CONTINUOUS INTERNAL EVALUATION (CIE) INDIRECT DIRECT TOOLS TOOLS EXTERNAL INTERNAL ASSESSMENT EXIT SURVEY UNIVERSITY THEORY TERM WORK NORAL EXAM (TERM TEST) **EXAM (80 MARKS)** (25/50 MARKS) (25 MARKS) (20 MARKS) **AVERAGE MARKS OUT OF 20 END TERM TEST MID TERM TEST** (20 MARKS) (20 MARKS) **PRACTICAL** ASSIGNMENT/TUTORIAL/ ATTENDANCE **PERFORMANCE** QUIZ (5 MARKS) (10 MARKS) (10 MARKS) C: COGNITIVE – Content Knowledge, Understanding, Retention parameter of the **ABOVE 90 % 05 MARKS** experiment etc. Weightage 4 marks, 2-3 marks related to question to be asked. C: COGNITIVE P: PSYCHOMOTOR SKILLS - To draw, To fit, To perform etc. Weightage 4 marks. Observe 04 MARKS 04 MARKS 81-90 % hand on skills performance and asked questions. A: AFFECTIVE DOMAIN – Punctuality, timely submission, neatness etc. Weightage 2 marks P: PSYCHOMOTOR 03 MARKS 75-80 % 04 MARKS Mechanism of Continuous Internal Evaluation (CIE) 03 MARKS **A: AFFECTIVE DOMAIN BELOW 75 %** 02 MARKS



THEEM COLLEGE OF ENGINEERING

Success through quality education!

Village Betegaon, Boisar Chilhar Road, Boisar (E), Tal. & Dist. Palghar-401501

Department of Electronics and Telecommunication Engineering

<u>Continuous assessment</u> (Experiment / Assignment / Tutorial / Project activity etc.)

- Candidate shall be assessed continuously for his sincerity, punctuality, and discipline along with the understanding of facts, principles, theories and application.
- Term Work and presentation for each practical made by candidates shall be assessed on following parameters.
 - **C:** Cognitive Content Knowledge, Understanding, Retention parameters of the experiment etc. Weightage 4 marks, 2-3 related questions to be asked.
 - **P: Psychomotor Skills** To draw, To fit, To perform etc. Weightage 4 marks. Observe hands on skills performance & ask questions.

A: Affective Domain – Such as punctuality, Timely submissions, Neatness etc, weightage 2 marks.

PARAMETER	C	P	A	Total	Sign. With Date
MARKS					
OBTAINED					
MAX.MARKS	4	4	2	10	

- 1. Each practical should be assessed for maximum of 10 marks.
- 2. Total marks of practical work are calculated at the end of the term and converted to a base as per teaching Examination Scheme.
- 3. Record of continuous assessment of candidates should be maintained by lecturer in charge and kept in the custody of Head of the Department after completion of the term.
- 4. Marks obtained by candidate after assessment of each practical work shall be shown to candidate for improvement in subsequent practical.
- 5. Term work marks shall not be kept confidential. Marks obtained by candidate in term work after continuous assessment shall be displayed on notice board and true marks are sent to MU.

Experiment No.: 3 Verification of Thevenin's Theorem

Aim:

To verify Thevenin's theorem and to find the load current for the givencircuit.

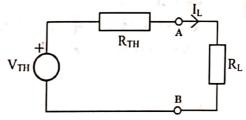
Apparatus Required:

Sr. No.	Apparatus	Range	Quantity
1	RPS (regulated power supply)	(0-30V)	2
2	Ammeter	(0-40mA)	1
3	Resistors	100Ω-100ΚΩ	4
4	Bread Board		Required
5	DRB		1

Theory:

Thevenin's theorem as applied to DC circuit, it states that any linear bilateral two terminal networks can be replaced by a voltage source (V_{TH}) in series with resistance (R_{TH}).

V_{TH} is the open circuit voltage or thevenin's equivalent voltage (i.e. voltage across terminal AB when R_L is removed) and R_{TH} is the by equivalent resistance of the network as viewed from the open circuited load terminals i.e. from terminal AB by deactivating all independent source.



