2018-19

JAI PRAKASH

BLUE BOOK

INTERNAL ASSESSMENT BOOK

Name Pavithra B.S (1AM16CS113)

Subject Machine Learning LAB Class 7th sem 'B'

Sl. No.	PARTICULARS	Test Date	Page No.	Marks Awarded	Signature of Staff Incharge
1	TEST -I			29/25	
2	TEST - II			17/25	
3	TEST - III				
4					
5					

CERTIFICATE

This is to certify that Smt. / Sri ..... *has satisfactorily completed the course of Assignment prescribed by the* ..... *University for the semester* ..... *Degree Course in the year 20 - 20*

MARKS	
MAX	OBTAINED
20	17

Pavithra

Signature of the Student

Signature of H.O.D.

Signature of the Staff Member (Incharge of the Batch)

PRINCIPAL
BMS ENGINEERING COLLEGE
BANGALORE-560 083

I - Internal marks - 20/25

II " " 17/25

Reduced - $\frac{20+17}{50} \times 12$

$= \frac{37}{50} \times 12$

$= 8.8$

$\approx 9/12$

Record - 8

Total - 8+9

$= \frac{17}{20}$

5

20/11/19

PRAKASH

Date Page

```
import math
import statistics as st
From sklearn.model_selection import train_test_split
import pandas as pd
def SummarizedByClass(x_tr, y_tr)
  Separated = { }
  for i in range(len(x_tr)):
    x, y = x_tr[i], y_tr[i]
  if (y is not seperated):
    Separated[y] = []
    Separated[y].append(x)
  Summary = { }
  for (L, subset in Separated.items():
    Summary[L] = [(st.mean(attribute), st.stdev
    (attribute))
      for attribute in zip(*subset)]
  transposes a matrix (2-d array) (list)
  return Summary
  def estimateProbability(x, mean, stdev):
  exponent = math.exp(-(math.pow(x-mean,2)/
  (2 * math.pow(stdev,2))))
  return (1/math.sqrt(2*math.pi) * stdev)*
    exponent
```

```
def predict ( summaries, testVector)
  bestprob, bestlabel = none, -1
     P = {}
  for (bl, mean_std, in summaries. item())
     P[[bl] = 1
  for i in range (len (mean-std)):
  mean, stdev = mean_std[i]
   x = testVector[i].
  P[[bl] = estimateProbability (x, mean, stdev):
  if (bestlabel is none or > best prob).
        bestprob = P[[bl]
        bestlabel = [bl]
         return best prob.
def d_classification_compute_accuracy (summ
aries , test_x, test_y)): correct = 0 for i in range
  result = predict (summaries, test_x);
(len (test_x)): if result == test_y
  correct = correct + 1
  accuracy = ( correct + float (len (test_x))
                  * 100.0
  return accuracy

df = pd.read_csv ("labs.csv", header =
                  none).
cols = [0, 1, 2, 3, 4, 5, 6]
  df_x = df [df. columns [cols]]
  df_y = df [df. columns [8]]
   x = df_x. values. tolist ();
   Y = df_y. values. tolist ();
x_train, x_test, y_train, y_test = train_test.
```

```
x, y = split (x, y)
print (" Total accuracy (len (x))
print (" Total attributes present (len
  for i in range [split (x, y)].
  print (" The accuracy"
     Naive Baysian is:" accuracy).
  for i in range (s)
     print (i+1, ':', x[i] )set)
  print (' Training Ex{0} in testing Ex={1}'.
   format (len (x_train), len (x_test)))
  Summaries = summariesByClass (x_train,
    y_train):
accuracy = do_classificati_compute_accuracy
(summaries, x_test, ytest)
print ("The accuracy & Naive Baysian is
      :" accuracy);
```

output

Ex - 13/18
Viva - 4/9
Diri - 3/3

20/28

for 20.11.19

PRAKASH
Date Page

Program - 1

```
import csv
hypo=['%',
with open("Pavi.csv") as csv_file:
 readcsv = csv.reader(csv_file, delimiter=',')
 print(readcsv)
  data=[]
print("In the given training Examples are");
 for row in reader:
        print(row)
        if(row[len(row-1].upper() = "Yes";
print("The positive Examples are");
  for x in data:
        print(x);
        print(in);

TotalExamples = len(data);
i=0
j=0
k=0
print("the steps to find-s algorithm are:", hypo
 list = [ ]
  p=0
 d = len(data[p]-1);
```

```
for j in range(d):
        list.append(data[i][j]);
  hypo = list;
   i=1;
  for i in range(TotalExamples):
      for k in range(d):
          if hypo[k] != data[i][k]:
                  hypo[k]='?';
                   K=K+1
          else:
                  hypo[k];
      print(hypo)
   i=i+1;
print(" The maximum specific hypothesis
 from the training Examples are");
   list=[];
  for i in range(d):
        List.append(hypo[i]);
  print(list);
```

E-10/18
Viva-4/4
Write 3/3

no output

17/25

VISION

To be a Leader in imparting Value based Technical Education and Research for the benefit of society

MISSION

- To Provide State of the Art Infrastructure Facilities.
- To Implement modern Pedagogical methods and committed faculty.
- To create a vibrant ambience that promotes Learning, Research, Invention and Innovation.
- To undertake manpower and skill development programmes for Academic Institutions and Innovation.
- To Enhance Institute Industry Interface through Collaborative Research and Consultancy.
- To Generate and Disseminate knowledge through Training Programme, Workshops, Seminars, Conferences, Publications.
- To be a more Comprenhsive college in terms of the number of pragrams offered.
- To Relentlessly pursue professional excellence with ethical and moral values.

AMC ENGINEERING COLLEGE
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Test	Date	Signature of the Student	Signature of the Invigilator
Test - I	23/04/19	Ahmed	
Test - II	22/05/19	Ahmed	22/5
Test - III	13/06/19	Ahmed	

BLUE BOOK

Name : MOINUDDIN AHMED

Branch : Computer Science & Engineering

USN : 1AM18CS109 Semester : 2nd sem

Section : 'B' sec Class Roll No. : 109

Subject : BASIC ELECTRONICS

AMC ENGINEERING COLLEGE

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INTERNAL ASSESSMENT BOOK

Subject ..... B.ELN .....

Sl. No.	Particulars	Test Date	Page No.	Max. Marks	Marks Awarded	Signature of Staff Incharge
1.	Test - I	23/04/19		50	22	
2.	Test - II	22/05/19		50	23	
3.	Test - III	13/06/19		50	25	
				30	24/30	

24+10 = 34/40

Certificate

This is to certify that Mr. / Ms. MOSINUDDIN AHMED *has satisfactorily completed the course of assignment prescribed by the Visveswaraya Technological University for Semester* 2nd *Branch* CSE *for the academic year 20 18 - 2019*

FINAL MARKS AWARDED
34/40
25/50

1	A	M	1	8	C	S	1	0	9	

Signature of Student

17/6/19

Signature of Staff Incharge

Signature of H.O.D.

D D: 23 | M M: 04 | Y Y Y Y: 2019 | AMC EDUCATION | Test No. : | Page No. :

I. Internal Test.

1) b) $(346.75)_{10} = (?)_2 = (??)_8 = (\ )_{16}$

$3 \times 10^2 + 4 \times 10^1 + 6 \times$

000 0 | 2|348 — $(346.75)_{10} = (101011010.1001011)_2 = (532.113)_8$

001 1 | 2|173 — 0

010 2 | 2|86 — 1 | 2|75

011 3 | 2|43 — 0 | 2|37 — 1

100 4 | 2|21 — 1 | 2|18 — 1

101 5 | 2|10 — 1 | 2|9 — 0

110 6 | 2|5 — 0 | 2|4 — 1

111 7 | 2|2 — 1 | 2|2 — 0

1 — 0 | 1 — 0

$(532.113)_8 = (15A.04B)_{16}$

$(346.75)_{10} = (101011010.1001011)_2 = (532.113)_8$

$(532.113)_8 = (15A.04B)_{16}$.

a)

Information source → transmitter → communication channel (or) medium → Reciever → Destination

i) Information source :- It is the information given in an analog signal. Usually messages are sent through messages.

ii) Transmitter :- Transmitter are used to convert the analog signal into an electrical signals. Because the electrical circuit understands only electrical signals.

Communication channel:- Communication channel is a medium through which the electrical signals are transmitted.
Eg:- wires.

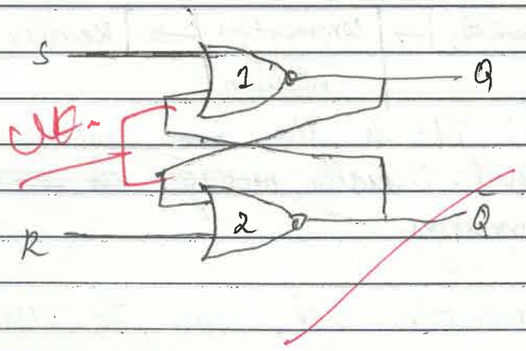
Receiver:- Receiver is used to take the electrical signals from the medium & convert it into a analog form (or) signals. so that the person can understand.

Destination:- It is place or things through which analog signals are recieved & communication is done.

4) b)

Flip-flops are the sequencial circuit in which data is stored in either 0's or 1's.

