special			
2	i incurcate the under	rstanding about the	AC fundamental				
3	Realize the require	ment of transforme	rs in transmission and distrib	ution a	Calcut		
-	other applications.		and distill	outon o	i electric pow	er and	
4	Select the type of	generator / motor re-	quired for a particular applic	ation	commenced bangarought risk educate a prosperioral in educing	the factor of the second	
5	Triany ac the variot	is electrical network	s. Itage electrical installations	TOTAL S	A CONTRACTOR OF THE PROPERTY O		
6							

RBT Classification	Lower Order	Thinking Levels	(LOTS)	Higher Order Thinking Levels (HOTS)			
RBT Level Number	Let 1	1.2	1.3		.1.5	L6	
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating	

- What one different types of electric measuring instruments?
- (920) give RMS and average valles of simosoidal Voltage? RMS value of vons = ym , avary = io-637xvm
- (\$3.) Explain how rodating magnetic field is produced? Five expression for its magnetude?
- DC machines
- (5) Explain the working of transformer at an inductive load.
- give the applications of each type what do you mean by SLIP?

		Departme	ev Engineering College, I	Juumana				
Progran	11	B.Tech.	ent of Electrical Engineer	ing	-			
Subject	Code	ESC-101	Semester	2 nd				
	nester Test	21101	Subject Title	Basic E	lectrical Engi	neering		
(MST) N		2	Course	Pf. Ran	jeet Singh, Pf.	Baljit		
,	•		Coordinator(s)	Singh, 1	Pf. Amrinder I	Caur		
Max. Ma	arke	24		Gill, Pi	f. Arshdeep Ka	aur		
Date of l	The state of the s		Time Duration	1 hour 3	30 minutes			
.,	101	29/5/2023	Roll Number	Roll Number				
Note: At	tempt all question							
Q. No.	The air question							
2		Q	uestion		COs, RBT	Marks		
MID	Enliet diffe				level			
	applications.	nt types of sir	ngle-phase induction mo	otor. Give	CO4, L1	2		
(2)	A Three phas	e induction moto	or has 2 poles and is co	nnected to	CO4, L5	2		
	400V,50 hz su	pply, determine s	vnchronous speed and spee	ed of motor	CO4, L3	2		
	when the slip i	00V,50 hz supply, determine synchronous speed and speed of motor when the slip is 4%. $NS = 1800 \text{ Ffm}$, $N = 1490 \cdot 40$						
Q3)	1 A 200 KVA.66	000/400 V. 50 Hz	single phase transformer h	ac 80 turns	CO1, L3	4		
	A 200 kVA,6600/400 V, 50 Hz single phase transformer has 80 turns on the secondary. Calculate 1. The approximate values of the primary and secondary currents					-		
	1. The approxi	mate values of the	primary and secondary cu	rrents				
	2. The approxi	mate number of p	rimary turns ~ 2.2					
r. Can	3. The maximu	im value of flux.	10 0000 200 1	10/				
Q4)	Explain the co	onstruction and w	orking of three phase asy	nchronous	CO1, L3	4-		
2 1	motor.	·-	•		,			
Q5)	Define autotra	ns ormer. Compai	e auto transformer with co	nventional	CO2,L6,L4	4		
\leq	two winding tr							
26	Explain the o	construction and	principle of operation of	of PMMC	CO6,L5	8		
	instrument. Gi	ve merits and dem	erits of PMMC instrument	S.				
	Outcomes (CO)	,						
Students	will be able to							
	Analyze the be	havior of electrica	al and magnetic circuits.					
?	Inculcate the u	nderstanding abou	it the ac fundamentals.					
3			ormer in transmission and	distribution	of electric po	wer and		
	other application							
	Select the type	of generator /mot	or required for a particular	application				
5		rious electrical ne						
,								

Department of Electrical Engineering Program B. Tech. Semester Subject Code ESC*101 Basic I lectrical I ngineering Subject Title 161 Mid Semester Test Course Pf. Ranjeet Singh, Pf.Baljit (MST) No. Singh, Pf. Amrinder Kaur Gill, Coordinator(s) Pf. Arshdeep Kaur Max. Marks 1 hour 30 minutes 24 Time Duration Date of MST Roll Number Note: Attempt all questions Q. No. Question COs, RBT Marks level The equation of alternating current i= 42.42 Sin 628t. Find average value law CO2, 1.32 Jorg = 29-02, Jary = 30 A and RMS value In of current. Define power factor. What are the values of power factor for a) purely resistive CO2, 1.5 2 circuit b) purely capacitive circuit? (0) Define battery and explain its types. CO6, L2 4 Derive the necessary equation for converting Delta network into an equivalent CO1, L3 4