Mathematically current through the load resistance R_L is given by the equation – V_{TH}

$$I_L = \frac{TH}{R_{TH} + R_L}$$

Where,

 $I_L = Load current$

 $V_{TH} = Open$ circuit voltage across the terminals AB

 $R_{TH} = Theveni's Resistance$

 $R_L = Load Resistance$

Circuit Diagram:

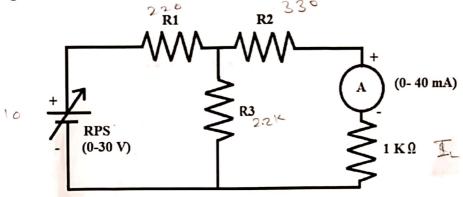


Figure 3.1

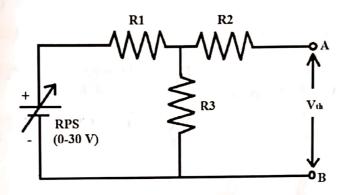


Figure 3.2

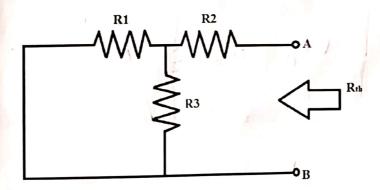


Figure 3.3

Procedure:

- 1. Select appropriate value of R1, R2 and R3.
- 2. ConnectthecircuitasshowninFigure3.1.SwitchONthepowersupply.Setaparticular value of voltage and note down the value of load current I_L usingammeter
- 3. To find V_{TH} , remove the load resistance (1k Ω) and measure the open circuit voltage (V_{TH}) using multi-meter. Refer figure 3.2
- 4. To find the Thevenin's resistance R_{TH}, remove the power supply and short circuit the terminals of circuit where power supply is connected and find the equivalent resistance R_{TH} at open circuit load resistance terminals using multi-meter. Refer figure 3.3

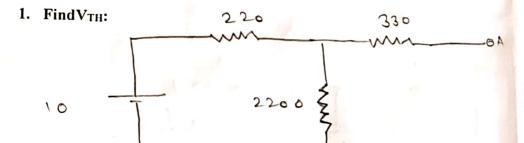
Precautions:

- 1. Voltage control knob of RPS should be kept at minimumposition
- 2. Current control knob of RPS should be kept at maximum position
- 3. All connections should be tight andcorrect.
- 4. Switch off the supply when not inuse.
- 5. Reading should be takencarefully

Observation Table:

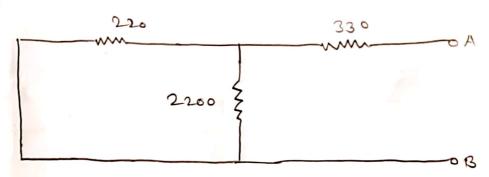
Thevenin's	Equivalent	Load	Load current, IL	
Voltage V _{TH} (volt)	Resistance $R_{TH}(\Omega)$	Resistance R _L (Ω)	Calculated value $I_L = \frac{V_{TH}}{R_{TH} + R_L}$	Observed value (Ammeter reading)
9. (1	521	1000	I = 3.086	ZL = 9.11 521 +1000
			21 = 5.94 mA	7 L = 5.9 89mA

Calculations:



$$T = \frac{V}{Req}$$
=\frac{10}{220 + 2200}
= 4.13 mA
$$V_{++} = 2200 \times 4.13 \times 10^{-3}$$
=\frac{9.086V}{}

2. FindRth:



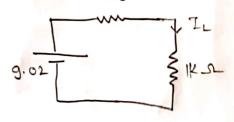
2001 series with 3301

530

3. CalculateI_L:

$$T_{L} = \frac{V_{+n}}{R_{+n} + R_{L}} = \frac{9.086}{15.30} = \frac{9.02}{9.02}$$

$$T_{L} = 5.94 \text{ m/H}$$



Result:

Result	Thevenin's Voltage V _{TH} (V)	Equivalent Resistance $R_{TH}(\Omega)$	Load current, IL(mA)
Theoretical	9.086	5 30	9.94
Practical	9.11	521	5.99

Parameter	С	P	A	Total	Sign. With Date
Marks Obtained	4	>	2	9	ans
Max. Marks	4	4	2	10	0