SR Flip-flops:-

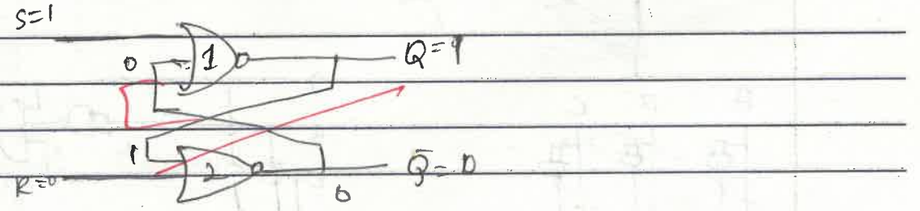


if set=1 - Q=1
Reset=1 $\bar{Q}$=1

Truth table:-

Input		Output		
S	R	Q	$\bar{Q}$	
0	0	NC	NC	O/P remains as the previous one O/P is unchanged
0	1	0	1	RESET
1	0	1	0	SET
1	1	0	0	Forbidden / Invalid

Eg:-



(i) If we given the input S=1, we know that if set=1 then Q=1, then R=0 & $\bar{Q}$=0.
(ii) when R=1, $\bar{Q}$=1., S=0, Q=0.
(iii) if R=0 & S=0 the circuit gives the values of previous o/p.
(iv) if R=1 & S=1 the values are invalid & flip-flop assumes as Q=0 & $\bar{Q}$=0.

Y= $A\bar{B}(+B+$

a) i) $Y = A\bar{B}C + B + B\bar{D} + AB\bar{D} + \bar{A}C$.

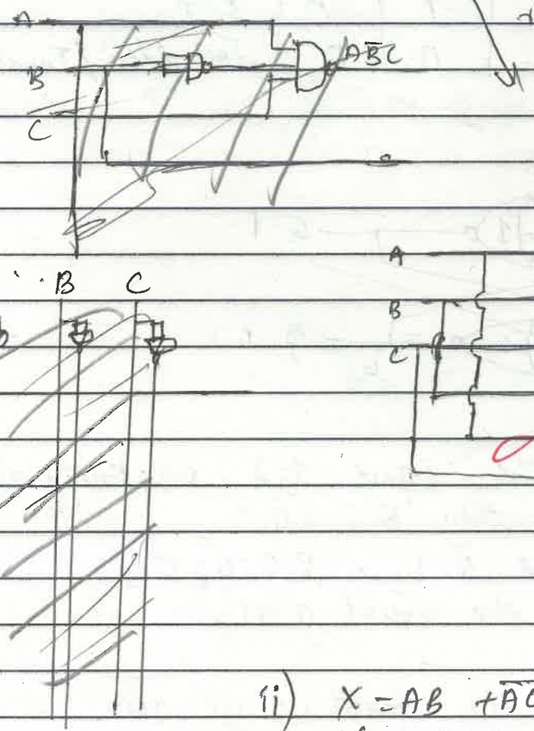
$Y = A\bar{B}C + B(1+\bar{D}) + AB\bar{D} + \bar{A}C$.

$Y = A\bar{B}C + B + AB\bar{D} + \bar{A}C$

$Y = A\bar{B}C + B(1+A\bar{D}) + \bar{A}C$.

$Y = A\bar{B}C + B + \bar{A}C$

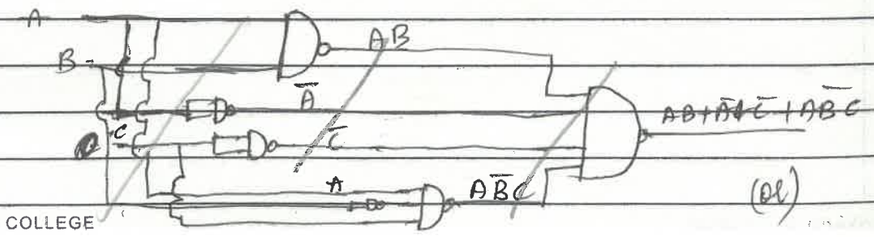
realization



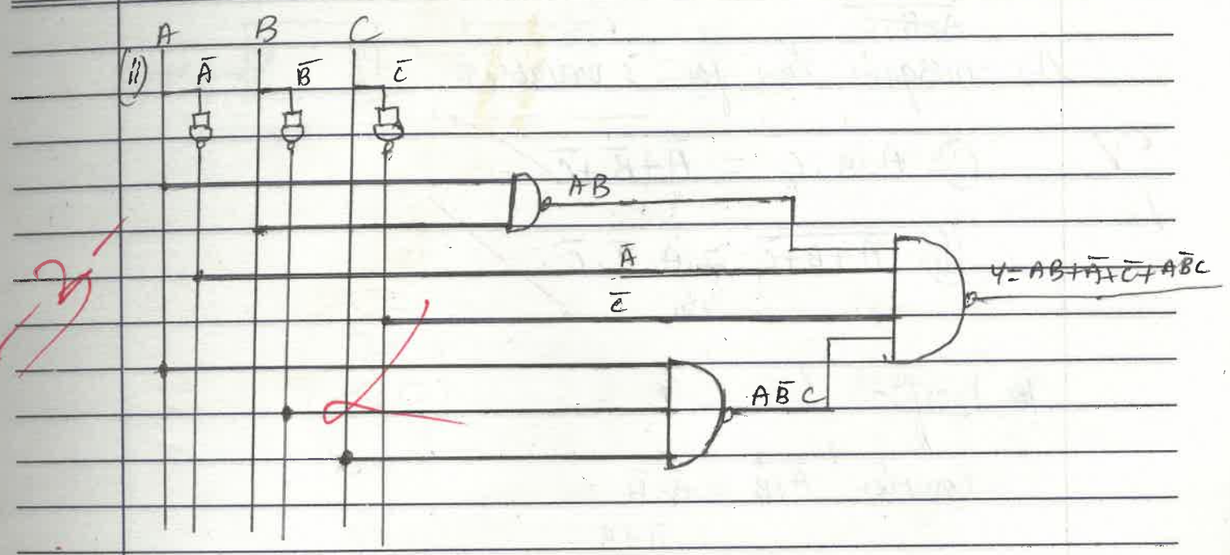
ii) $X = AB + \bar{A}\bar{C} + A\bar{B}C(AB+C)$

$X = AB + \bar{A} + \bar{C} + A\bar{B}C(AB) + A\bar{B}C$. $(\cdot\bar{B}, B=0)$

$X = AB + \bar{A} + \bar{C} + A\bar{B}C$.



ii)



(3) De-Morgan's theorem:

De-Morgan's theorem states that

i) The compliment of product is equal to the sum of individual ~~compl~~ compliments.

ii) The compliment of sum is equal to the product of individual compliments.

(i) $\overline{A.B} = \bar{A} + \bar{B}$.

(ii) $\overline{A+B} = \bar{A}.\bar{B}$

Rules:

(1) Take the compliment on whole expression.

(2) Change OR to AND gate.

(3) Change AND to OR gate.

(3) Take the compliment on individual one.

~~$\overline{A+B+C}$~~

De-morgan's law for 3 variables

(i) $\overline{A.B.C} = \overline{A}+\overline{B}+\overline{C}$.

(ii) $\overline{A+B+C} = \overline{A}.\overline{B}.\overline{C}$.

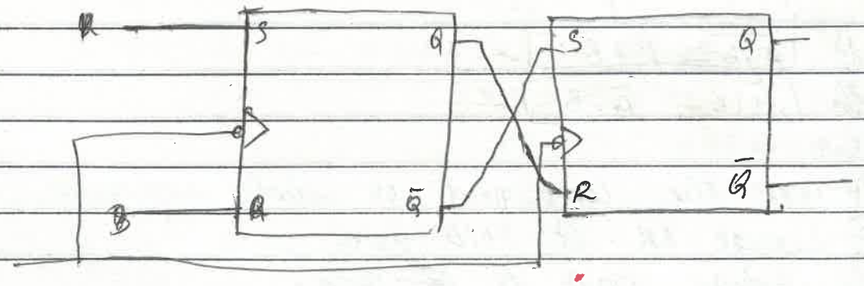
Proof :-

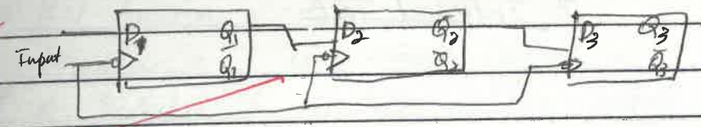
Consider $\overline{A+B} = \overline{A}.\overline{B}$

$= \overline{A+B}$.

b) i) 4-bit SISO shift register:

Shift register are 2 flip-flops when the clock pulses occurs, the RS flip-flop is copied to previous flip-flop.





22/30

1b=6

1a=7

4b=6

4a=3

3a=2

3b=1

29/11/19

D D | M M | Y Y Y Y | Test No. : | Page No. :

02 | 05 | 2018

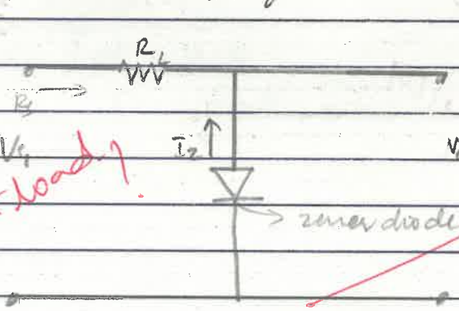
II Internal Test

1) b)

Zener diode is manufactured to have a specific breakdown voltage called Zener Voltage (V_z).