Guru Nanak Dev Engineering College, Ludhiana

	Star network.				
<u>(1)</u>	Deduce an expression for current, impedance and power factor for RLC series circuit when ΔC voltage is applied. Some of the property of t	CO2, L6	4		
Q6)	State Superposition theorem and Justify with suitable example.	CO6,L5	2+6=8		
	se Outcomes (CO) uts will be able to	Landander rendere divides der rendere vicende un			
dia, amount of the respect	Analyze the behavior of electrical and magnetic circuits.				
2	Inculcate the understanding about the ac fundamentals.				
3	Realize the requirement of transformer in transmission and distribution of application.	electric power	and other		
4	Select the type of generator /motor required for a particular application.		3		
5	Analyze the various electrical networks.				
A CONTRACTOR STATE OF THE PARTY	Recognize the various measuring instruments.	The state of the s			

RBT Classification	Lower Order	Phinking Levels (LO	OTS)	Higher Orde	r Thinking Lev	els (HOTS)
RBT Level Number	1,1	1.2	1.3	U	1.5	1,6
RRI Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

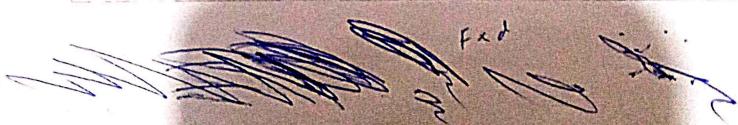
Guru Nanak Dev Engineering College, Ludhiana

	Departmen	at of Electrical Engineerin	A year of the large statements and the statement of the state and the state of the
The second second second second second second	B Tech.	Semester	The second secon
Program	ESC-101	Subject Title	Basic Electrical Engineering
Subject Code Mid Semester Test (MST) No.	Lat	Course Coordinator(s)	Pf Ranject Singh, Pf Balject Singh, Pf. Karanbir Singh, Pf Sukhpal Singh, Pf. Balwinder Singh
Max. Marks	24	Time Duration	1 hour 30 minutes
Date of MST	28.09.2023	Roll Number	The second secon

Q. No.	Question Question	COs, RBT	Marks
(0)	Define Deflecting Torque	CO6, L1	1 - 3
000	An alternating current 1 is given by : 1 = 141.4 sin 314t	CO2, L5	2
Market of the Parket of the Pa	Find R.M.S and average value of current Differentiate between PMMC and Moving iron-instruments	CO6, 1.2	-1
63	Derive the equation for converting Delta network into an equivalent Starnetwork	COI, L3	
05	Deduce an expression for impedance and power factor for RLC series encuit when AC voltage is applied and also derive the expression for resonant frequency.	CO2, L6	± 4
26	State Thevenin's theorem and I'ind the current passing through 4Ω resistance by using Thevenin's Theorem. 10V 1 onm 3 ohm 4 onm	CO1,L5	8
	В		•

Course	Outcomes (CO) s will be able to
1	Analyze the behavior of electrical and magnetic cucuits
2	Incalcate the understanding about the ac fundamentals
3	Realize the requirement of transformer in transmission and distribution of electric power and other
14-	application
1	Select the type of generator /motor required for a particular application
5	Analyze the various electrical networks
16	Recognize the various measuring instruments.

RBT Classification	Lower Order	Thinking Levels (LOTS)	Higher Ord	er Thinking I	evels (HOTS)
RBT Level Number	L.L.	L2	L3	L4	L5	1.6
	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating



THE PERSON NAMED IN		Guru Nanak De	v Engineering College, Lud	hiana		
D		Departmen	nt of Electrical Engineering	illalla		
Program		B. lech.	Semester	1 st		
Subject (ESC-101	Subject Title		trical Engine	
Mid Semester Test (MST) No.		2 nd	Course Pf. Ranje Coordinator(s) Singh, Pf Pf.Sukhp		ectrical Engineering eet Singh, Pf.Baljeet f. Karanbir Singh, pal Singh, Pf. Balwinder	
Max. Ma	rks	24	Time Duration	Singh		
Date of N		07.11.2023	Roll Number	1 hour 30	minutes	
Q. No.	empt all question					
(1)	A 2000/2001/	7	estion		COs, RBT level	Marks
4	Calculate Prima	ry turns.	ner has 66 turns in the	secondary.	CO3, L5	2
Q2	What is the need of Earthing? CO5, L2 2					
Q3	Explain the working principle of Auto Transformer. What are its CO3, L1 4 applications?					
Q4 Q5)	Discuss about v	arious components	of LT switchgear?		CO5, L2	4
1/	Draw and explain the torque slip characteristics of 3- phase induction CO4, L6 motor?					4
Q6 °	b) A three phase is dusting the state of the motor.				8 (4+4)	
	Outcomes (CO) will be able to	•				
1	Analyze the be	havior of electrical	and magnetic circuits.			
2			the ac fundamentals.			
3	Realize the req	uirement of transfor	mer in transmission and dist	ribution of	electric power	and other
4	Select the type		required for a particular app	lication.	Part of the second Property of the second	STATE SWIFTING
5	Analyze the va	rious electrical netv	vorks.			
6	Recognize the	various measuring i	instruments.			