	Basic Electrical Engineering (FEC105) SEM-I
Assignment	2. (8) 01
D. Augual of wave form.	3) V=141.48 n3771 . find () time period
with a second	@ Frquency @ Instantonos voltate at +: 3ms
0.5	6 may value
O TI/6 1 21T > 0	8012: - V= 141.4 8m3777
-0.S N	comp. wit v= Vmsinust
Vavy = Judo	Vm=141.4 w=317.
्रा ।	2 To f = 37.7
= Jodo + I vmsinodo	f = 160 Hall
0 T 11/6 TI	(3401) C 08 - 18 34
= Z Vm J shoodo	
	f 60
- 0.594Vm	At + =3 mse (1.
Call	- 127 8 V
1 And ms value of wave form	and of the state of the Con-
- Hanson Fr	4) Three grousoide voltage ading
Vm -	in seines are given by V = losin4401
V1 T/4 TF 2FI	15- 1052 80 (440+-45), V3=20,05440
to the the Testing of the sil	Desire experison for the occultant
50177 - 1/2 - 1 (12-10)	voltage and decimin e frequency
ठ (२ग)	and sons value of retultant voltage
-1 Juningado	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
यम चें/भू	12-10-52 Sin (440+-45')
- vm² jt	V 3 = 20 COS440 += 20 8: 0 (440++17,)
2 7	V = V, + V2 + V3
2T X 1.4280	-(7·07) + (7·07-7·01;) + (14·11;
1 V ms = 0.476 Vm	15.80<26.57
	V = 15.80 52 6, n (44.0++ 261.57)
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Vine - 15.80 , Min 80 411	I diens at every be a they are.
w- 9440 horsings 10 21 many	15 (1) light cosmit of , still p of
: f = 170:03 Hz	form to the form () is an elarge (1)
To alk	2 2 2 100 - 1 2 0 of 2 9 . The
5) ASOHZ, alternating voltage	1504,501/2
of 1500 is applied independent	· A 33 83 - L = 5x.
to O sesistance of To a D Induc-	i = Im sin (wt + Ty)
tonce of 0.24 Ocapacitone	1. (3)2) 1-001-2
of sout find the expression	- um sin lootit +TI
for instantineous want in	1810 Xc (84 5) 1840 = 7.9)
each case.	8 × · CE = 4
3010: - V=1500, f=50H2/	6) An inductor coil drows JoA
	current and consume 2000W power
R=10-2, L=0.2H, C=504F	from 200V, SO HZ as supply determine
	Impedance, sonstant, ractance,
1504 150 Hz - V P2 FOT	inductance of cit, power factor,
I Im Sinut	reactive and apparent power.
- vm 8in (2119t) 21	1102 VOIZCOID SIDOV P note
21 +1 + two R works 101 196009	no gonfred AE 21 no let handre
· 100= 21.2138/ 10071+ A.	ult 8. 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Vsmst- 150 V roung bon	Lunio 12007 Worz 21, 1000
Voork = 2/2.13	P=V1650 11000 = 200×10 000
L=0.2H	.: \$ = 60°.
1=0.2	2001 = 20000 - 20 < 60 =10+j17.32
1	10 < - 60
120x 120 H2	: 1000 is pover.
1 = um sin (1007) - 17)	X2=17.31 (x at = a9)
XL	WL - 17.31 ALV 8500
= 15052 Sin (dont-17/2)	9-11-200x10=2000 W
68.8	18= 216/10 = 1000 1BC
= 3.37 sin (100 11+-11/2)	-15 C/ -
	THEEM COLLEGE OF ENGINEERING

7) A ordistor of I noon is consuled in seniel with a sout capacitor
TO a SOTIZ, 2001 Supply that (1) Impedance (2) current (2) P. F.
These angle & voltage across resistor and awas capacitor.
50)";- R=100 R , C = 507 Lo-67
X - 1 - 13 100 - 11 - X
Xc-1-63.66A XiZXV
Z = 100 +2 1/2 = 1
Z=160+j(63-66)
= 118.84 <32.48 m
P.F- 08 (32.48) = 0.843 (Mading)
Q = 32.48
Z = 118.84 = 1.84 BA
118.84
VOITE TO THE MAN TO TH
V = TR = 100×1.67 = 18.90
V=Txc=1.69x63:66=707-59 V- 11021 VOZI
the state of the s
2) when a voltage of 2004, 5042 is applied to an impedance a current taken is 8A logging and power is 22040. what it is
A cubent taken is 8 A logging and Dower is a soul of
connected to an impedance of the current is lost leading and
power is 500 w. What arent and power will be a finish
It is applied to two impedence connected in Seriel
the way to seviet
3 1 (2)
V2100V VZ 1801
PB = 800 w
Po 5 t 2
12028
120-0 10 A 140
20 - 1- 1- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
NA = 15/2, 2/15.2/1.8.2)
= 12.38.2 : [1] - 1.5.5 -
And the second s