Voltage Regulator:

Voltage Regulator is used for maintaining a constant o/p voltage irrespective of i/p line voltage & applied load



With & without load.

Above circuit diagram is called zener diode as a voltage regulator in which the o/p voltage is almost constant irrespective input voltage (V_i) & load Resistor. R_s is used to limit the I_z (Zener diode current) at desire level. V_o is small as shown in figure above.

$V_o = V_z \quad I_s = I_z$

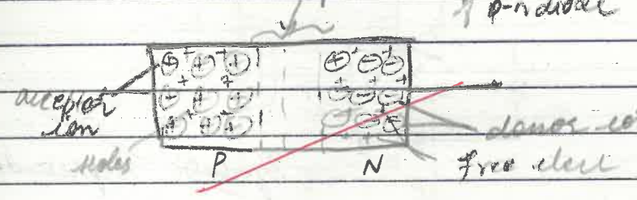
$V_s = V_i \quad I_s = I_z = \dfrac{V_i - V_z}{R_s}$

$$I_z = \frac{V_i - V_z}{R_s}$$

D D | M M | Y Y Y Y | Test No. : | Page No. :

a) P-N junction diode:-

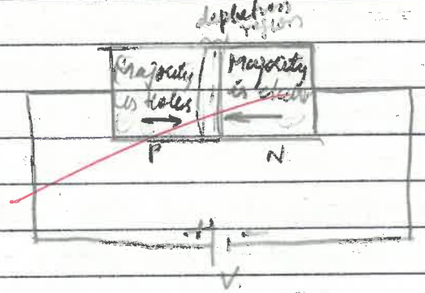
Consider a simple crystal of semiconductor consisting of p-type & n-type. The region where the p-type & n-type meets is called p-n junction & resulting device is called as P-N junction diodes.



In the figure, acceptor ions with its associate holes are shown in p-type. In which both acceptor ions & holes have a equal magnitude, opposite in signs & same in number. Similarly, donor ions with its associate free election are shown in n-type. In which both donor ions & free election have a equal magnitude, opposite in signs & same in number.

Forward bias :-

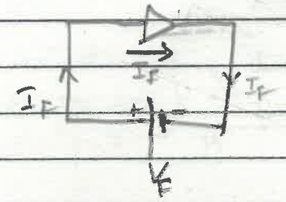
It is dc voltage across the p-n junction by influencing of some external source is called as bias.



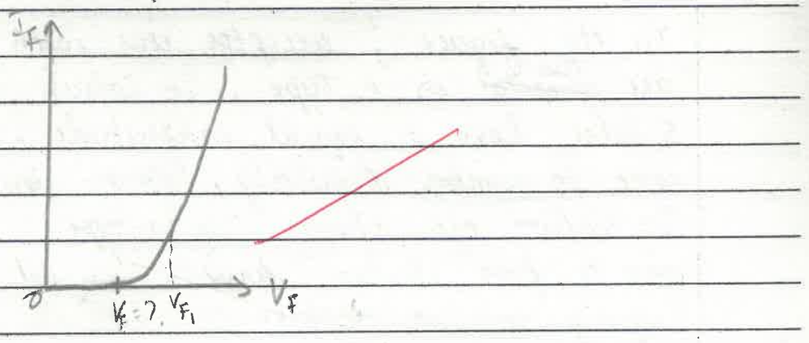
D D M M Y Y Y Y — Test No. : — Page No. :

A bias in which the positive terminal of the battery is connected to p-type & negative terminal of the battery is connected to n-type is called forward bias.

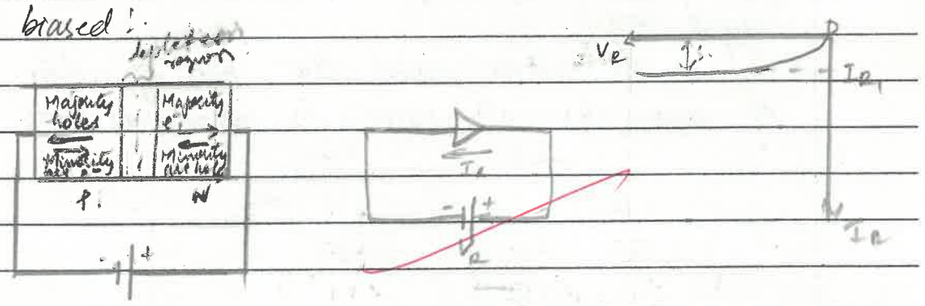
Once a circuit or semiconductor is forward bias, the electron & holes are freely let to move in p-type & n-type respectively.



Symbolic respresentin



Reversed biased:

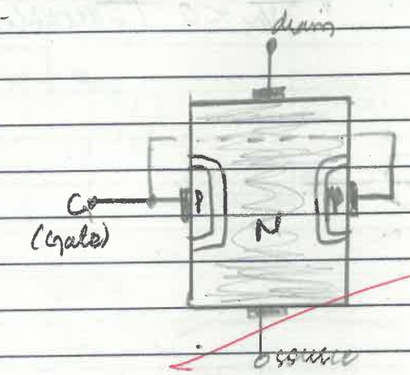


In this negative terminal of the battery is connected to p-type & positive terminal of the battery is connected to n-type is called Reversed bias p-n function diode.

D D M M Y Y Y Y — Test No. : — Page No. :

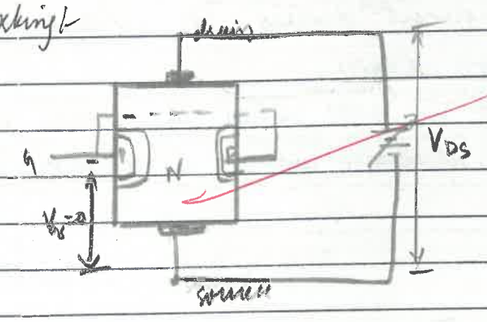
The Reverse current occured due to the minority charge carrier is called as Reverse Saturation current.

3) JFET:-



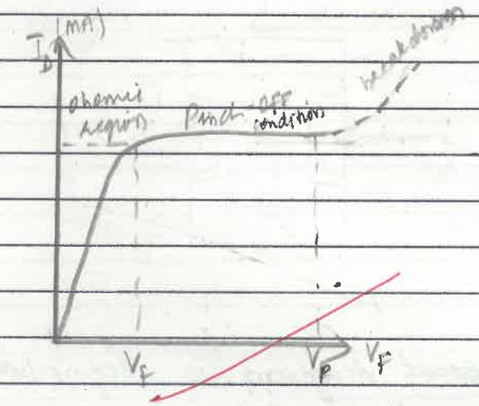
Above diagram is definition of JFET. The upper side of JFET is connected by a drain, lower part of JFET is connected by a source. The 2 P-type are diffused in N-type forming a channel. The 2 p-types are connected to the Gate leads.

Working:-



As V_{DS} is voltage across drain & source & V_{GS} is voltage across gate & source. As the V_{DS} is connected the the ~~same~~ current flows. As the voltage increase I_D decreases.

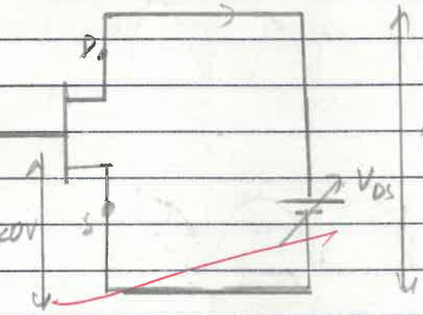
$V_{GS}=0$ $\quad V_{DS}<0$ (variable)



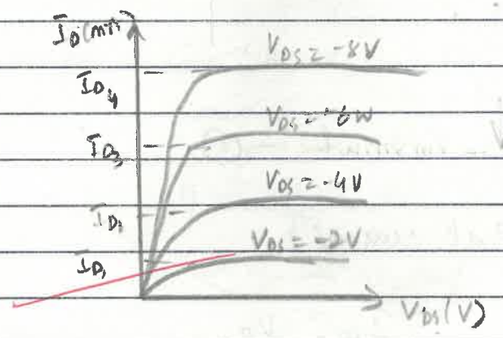
~~Ohm~~ As V_{DS} is increased I_D also increases in the initial portion of the curve and it obey's ohm's law. Therefore it's known as ohmic region. As V_{DS} is further increased I_D levels off until V_D is reached at some specific value, that voltage when I_D levels off is called Pinch off Voltage (V_p).

~~Even~~ Through the resistive is high, V_D is more, the current will be having a relative constant. The region where the relative constant of current occurs is called as pinch-off ~~sat~~ region or saturation region.

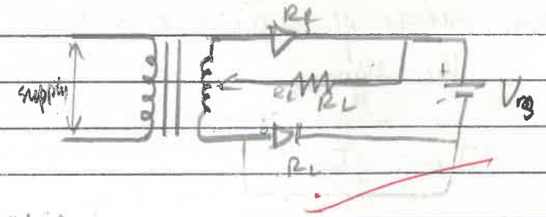
The reverse of current is seen when V_{DS} exceeds at a certain levels. Such region is ~~at which voltage~~ called breakdown voltage region. (V_B).