RBT Classification	Lower Order	Thinking Levels (LOTS)	Higher Order Thinking Levels (HOTS)		
RBT Level Number	Ll	L2	L3	L4	L5	L6
RBT Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating

printed pages within first ten 9 _questions and _2_ Please check that this question paper contains_

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester:1st /2nd

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Scientific calculator is Allowed

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

1) Parts A and B are compulsory

2) Part C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice

3) Any missing data may be assumed appropriately

Part - A

[Marks: 02 each]

Q1.

- Define Kirchoff's voltage and current. a)
- Define deflecting torque. b)
- Give two limitations of Ohm's law. c)
- What are the various types of three-phase transformer connections? d)
- A consumer uses a 10 kW geezer, a 6 kW electric furnace, and five 100 W bulbs for 15 hours. How many units (kWh) of electrical energy have been used?
- A coil of resistance of 30 Ω with an inductance of 0.25 H and capacitance of $250~\mu F$ are connected in series and is fed by 230V, 30 Hz supply. Find the impedance of the circuit

Part - B

[Marks: 04 each]

- Q2. Explain how the transformer operates and derive an EMF equation transformer.
- Q3, Discuss the construction and working of permanent moving coil instruments.
- Q4. Draw and explain the torque slip characteristics of a 3-phase induction motor.

Page of 2

Q5 Analyze an AC circuit comprising of series RLC and also derive an expression for impedance, voltage, current, and power factor.

- Q6. A three-phase 50 Hz induction motor has 8 poles and operates with a slip of 4 % at a certain load. Find the speed of the rotor and the frequency of the rotor current at 1000rpm.
- Q7. State and prove Norton theorem with suitable example.

Part - C

[Marks: 12 each]

With a clear, labelled diagram, describe the components and operation of a threephase induction motor in detail.

OR

Write a short note on the following

a. Components of LT switchgear.

b. Earthing

Q9. Deduce the expression for star to delta and delta to star conversion.

OR

A 65 kVA transformer has an iron loss of 550 W and full load copper loss of 975 W. If the power factor of the load is 0.85 lagging. Calculate full load efficiency and kVA at which maximum efficiency occurs. Also, find the maximum efficiency.



Plance check that this question paper contains_ 09 questions and 02 printed pages within first ten

[Total No. of Questions: 09]

MORNING

[Total No. of Pages: ..02....]

Uni. Rell No.

02 JUL 2022

Program: B.Tech. (Batch 2018 onward)

Semester: 2nd

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

1) Parts A and B are compulsory

2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice

3) Any missing data may be assumed appropriately

Part - A

[Marks: 02 each]

Q1.

Explain the concept of voltage and current source transformation with an example.

Name two ways of connecting three phase system. Write down the relationship

between phase and line voltage and current for these systems.

Compare an auto transformer with a two-winding transformer. Wife new

Define term phase splitting.

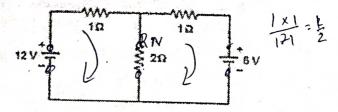
A lead acid cell maintains a constant current of 3A for 10 hours before its terminal voltage falls to 1.8 V. Calculate the capacity of the cell.

What are electrical measuring instruments? Give example.

Part - B

[Marks: 04 each]

Using Norton theorem calculate the current through 2Ω resistance.



Draw power triangle. Define apparent power, active power and reactive power of AC system.

Derive the condition for maximum efficiency of a transformer.

Page 1 of 2

MORNING

02 JUL 2022

3Φ, 6 pole 50 Hz induction motor has a fractional slip 0.01 at no load and 0.03 at full load. Calculate

- a) Synchronous speed
- b) No load speed of motor
- c) Full load speed of motor
- d) Frequency of rotor at full load.

With the help of neat diagram explain the construction and working of Miniature Circuit

Explain the construction and working principle of Moving Iron Instrument. Give

Part - C

[Marks: 12 each]

Derive all the necessary equations for converting delta network into an equivalent star network and vice versa.

a. Draw neat phasor diagram and deduce an expression for current, impedance, phase angle, power factor and power of RL series circuit when an AC voltage is applied.