For Coil B , ZB = UB , 100 - 10 /2 . Po = T2 ra 2 xa = 5-4
TB, 10 10 10 10 10 10 10 10 10 10 10 10 10
86=12824782 - 1184-84 = 8.66-2
VO. KA &B XA
Arrand dade
IT
V=100 V
Z = XA + JXA + 8B + JAB
= 1.8 +5+j12.36 + 57j3.66. = 22.11 < 71.89 -2
2= 32.11
\$ = \$1.89° UX Inde > (1) + 50 = 1 = 5
I = V - 100 - 4.52 A
2 - 22.11 = 91 - 012 - 0 - 1.5
0=32(rafob) = (4.52)2 (6.875) = 140.64W.
(1)- 81 1X 182.
2) An indutor coil has a relistance of 204 and industruce of 05M
It is cornected in qualled with a capacitor of 204 This combination
is connected across a 230v supply having variable boquercy find
the former of which the total current drawn from the supply is in
shale with us tage what is composaled, find value of world drues of
and impedence of or right.
R=20 L=0,2 H 174 . CUE 10 18 1
(-21×1-26) - (1001) - 3 .
say wiath of the tell
This condition is caused fes mance
2-L = 0.2 - 800 x 7 = V -0.46 A
CP 20X10-6X20
fr-1 11 e2 - 1 1 - 20 - 77-06H 2
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15 (4 4 3 4)
10) A coil is commeted across a non-conductive resistance of
1202 rates a sypt 50 Hz Su not. is applied to this water
the call draws a custoff of 5.7 and lotal war to
Determine the power and power Factor of the coil and the
whole wowd.
X XV
Vacior V
mm / mi+allaritax - s
120 10 12 4 22 col + 24 201 =
D 118 17 81 12
2401, 80172
Z con = \ 82+ X2 < tan - XL
18 17 1 - 100 - U - 12
ZGI = U - 240 - 48 = \82+x_2 - CALLACT = / 15 A TO U - / ACT GY FT = 9
P=37ra 120 1 - 1 45m/ = Mark = Markers.
$3^2 + X_1^2 = 48^2 - (1)$
1 2 cpt = Zckg dock - sinchibe a contine which of
ZCKI = 1. V - 2.40 - 40-21 Idland is hely
to the man and Felician 6 and stage vose . stage I dispose a
Also, ZCKT = (120x1)2 + (120x1)2 = 40 0
(8+126) 12+ (84)2 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
(1208) + (X120) = 1600
1 + 24 or + 120 +x12 / 500 J
$(120)^{2} (8^{2} + XL^{2})$ - 1600
(x2+x12) + 2403+1202
0 (120)2 (482) - 16001
(48)2+240x+1202
- 3 = 16.8 2 me set more à de miller
=> XL = 44.96-2
φ = tan XL - tan 44.96) - 69.81
P.F.=(0.50 = 65 69.51 16.8.35 105
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Page 147

ZUF 576236 169.58 _ 40(51.33"
143.99× 18.19 1 1 1000 2001 1 1 1 1000 1000
Boy -151.33 have make out to other est and was to de
PF 2080 = COSSI-33 = 0.624 (lacolu)
P=VICOSO = 240 X6 X 0.6 24 = 893.562
Il A circuit consist of a susistance of 42 and industrice of a. str and a
vosiable capacitus in series across a 2004, so 12 supply calculate
Dualeu of capacitan to produce recomme 2 voltage across capacitor
@ D. Fantor of the cinit. (while)
3017: - R=42, 150.5H, V= 160V/ F=50ML
The Resonan across from 1 = 142
4 - 115 = cW " "
27 Jec 27 0.5xe
- 50 = 1 - C = 20 26 HF
No.SX C
3. Factor on Que mos the 4 20:26 Anoth = 189.26
all promit & si to of that there is the state of the stat
voltage across enpaidor sounded all a much across
$\sqrt{200000000000000000000000000000000000$
461 3
271 FC 271 X50× 20·26×10-6
X = 151.1\
T = V - 100 - 25A
P 4 TOVETON
LOTINGUE = 19 LITUUE 17
Parameter C P A Total sigh with Date
Marks . 4 3 2 9
obtaine d
Max murks 4 2 10