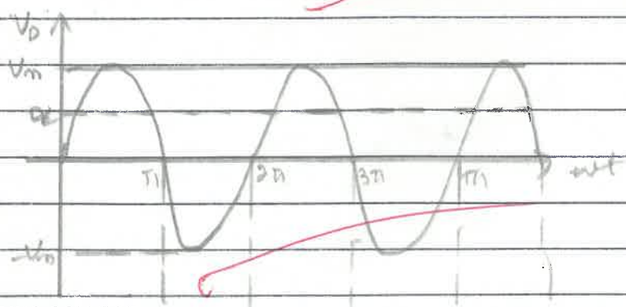


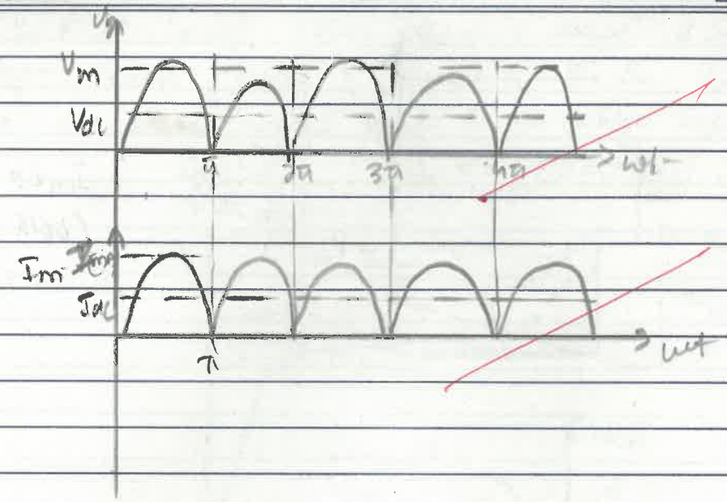
$I_{GS}<0$ & $I_{DS}>0$ (both are variables)



b)







$V_s = V_m \sin\omega t$ — (1)

Peak current,

$$I_m = \frac{V_m}{R_L + R_f}$$

Average values of current & voltages

$$V_{dc} = \frac{2V_m}{\pi}$$

$$I_{dc} = \frac{2I_m}{\pi}$$

Rms values:-

$$I_{rms} = \frac{I_m}{\sqrt{2}}$$

$$V_{rms} = \frac{V_m}{\sqrt{2}}$$

Efficiency:
It is ratio of power dc to power ac.

$$\eta = \frac{P_{dc}}{P_{ac}}$$

$$P_{dc} = I_{dc}^2 R_L = \frac{4I_m^2}{\pi^2} R_L$$

$$P_{ac} = I_{rms}^2 (R_f + R_L) = \frac{I_m^2}{2} (R_f + R_L)$$

$$\eta = \frac{\frac{4}{\pi^2} I_m^2 R_L}{\frac{I_m^2}{2}(R_f + R_L)}$$

$$\eta = \frac{0.813}{1 + \frac{R_f}{R_L}}$$

Ripple factor:

$$\gamma = \frac{I_{rms}}{I_{dc}}$$

$$= \sqrt{\frac{\left(\frac{I_m}{\sqrt{2}}\right)^2}{\frac{2I_m^2}{\pi}} - 1}$$

$$\gamma = 0.423$$

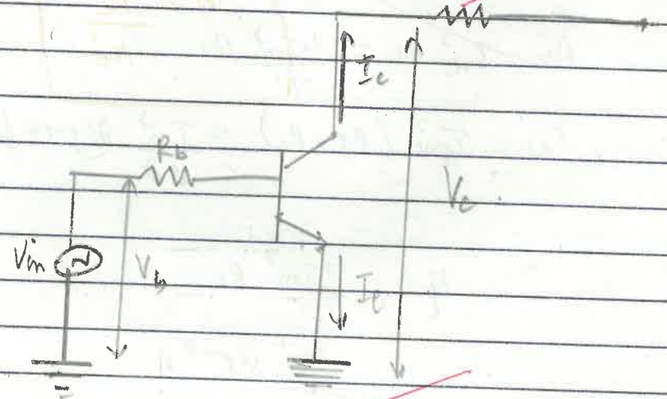
D D 1 3 | M M 0 6 | Y Y Y Y 2 0 1 6

Test No. : | Page No. :

III Internal Test

19) BJT as an amplifier:

Transistor is used for using current. It usually has I_B (Base current) is equal to collector current.



Let R_b be the base resistance with voltage V_b and input voltage is connected to it. Let R_c be the collector resistance has a collector voltage 'V_c'. where I_c → current flowing through emitter.

Emitter current,

$$I_e \simeq I_e = \frac{V_b}{r_e'} \quad -①$$

collector voltage is given by,

$$V_c \simeq I_e R_c \simeq I_c R_c. \quad -②$$

Base voltage, $V_b = V_{in} - I_b R_b$

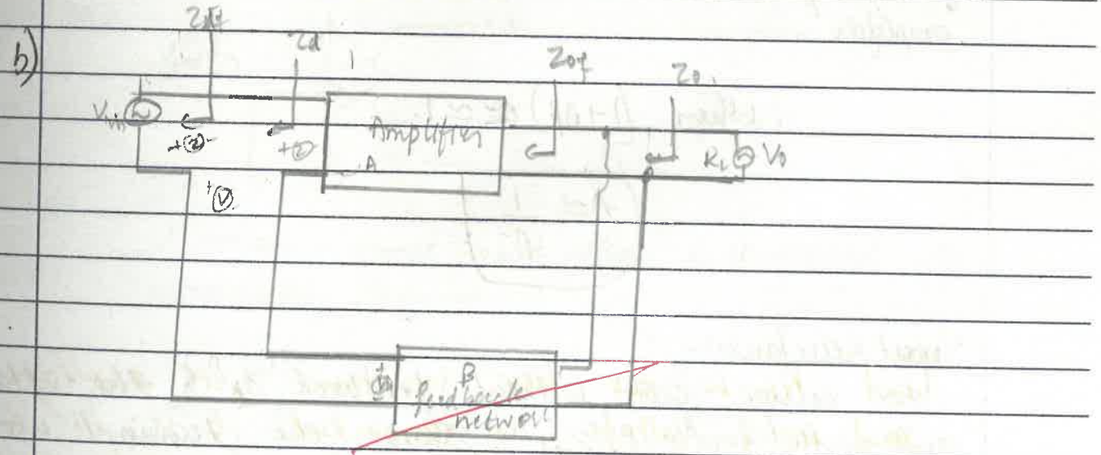
The voltage gain, $A = \frac{V_c}{V_b}$ substituting by ① & ②.

$$A = \frac{I_e R_c}{I_e r_e'}$$

$$A = \frac{R_c}{r_e'}$$

∴ R_c → collector resistor
r_e' → emitter resistor generated.

b)



It is voltage series feedback amplifier in which the voltage signal is feedback from feedback network to Amplifier in series connected to input terminals.

Voltage gain without feedback $A = \frac{V_o}{V_i}$ — ①

Voltage gain with feed back $A_f = \frac{V_o}{V_i}$ — ②

$V_o = AV_i$ — (4)

$V_o = A(V_{in} - V_i)$

$V_o = A(V_{in} - \beta V_o)$ (By substitution $V_{in} = \beta V_o$)

$V_o = AV_{in} - A\beta V_o$

$V_o(1+A\beta) = AV_{in}$

$$A = \frac{V_o}{V_{in}} = \frac{A}{1+A\beta}$$

∴ Voltage gain for series feedback amplifier

∴ When $(1+A\beta) \gg 1$.

$$A \simeq \frac{1}{\beta}$$

Input resistance:-

The voltage gain without feedback "Z_i" & the voltage gain with feedback "Z_f". Since the terminals are connected in series with input terminal of amplifiers.

∴ $Z_f = Z_i(1+A\beta)$

O/p resistance:

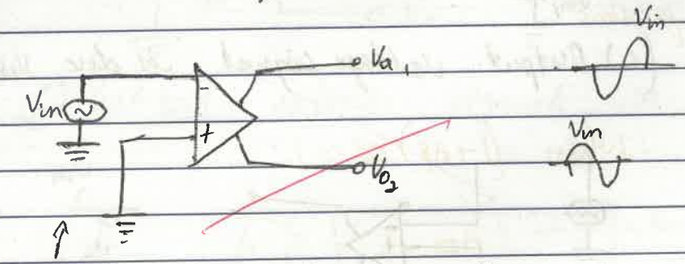
The voltage gain without feed back 'Z_o' & the voltage gain with feedback 'Z_f'. Since the terminals are connected in parallel with O/p terminal of amplifier

∴ $Z_f = \frac{Z_o}{(1+A\beta)}$

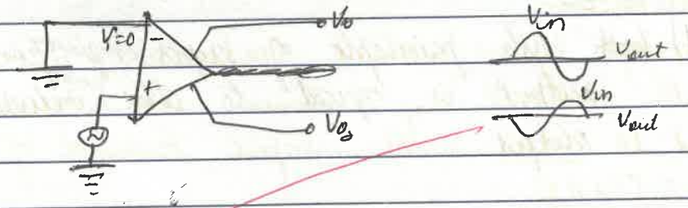
c) There are 3 input modes of an Op-amp:-

1. Single-ended input.
2. Differential-ended input.
3. Common mode input.

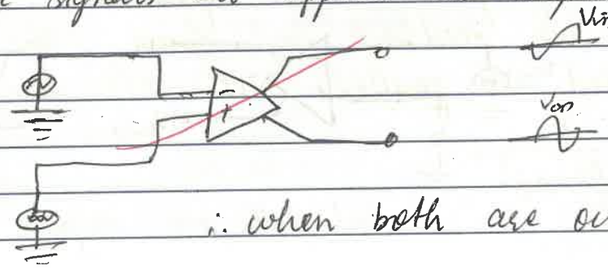
1. Single-ended input:- In this mode, the a.c signal voltage is connected to one input terminal & the other one is grounded.