(b) A voltage e =200 Sin (100II t) is applied to a coil having $E=200~\Omega$ and $E=0.38~H_{\odot}$ Determine the expression of current and power taken by coil.

(a) Draw an equivalent circuit and drive circuit parameters of conventional two winding

(A 400/200, 50 Hz, 10 KVA transformer has primary and secondary winding resistances of 2.5 Ω and 0.5 Ω and winding leakage reactances of 5 Ω and 1 Ω respectively. Find the equivalent resistance and reactance referred to secondary side

Explain the construction and working principle of 3 @ Induction Motor. Why induction motor need starter?

[Total No. of Questions: 09]

[Total No. of pages: 1]

Uni. Roll No. 22033.47....

Program/Course:B.Tech. (Sem.-1st/2nd)
Name of Subject: Basic Electrical Engineering
Subject Code: ESC-101

Paper I.D.: 15929

Time Allowed: 3 Hours

Max. Marks: 60

Note:

1) Part A and B is compulsory.

- 2) Part-C has two Questions Q8 and Q9 both are compulsory, but with internal choice.
- 3) Any missing data may be assumed appropriately.

Part-A

[Marks: 02 each]

Q1

(a) What do you mean by electric resistance? Mention the factors on which it depends?

Distinguish between node and junction?

- Define peak factor and form factor of an alternating quantity?
- Define magnetic flux and give its unit?
 - Which losses occur in a dc machine?

f)Define damping torque?

- (g) A 50 Hz, 4 pole, 3 phase induction motor has rotor current of frequency 2 Hz. Calculate slip and speed of motor?
- Give concept of work and energy.

Explain the term Earthing.

What is the difference between primary and secondary batteries?

Part-B

[Marks: 04 each]

What are different component of LT Switchgear and Protection?

Explain the working of an auto transformer. How its different from conventional two winding transformer.

Q4 Explain the BH characteristics of magnetic material.

Discuss how do you analyse series RLC circuit? Draw its phasor diagram?

- What do you understand by Power factor? Also explain the different methods to improve power factor.
- Q7 Explain the classification of electrical instruments.

Part-C

[Marks: 12 each]

Q8.(a) Derive the emf and torque equation of a dc machines.

or

- (b) Explain the construction and operating principle of a Permanent magnet moving coil.
- (09. Ja)Discuss construction and working of Transformer?
 - (b) state and explain the Thevenin and Norton theorems with suitable example.

Conductive

	0	munitians and	2	printed pages within first te	n
Please check that this question paper contains_	9	questions and		primea pages within just to	

[Total No. of Questions: 09]

[Total No. of Pages: ...2...]

Uni. Roll No.

Program: B.Tech Semester: 2nd

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 02 Hours

Max. Marks: 60

27-01-2022(E)

NOTE:

- 1) Each question is of 10 marks.
- 2) Attempt any six questions out of nine
- 3) Any missing data may be assumed appropriately
- Ilow Thevenin and Norton theorems can be used to solve a linear circuit? Give the methodology with suitable example to apply Thevenin's theorem to any linear circuit.
- Discuss the concept of resonance in parallel circuit. A series RC circuit takes power at 7000 W when connected to 200 V, 50 Hz supply. The voltage across the resistor is 130 V. Calculate (i) the resistance (R), Current (I), pf (cos\phi), capacitance (C) and impedance (Z) and (ii) Also write equations for v(t) and i(t).
- In a 50 kVA transformer, the iron loss is 500W and full load copper loss is 800W. Find the efficiency at full load an half load at 0.8 pf lagging.
- Compare Permanent magnet moving coil and moving iron instruments with focus on the operating torques. Give the working of moving iron instruments in brief.
 - Q5. What information do we get from Power Flow diagram of three phase Induction Motor.

 Λ 440 V, 50 Hz, 6 pole, 3-φ induction motor draws an input power of 76 kW from the mains. The rotor emf makes 120 complete cycles per minute. Its stator losses are 1 kW

and rotor current per phase is 62 A . Calculate (a) rotor copper losses per phase (b) rotor resistance per phase (c) torque developed.

- Q6. Discuss about various components of LT switchgear (5 Marks)

 Explain different types of batteries. (5 Marks)
- Derive the EMF equation of transformer and with a suitable example, explain the approximation of equivalent circuit of transformer referred to secondary.
- (Q8.) Why a starter is required in a 3-phase induction motor. Discuss about various type of starters with diagrams.
- Q9. Explain Three phase balanced circuit with the necessary conditions and diagram of waveform (three phases). A delta connected balanced three phase load is supplied from a 3 phase, 400 V supply. The line current is 20 A and the power taken by the load is 10 kW. Find (i) impedance in each branch (ii) the line current, power factor and power consumed if the same load is connected in star.

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

Program: B.Tech Semester: 1st

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 02 Hours

Max. Marks: 60

22-02-2022(M)

NOTE:

1) Each question is of 10 marks.

2) Attempt any six questions out of nine

3) Any missing data may be assumed appropriately

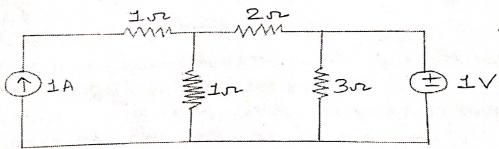
(Q1)

A) Define the term resonance for an AC circuit consisting of resistance, inductance and capacitance. Derive the condition of resonance in series R-L-C circuit.

B) Also determine i) resonant frequency ii) Q-factor iii) the half power frequencies iv) Bandwidth v) current at resonance in series R-L-C circuit having R=10 ohms, L=0.1Henry and C=8 microfarad. Assume the voltage to be V and write your answers in terms of V.



State and explain Superposition theorem. Find current through 2 ohms resistor in the circuit as shown in figure:





Enlist and explain the losses occurring in a transformer. Write an expression for calculating the efficiency of a transformer and develop the condition for maximum efficiency.

- Describe the construction and working principle of the three phase induction motor.

 Draw the torque-slip characteristics and explain why this motor cannot operate on synchronous speed?
- Draw and explain Power Triangle explaining active, reactive and apparent power. If load draws a current of 9 A at 0.8 pf lagging when connected to 100 V supply, Calculate the values of real, reactive and apparent powers. Also find out the resistance of the load.
 - Q6. Derive all the necessary equations for converting a star into an equivalent Delta network and a Delta into an equivalent Star network.
 - Q7. Describe the construction and working of permanent magnet moving coil instrument.

 What are its advantages and demerits.
 - (Q8.) Explain the construction and working principle of Synchronous generators.
 - Q9. Write short note on the following:
 - (A) Types of batteries
 - B) Power factor correction methods

Please check that this question paper contains_9_	questions and2 printed pages within first ten
[Total No. of Questions: 09]	[Total No. of Pages:2]
Uni. Roll No	[Total No. of Lagos m2m]
Program: B.Tech Semester: 2 nd	THE RESERVE THE PARTY OF THE PA
Name of Subject:	Basic Electrical Engineering
Subject Code: ES	C-101 - C. A. Company and C. A. A. A. A. A. C.
Paper ID: 15929	A STATE OF THE STA
Time Allowed: 02 Hours	Max. Marks: 60
NOTE:	
1) Each question is of 10 marks.	12-07-21(M)
2) Attempt any six questions out of nine	The state of the s
3) Any missing data may be assumed app	ropriately
Q1. How Thevenin and Norton theore	ms can be used to solve a linear circuit? Give the
	e to apply Norton theorem to any linear circuit.
Solution of the state of the st	e to apply Norton theorem to any linear circuit.
$//$ Q_{2} A 230 V , 50 Hz AC supply is a	applied to a coil of 0.06 H(inductance) and 2.5

(resistance) connected in series with a 6.8 μF capacitor. Calculate

- (a) Impedance (Z)
- (b) Current(I)
- (c) Phase Angle(φ)
- (d) Power factor
- (e) Power consumed
- In a 50 kVA transformer, the iron loss is 500W and full load copper loss is 800W. Find the efficiency at full load an half load at 0.8 pf lagging.
- Q4. Compare Permanent magnet moving coil and moving iron instruments with focus on the operating torques. Give the working of moving iron instruments in brief.
- Q5. A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1% at no load and 3% at full load, Find:
 - (a) Synchronous Speed

- (b) No-Load Speed
- (c) Full-Load Speed
- (d) Frequency of rotor current at standstill
- (e) Frequency of rotor current at full-load
- (Q6.) ((a)) Discuss about various components of LT switchgear (5 Marks)
 - Explain different types of batteries. (5 Marks)
 - Derive the EMF equation of transformer and with a suitable example, explain the approximation of equivalent circuit of transformer referred to primary.
- Why a starter is required in a 3-phase induction motor. Discuss about various type of starters with diagrams.
 - Explain Three phase balanced circuit with the necessary conditions and diagram of waveform(three phases). Give the voltage and current relations in star and delta connections.