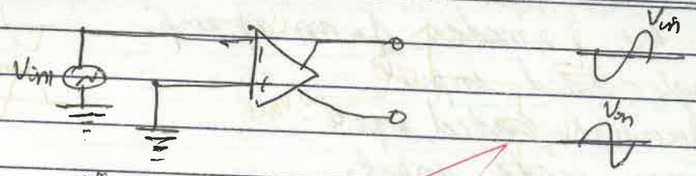
∴ when signal input voltage is connected to inverting terminal.



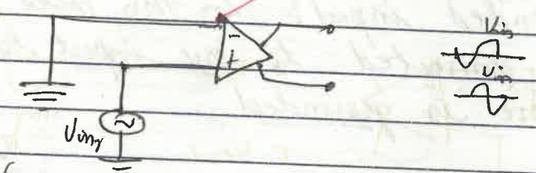
2. Differential-ended input:- In this mode, the 2 out of phase voltage signals are applied to inputs.



∴ when both are out of phase



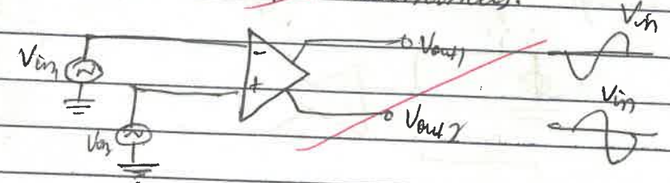
(a) output voltage is due V_{in_1} only.



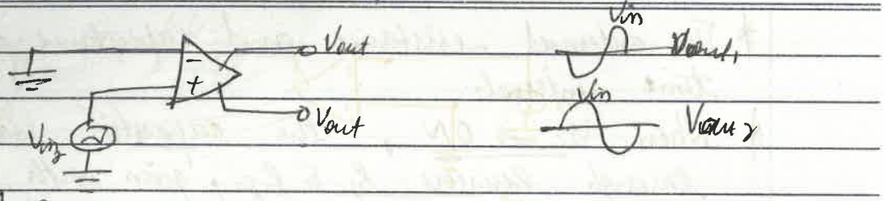
(b) Output voltage signal is due V_{in_2} only.

(d) With principle of super imposition, the total output is equal to the sum of individual output

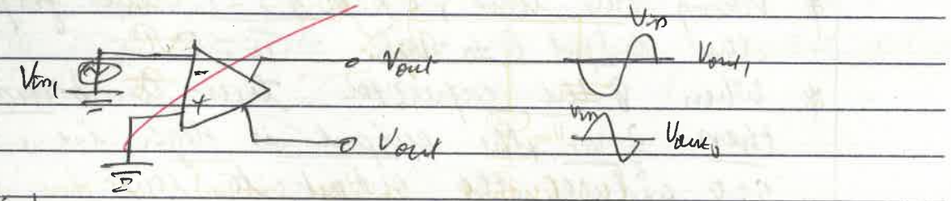
(c) Common Mode Input:
In this mode, both in phase voltage signals are connected to input terminals.



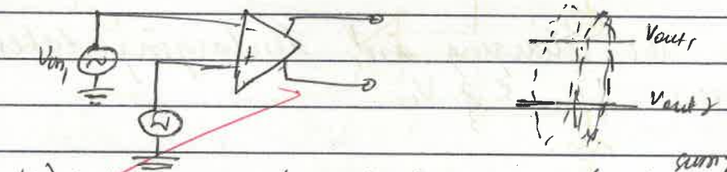
(a) both are in phase with input terminal



(b) Output voltage signals is due to V_{in_2} only.

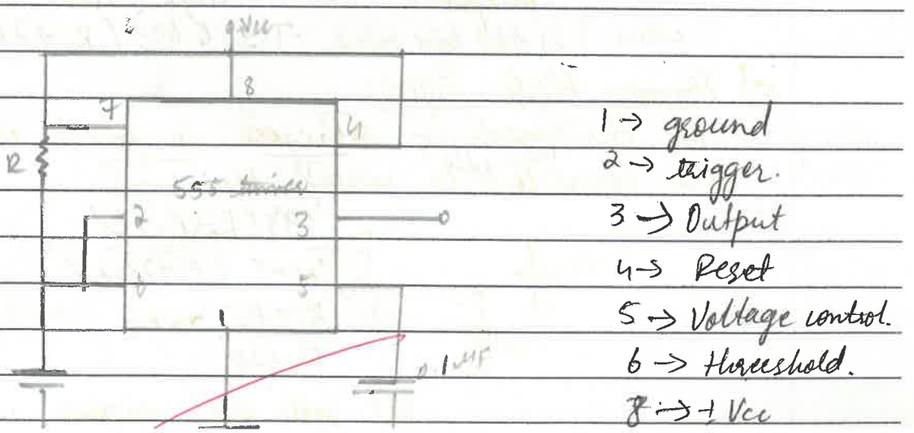


(c) Output voltage signals is due to V_{in_1} only



(d) The total output is equal to sum of individual input.

49)



* The external resistance and capacitance are sets for time intervals.
* When V_{cc} is ON, the capacitor starts charging through Resistors R_1 & R_2, given with time constant.
$T_{High} = (R_1 + R_2) C$.
* During this time (similarly set) $R=0$ & $S=1$. the flip flop changes the output Q to High. $T_2 = R_2 C$.
* When the capacitor tries to becomes greater than $\frac{2}{3} V_{cc}$, the output is High i.e., $R=0$ & $S=0$ reduces the output to low.
* when the capacitor tries to becomes greater than $\frac{1}{3} V_{cc}$, then its gets discharged.
* Since the charging and discharging takes place in between $\frac{1}{3} V_{cc}$ & $\frac{2}{3} V_{cc}$.

$\therefore T_{High} = 0.693 (R_1 + R_2) C$

$T_{low} = 0.693 R_2 C$.

$\therefore T = T_{High} + T_{low} = 0.693(R_1+R_2 C) + 0.693 R_2 C$.

where T is total time constant, $T = 0.693 (R_1 + 2R_2) C$

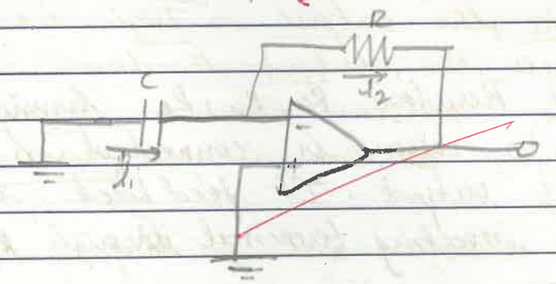
$$T_{Duty\ cycle} = \frac{T_{High}}{T}$$

$$= \frac{0.693 (R_1+R_2) C}{0.693 (R_1+2R_2) C}$$

$$= \frac{R_1+R_2}{R_1+2R_2} \times 100$$

$$T_{Duty\ cycle} = \frac{1.44}{R_1+2R_2}$$

b) Differentiator :
It is circuit in which the output voltage is directly proportional to time derivative of input voltage.
The circuit is as shown below.



Apply KCL, $i_1 = i_2$

$$C \frac{d(V_i - V_0)}{dt} = \frac{V_i - V_0}{R_f}$$

$$C \frac{dV_i}{dt} = -\frac{V_0}{R_f}$$

$$V_0 = -C R_f \frac{dV_i}{dt}$$

$i_1 = \frac{d(V_i - V_0)}{dt}$, $i_2 = \frac{V_i - V_0}{R_f}$,
(when $V_i = 0$ in i_2, $V_0 = 0$ in i_1)

∴ Thus it proofs O/P voltage is directly proportional to time derivative of input.

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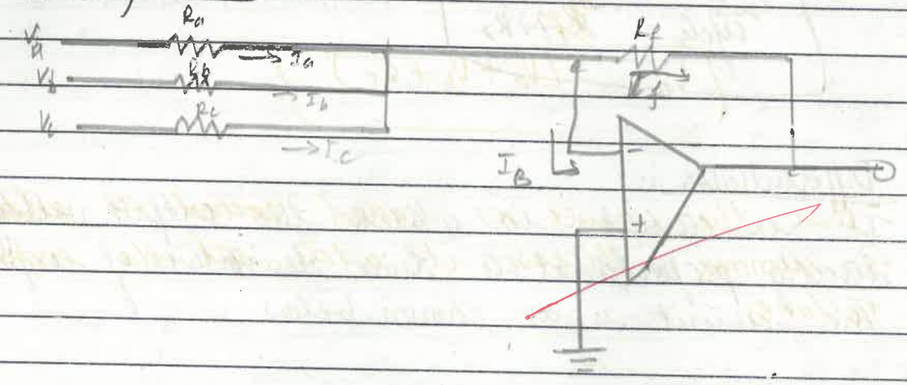
Inverting Summer



Consider the Resistors R_a, R_b, R_c having a voltage of V_a, V_b, V_c when is connected in series with R_f Resistor to output. It feed back to the inverting to the inverting terminal through R_f.

So by applying KCL,

$$I_a + I_b + I_c = I_p + I_f \qquad (\because I_p \simeq I_f)$$

$$\frac{V_a - V_i}{R_a} + \frac{V_b - V_i}{R_b} + \frac{V_c - V_i}{R_c} = \frac{V_i - V_o}{R_f}$$

when $(V_i = 0)$, then,

$$\frac{V_a}{R_a} + \frac{V_b}{R_b} + \frac{V_c}{R_c} = -\frac{V_o}{R_f}$$

$$V_o = -\left(\frac{R_f}{R_a} V_a + \frac{R_f}{R_b} V_b + \frac{R_f}{R_c} V_c\right)$$

$$V_o = -R_f \left(\frac{1}{R_a} V_a + \frac{1}{R_b} V_b + \frac{1}{R_c} V_c\right)$$

when $R_a = R_b = R_c = R_f$ when all are connected in parallel. So Resistance are same.

D D M M Y Y Y Y — AMC EDUCATION — Test No. : — Page No. :

$$V_o = -\frac{R_f}{R_f}(V_a + V_b + V_c)$$

$$\boxed{V_o = -(V_a + V_b + V_c)}$$

∴ Thus the circuit is called as adder or summer. Because it adds all the individuals voltages.

25/30

$I_a = 5$
$I_b = 5$
$I_c = 5$
$4c = 5$
$4b = 5$

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Test	Date	Signature of the Student	Signature of the Invigilator
Test - I	23/04/19	Ahmed	
Test - II	22/05/19	Ahmed	
Test - III	17/06/19	Ahmed	

BLUE BOOK

Name : MOINUDDIN AHMED

Branch : Computer Science & Engineering

USN : 1AM18CS109 Semester : 2nd sem

Section : ELECTRONICS Class Roll No. : 109

8

Academic year: 18-19

Karan Sanjay Kalkar. (9)
1AM17EE021
IVth sem.
17-05-19

8) No load and Blocked rotor test on three phase induction motor to draw circle diagram

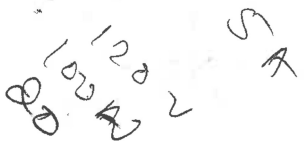
Aim: To conduct No load and Blocked rotor test on three phase induction motor to draw circle diagram

Apparatus required

SL NO	Apparatus	Range	Quantity
1	Voltmeter (AC)	(0-600 V) MC	1
2.	Ammeter (AC)	(0-10A) MI	1
3	Wattmeter	10A, 600V, LPF	2
		10A, 600V, UPF	2
4	Auto transformer		1
5	Connecting wires	-	-
6	Tachometer		1

Procedure:

For No load test



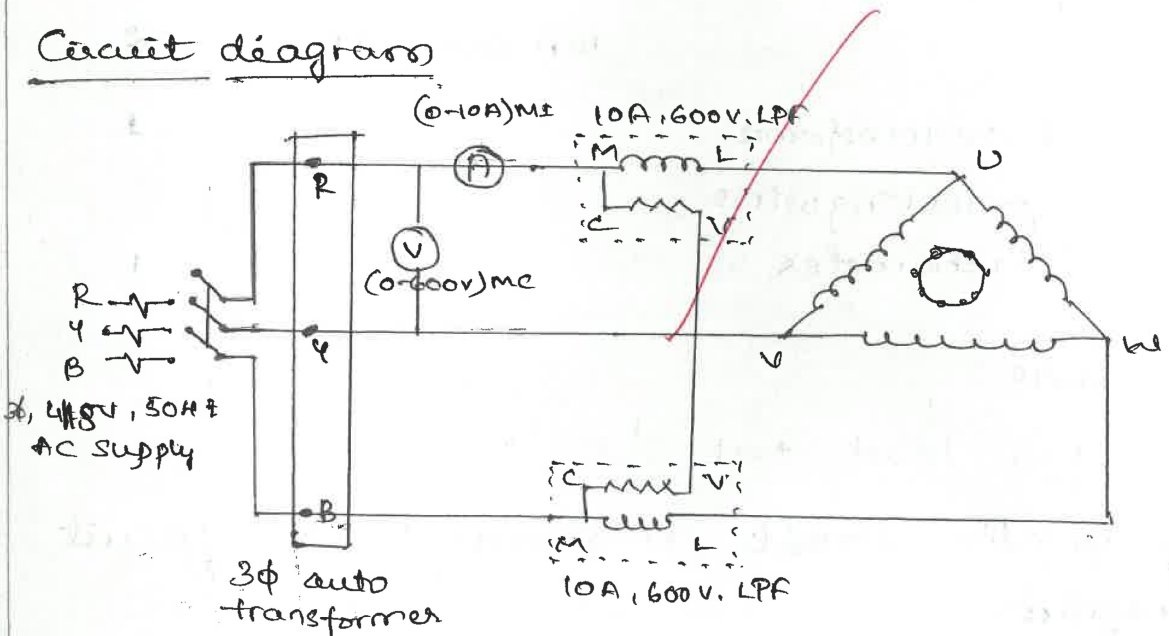
1) Rig up the circuit as shown in the circuit diagram
2) Provide the input voltage by slowly varying the 3 phase autotransformer up to rated voltage.
3) Then note down the voltage reading, ammeter reading and wattmeter readings and the speed of the motor. Use LPF wattmeters and Tachometer for measuring speed of rotor

4) Reduce the autotransformer and switch off the supply

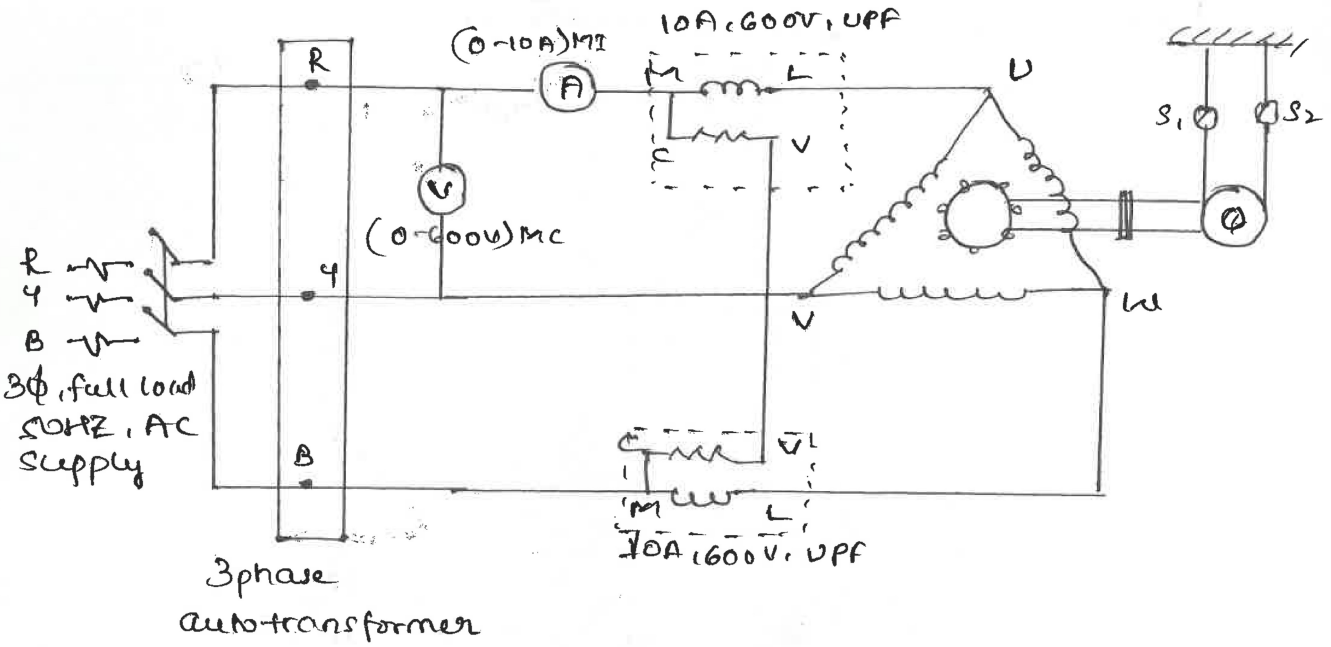
Procedure for Blocked rotor

1) Replace LPF wattmeter by UPF wattmeters
2) Provide the supply voltage by slowly varying the autotransformer until the ammeter reads the rated current value. by blocking the rotor of the motor
3) Note down the voltage reading, ammeter reading & wattmeter readings
4) Reduce the autotransformer and switch off the supply.

Circuit diagram



No load Test



Blocked rotor test.