	Please check that this question paper contains 09 questions and 02 printed pages within first ten
	[Total No. of Questions:09] MORNING [Total No. of Pages:02] Uni. Roll No
	Program: B.Tech. (Batch 2018 onward) Semester: 1 st
	Name of Subject: Basic Electrical Engineering Subject Code: ESC-101 Paper ID:15929
, a	Time Allowed: 03 Hours
	NOTE: Max. Marks: 60
	1) Parts Aand B are compulsory
	2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice3) Any missing data may be assumed appropriately
	Part - A [Marks: 02 each]
	Q1.
	Explain Kirchhoff's Law.
	Give comparison between Auto Transformer and Two winding Transformer.
	What are Electrical Measuring Instruments? Qugv = 0.637 × 100 A Voltage is represented by sine wave and has a maximum value of 100 V. Evaluate
	its R.M.S value and Average value of voltage. Vim = 0.7078 wmax
	© Define Ampere Hour efficiency of a battery? VMY = 100 = 70.71 V
	f) A 50Hz, Four pole, 3 Dinduction motor has rotor current frequency of 2Hz. Determine
	a) Slip b) Speed of motor.
Tan area area	Part - E [Marks: 04 each]
eletrical	Explain construction and working of permanent magnet moving coil instrument. Give
	its merits and dements.
	O3. Define Switchgears. Explain the different component used in LT Switchgear.
	With the help of power triangle explain various types of power in AC circuits.
	active power maccircuits. pactive power maccircuits. pactive power maccircuits.
	Page 1 of 2
	그는 사람들이 그림 그는 이 배달 나는 다시다. 그는 이 하는 나를 다 맛져 먹는 그 없는 내가야한 그래요요 하나 그리고 있다.

g.

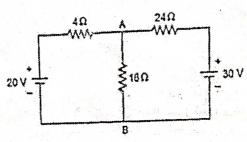
d

Describe the working principle of transformer and drive E.M.F equation of

transformer.

Why induction motor need starter? Explain any one starting method of three phase

induction motor in detail. State Norton's Theorem and determine the current flowing through 16-ohm resistor of Q7. network shown in the figure.



Part - C

[Marks: 12 each]

Derive all the necessary equations for converting a Delta into an equivalent Star network and also a star into an equivalent delta network.

- A) Derive an expression for Impedance, Current, Power and power factor for RLC series circuit when AC voltage is applied and draw the phasor diagram.
- A circuit consists of a resistor of 9 Ω resistance, 6 Ω inductive reactance and 9 Ω capacitive reactance in series across a 240 V, 50 Hz supply. Calculate the circuit current and its phase angle.

What are the various losses in transformer? Derive the condition that efficiency at a given terminal voltage and load power factor is the maximum if full load losses are equal to the iron losses in the transformer.

OR

Explain the construction and working principle of three phase induction motor. Discuss the various speed control method of three phase induction motor.

Page 2 of 2

[Total No of Questions: 09]

MORNING

[Total No pages: 02]

Uni, Roll No.

25 MAY 2019

Program/Course: B.Tech. (Sem. 1st and 2nd)

Basic Electric Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 3 Hours

Max.Marks: 60

Note:

1) Part -A and B are compulsory.

- 2) Part-C has two question Q8 and Q9. Both are compulsory, but with internal choice.
- 3) Any missing data may be assumed appropriately.

Part-A

[Marks: 02 each]

Q1.

a) State ohms law. Give its limitations.

b) Classify various measuring instruments.

Define power factor of an ac circuit.

d) What is earthing? Why it is provided?

A battery has taken a charging current of 5.2 A for 24hours at a voltage of 2.25 V, while discharging it gave a current of 4.5 A for 24 hours at an average voltage of 1.85 V. Calculate the quantity efficiency and the energy efficiency of the battery.

f) A 50 Hz, 4 pole, 3 phase induction motor has rotor current of frequency 2 Hz. Calculate slip and speed of motor.

Part-B

[Marks: 04 each]

Q2. For a single phase sinusoidal waveform, find average and rms values in terms of maximum value. Hence determine form factor of the sine wave.

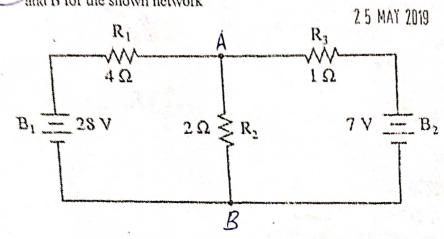
603. Give Analogy between Electric and Magnetic circuits.

24. Define primary and secondary batteries. Explain any two types of batteries in details.

When a star connected network is transformed to delta connected network, shows that Resistance of an arm of delta = Sum of star resistances connected across that arm plus product of the arm two resistances divided by the third. Also calculate the equivalent delta arm resistance if all star arm resistance is 9 ohms.

Q6. Draw and explain torque speed characteristics of separately excited Dc motor.