Tabular Column:

No load test

SL NO	V_o	I_o	W_1	W_2	$W_o = W_1 + W_2$
1	400	2.3	30×4 = 120W	115×4 = 460W	580 W

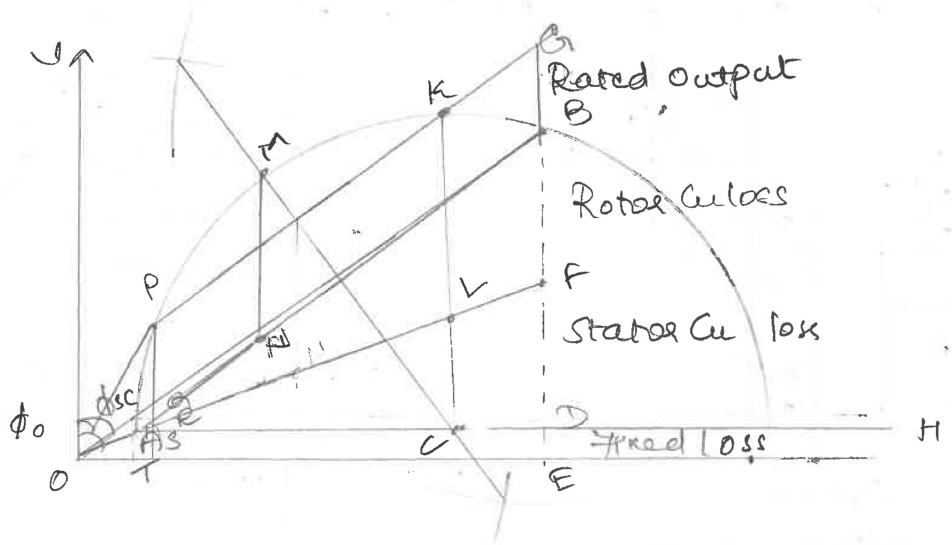
Wattmeter Constant = $\frac{\text{Voltage range} \times \text{Ammeter range} \times \text{Power factor}}{\text{Full scale reading}}$

$= \frac{600 \times 10 \times 0.2}{300} = 4$

Blocked rotor test:

SL NO	V_{sc}	I_{sc}	W_1	W_2	$W_{sc} = W_1 + W_2$
1	120	5A	20×4 = 80	140×4 = 560	640

Procedure of Circle diagram



No load power factor = ~~cos~~ angle = ϕ_0

$$\phi_0 = \cos^{-1}\left(\frac{W_0}{\sqrt{3}\, V_0 I_0}\right) = \cos^{-1}\left(\frac{580}{\sqrt{3}\times 400\times 2.3}\right) = 68.65$$

Blocked rotor power factor = $\phi_{sc} = \cos^{-1}\left(\frac{W_{sc}}{\sqrt{3}\, V_{sc} I_{sc}}\right)$

$$\phi_{sc} = \cos^{-1}\left(\frac{640}{\sqrt{3}\times 120\times 5}\right) = \underline{51.98°}$$

No load current $I_0 = \underline{2.3}$ A

Nominal current $I_{SN} = I_{sc}\left(\frac{V_0}{V_{sc}}\right)$

$I_{SN} = \underline{16.66}$ A $= 5\times\left(\frac{400}{120}\right)$

Nominal power $W_{SN} = W_{sc}\left(\frac{V_0}{V_{sc}}\right)^2$

$W_{SN} = \underline{7111}$ W $= 640\times\left(\frac{400}{120}\right)^2$

Construction.

Current Scale 1 cm = 2 A

1) Draw No load current I_o at angle ϕ_o with voltage by taking current scale. and mark A
2) Draw a line parallel to horizontal axis.
3) Then draw Nominal current line I_{SN} at angle ϕ_{sc} with respect to voltage by taking current scale and mark point B.
4) Then join line A and B then AB called power line
5) Draw a perpendicular bisector to AB and extend the line to meet the horizontal line of A and mark it as C.
6) Taking C as a centre and CA as radius draw a circle touching point B
7) Draw a perpendicular to the horizontal axis and mark point D on AB line and E on current axis
8) Point F is marked on the mid point of the line BD and joined the AF which is torque. line
9) Power scale Calculation

$$\text{Power scale} = \frac{W_{SN}}{AC(BD)} = \frac{7111}{6.2} = 1146.93 \text{ W}$$

$$\text{Rated output power} = \frac{3 \times 746}{\text{Power scale}} = \frac{2233}{1146.93} = 1.94 \text{ cm}$$

Extend line BD up to length of rated output power and mark G point and join BG

10) Draw a line parallel to AB from G to meet on the circumference and mark point P and join GB

11) ~~Draw a perpendicular~~ Mark point M on circumference which bisector of AB touches and mark it as the QP touching one more point at circumference.

12) Draw a perpendicular M to horizontal axis to touch torque line at N and draw perpendicular from K to meat torque line L.

Motor input = PT × power scale = 3 × 1146.93 = 3440.79 W

Rotor input = PR × power scale = 2.2 × 1146.93 = 2523.246 W

Fixed loss = ST × power scale = 0.5 × 1146.93 = 573.46 W

Output power = PQ × power scale = 2.1 × 1146.93 = 2408.55 W

Maximum power = MN × power scale = 2.9 × 1146.93
slip = 3326.097

Torque developed = $\frac{PR \times \text{power scale} \times 60}{2\pi NS \times 9.81}$

$= \frac{2.2 \times 1146.93 \times 60}{2 \times 3.14 \times 1440 \times 9.81 \times 0.11} = 15.51$ kgm

Maximum torque = $\frac{KL \times \text{power scale} \times 60}{2\pi NS \times 9.81 \times}$ = ~~26.79~~

$= \frac{3.8 \times 1146.93 \times 60}{2 \times 3.14 \times 1440 \times 0.11} = 26.79$ kgm

Starting torque = $\frac{BF \times \text{power scale} \times 60}{2\pi NS \times 9.81}$ =

$= \frac{3.1 \times 1146.93 \times 60}{2 \times 3.14 \times 1440 \times 0.11} = 21.4$ kg m