Q7. State Thevenin's theorem. Determine Thevenin's equivalent circuit between terminals A MORNING



Part-C

[Marks: 12 each]

Q8. (a) Describe the constructional details of transformer. Explain different types of losses in a transformer and also derive condition for maximum efficiency of the transformer.

Or

What is resonance? Discuss the condition of resonance for series circuit.

(29 (a) Explain the operating principle and working of a Permanent magnet moving coil.

Or

Why starters are necessary for starting of 3 phase induction motor? What are the various types of starters? Explain any two starters in detail.

PAGE 1 OF 2

MORNING

[Total No. of Questions: 09]

1 1 DEC 2019

[Total No. of Pages: 02]

Uni. Roll No.

Program/ Course: B.Tech.batch 2018 onwards (Sem. 15/2nd)

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 3 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has two questions Q8 and Q9. Both are compulsory but with internal choice
- 3) Any missing data may be assumed appropriately

Part-A

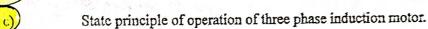
[Marks: 02 each]

Q1.



State Norton's Theorem.

Define Apparent Power.



What is operating principle of permanent magnet moving coil instrument.

What can you infer regarding magnetic properties of a material from area

under BH curve?



Enlist two methods for power factor improvement.

Part-B

[Marks: 04 each]



Define Kirchoff's current and voltage laws.

What are the various losses in transformer? What is condition for maximum efficiency of transformer?

Q4. What are the constructional features for a separately excited DC motor?

Explain with a diagram.

What is use for following:

if SFU ti) ELCB -iii) MCCB iv)MCB

Q6. Derive condition for parallel resonance for a parallel RLC circuit.

1

MORNING



Which type of instruments are used for measuring DC quantities only?

Describe with construction.

Part- C

[Marks: 12 each]

Q8. What is a balanced system? Convert a given Star connected system to a delta connected system. Also derive voltage and current relations in a given star connected system.

OR



Draw equivalent circuit of a transformer. Define efficiency and regulation of a transformer.

- Q9. A three phase induction motor runs at almost 1000rpm at no load and 950 rpm at full load when supplied with power from a 50Hz 3 phase line.
 - i) What is number of poles of motor?
 - ii) What is percentage slip at full load?
 - iii) What is corresponding frequency of rotor voltages?
 - iv) What is corresponding speed of rotor field with respect to motor?
 - v) What is corresponding speed of rotor with respect to Stator?
 - vi) What is rotor frequency at slip of 10%?

OR

[a] (b)

Why is earthing necessary for an electrical installation?

6

What are important characteristics for a battery?

. (

PAGE 2 OF 2

12

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

MORNING

B.Tech. (Sem. 1st)

Basic Electrical Engineering

Subject Code: ESC-18101

10 DEC 2019

Paper ID: 15929

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

1) Parts A and B are compulsory

2) Part C has two questions Q8 and Q9 and both are compulsory, but with internal choice.

3) Any missing data may be assumed appropriately

Part - A

[Marks: 02 each]

Q1.

Define Kirchhoff's law.

Give the classification of instruments.

Define RMS and Average Value of an alternating current.

(d) What is difference between Wire and cable?

c) The synchronous speed of induction motor is 1500 rpm and rotor speed is 1440 rpm.

(1)

Draw the complete phasor diagram of the transformer under no load conditions

Part - B

[Marks: 04 each]

Q2. Explain the working of synchronous generator.

O3. Describe the methods of power factor improvements.

Explain why PMMC instruments are most widely used instruments. Discuss their advantages and disadvantages.

Determine the current in 4 Ω resistance using superposition theorem in the network shown in fig no. 1

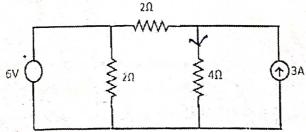


Fig 1

 Ω (Ω6.) A coil of resistance 12 Ω and inductive reactance of 25 Ω is connected in series with a capacitive reactance of 41 Ω . The combination is connected to a supply of 230 V, 50 Hz. Using phasor algebra, find i) circuit impedance ii) current iii) power factor iv) power consumed.



Derive the necessary equations for converting a delta network into an equivalent star network.

Part - C

[Marks: 12 each]



Discuss the working of two winding transformer and its emf equation. Draw the equivalent circuit of a single phase transformer and drive the expression for all its parameters.

(1/X)

OR
Discuss the phase relation between emf and current when AC flows through RLC series circuit. Derive the condition of resonance in RLC series circuit.

List the factors that determine torque in running conditions and derive the condition for maximum running torque. Also draw the torque slip characteristics.

OR

2 Name and discuss different components of Low tension switchgear. Also discuss different types of batteries and their characteristics.

Please check that this question paper contains 9 questions and 2 printed pages within first ten

[Total No. of Questions: 09]

[Total No. of Pages: ...2...]

Uni. Roll No.

Program: B.Tech Semester: 2nd

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101

Paper ID: 15929

Time Allowed: 02 Hours

Max. Marks: 60

NOTE:

- 1) Each question is of 10 marks.
- 2) Attempt any six questions out of nine
- 3) Any missing data may be assumed appropriately



How Thevenin and Norton theorems can be used to solve a linear circuit? Give the methodology with suitable example to apply Norton theorem to any linear circuit.

- Q2. A 230 V , 50 Hz Λ C supply is applied to a coil of 0.06 H(inductance) and 2.5 Ω (resistance) connected in series with a 6.8 μF capacitor. Calculate
 - (a) Impedance (Z)
 - (b) Current(I)
 - (c) Phase Angle(φ)
 - (d) Power factor
 - (e) Power consumed
- In a 50 kVA transformer, the iron loss is 500W and full load copper loss is 800W. Find the efficiency at full load an half load at 0.8 pf lagging.
- Compare Permanent magnet moving coil and moving iron instruments with focus on the operating torques. Give the working of moving iron instruments in brief.
 - Q5. A 3 phase, 6 pole, 50 Hz induction motor has a slip of 1% at no load and 3% at full load, Find:
 - (a) Synchronous Speed

4-5-5

- (b) No-Load Speed
- (c) Full-Load Speed
- (d) Frequency of rotor current at standstill
- (e) Frequency of rotor current at full-load
- Q6. Discuss about various components of LT switchgear (5 Marks)
- Opening the EMF equation of transformer and with a suitable example, explain the approximation of equivalent circuit of transformer referred to primary.
- Why a starter is required in a 3-rhase induction motor. Discuss about various type of starters with diagrams.
- Explain Three phase balanced circuit with the necessary conditions and diagram of waveform (three phases). Give the voltage and current relations in star and deita connections.

1 Niput VI

V2 > V1

V2 < VL SHOPOWER

[Total No. of Questions: 09]

[Total No. of Pages: .02]

Uni. Roll No. 2203751

Program: B.Tech. (Batch 2018 onward)

Semester:...1st, 2nd

Name of Subject: Basic Electrical Engineering

Subject Code: ESC-101 Paper ID: 15929

Scientific calculator is Allowed

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice

3) Any missing data may be assumed appropriately

Part - A

[Marks: 02 each]

Q1.

- a) Define rms and average value of a sinusoidal voltage.
- b) State and explain Kirchoff's laws.
 - c). What is the purpose of OCT & SCT in transformers?
- What is Earthing? Enlist different types of Earthing?
- e). A three phase, 50 Hz, induction motor has a full load speed of 1460 rpm. calculate slip ,number of poles and the frequency of rotor induced EMF?
 - What are the electrical characteristics of a battery? Part - B

[Marks: 04 each]

(Q2). Describe the construction and working of permanent magnet moving coil instruments.

Q3). A separately excited DC motor draws and armature current of 12 ampere from 220 volt de supply when developing a gross torque of 20 Nm in the armature running at 1200 RPM what will be the induced back EMF in the armature?

(04) A 20 KVA loss-less Transformer has 500 turns on the primary and 40 turns on the secondary winding the primary is connected to 3000 volt, 50 hertz mains determine:

i. Number of primary and secondary currents at full load

ii. The secondary EMF and iii. The maximum flux in the core. The no load current may be ignored.

Q5) Explain in brief the Thevenin and the Norton theorems.

Q6 Name different types of switches, fuses and circuit breaker. Explain briefly the working of MCB.

Q7. Compare electric circuits with magnetic circuits.

P.T.O.

Part - C

[Marks: 12 each]

Q8. What are the different types of transformers based on the construction of core? What is the significance core in a transformer? Explain the working of transformer at an inductive load. What are the losses in the transformer? How we can find the losses in laboratory without putting on the actual load?

Drive an expression for EMF equation and Torque equation for DC machines. Explain the working and construction of DC motor with help of suitable diagrams what are the types of DC Motor? what is the need of Starter is a DC motor? How the starter help reducing the starting current?(LOTS)

Explain the construction and working of three phase induction motors. What are the different types of three phase induction motors? Give some applications of each type.

OR

Explain phasor diagram impendence triangle, voltage triangle and power triangle. Explain power factor from above terms. Prove that power, P=1.732 V_L I_L cos Ø in 3 phase star and delta connection; also show the relationship between line and phase quantities.