Rated output = BC × powerscale

= 2 × 1146.93 = 2293.86 W

Rotor Copper loss = BF × power scale

= 3.2 × 1146.93 = 3670.17 W

Stator Copper loss = FD × power scale

= 3.2 × 1146.93 = 3670.17 W

% slip = PR / OP × 100 = 3 / 3.41 × 100 = 0.88

Efficiency = %η = Motor O/P / Motor I/P = PQ / PF × 100

%η = 2.01 / 3 × 100 = 70 %

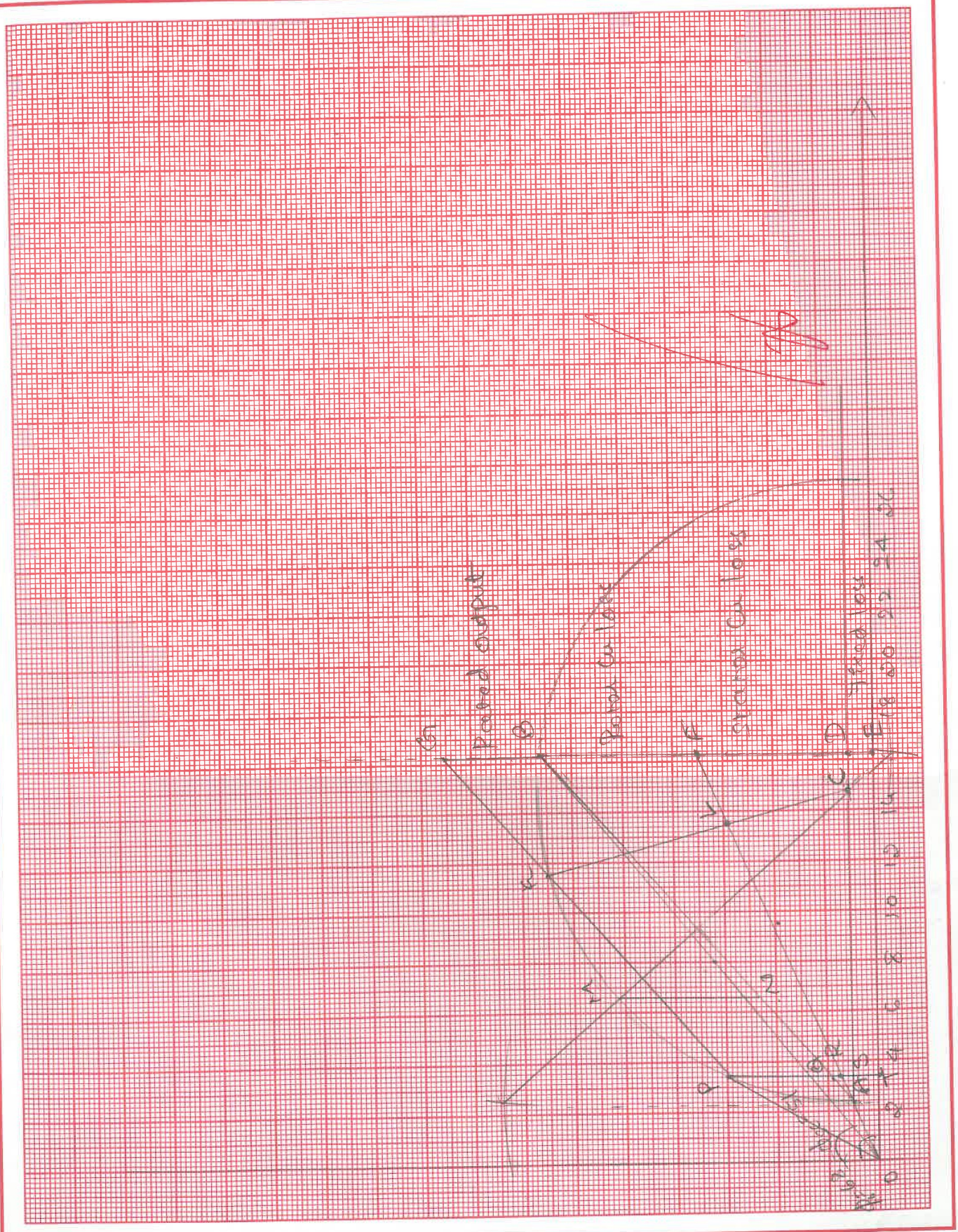
% slip = PR / QR = 2.2 / 0.2 = 11

~~Full load torque to starting torque~~ =

29/30

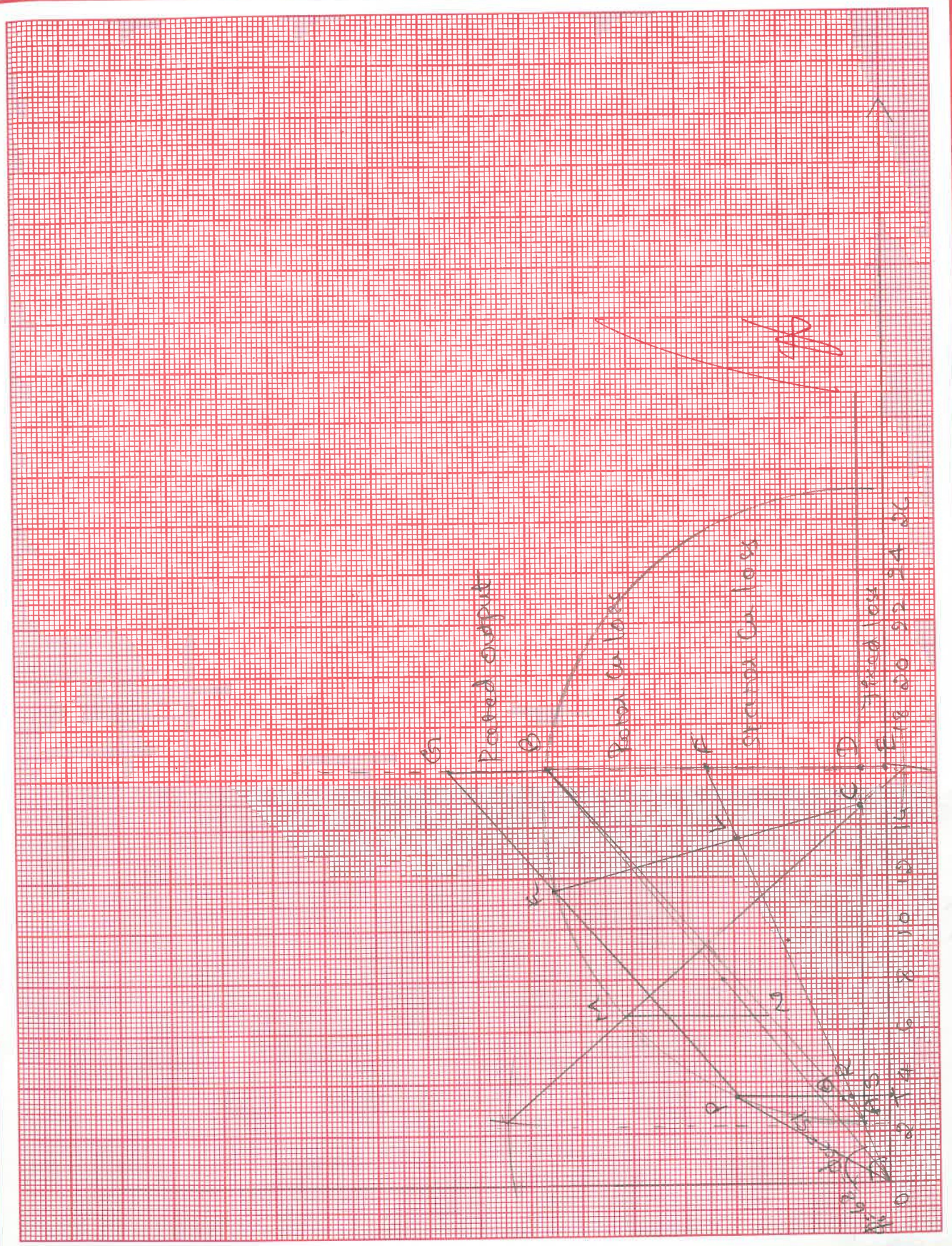
Name :

Date :



Name :

Date :



Electrical Machines Lab-1

Academic year - 18-19

Praveen Kumar. D. V
1AM17EE019
30/11/2018
17EEL37
III Sem.

3

Sumpner's test on similar transformers and determination of combined and individual transformer efficiency.

Aim:- To determine the combined and individual transformer efficiency.

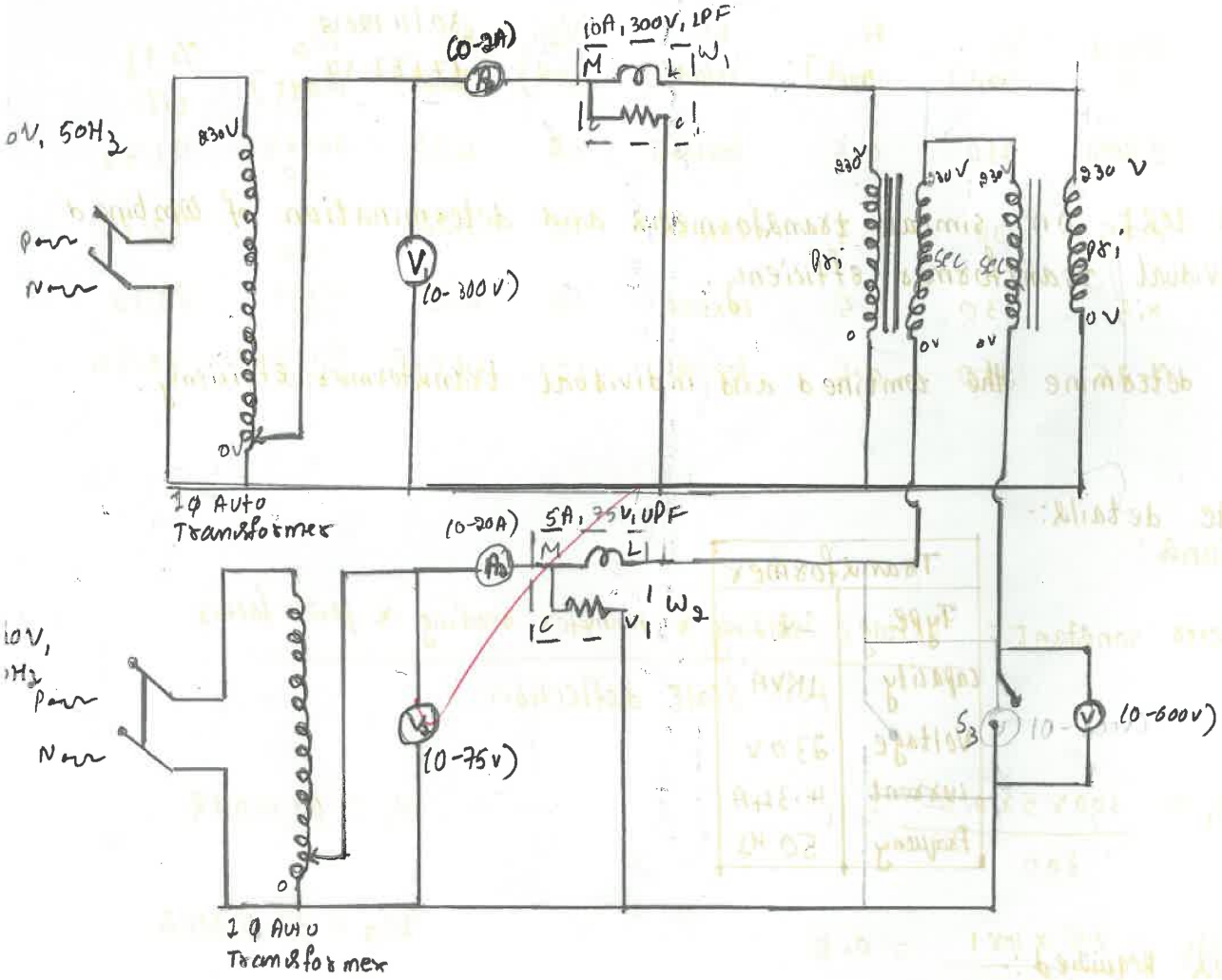
Name plate details:-

Transformer	
Type	1φ
capacity	1KVA
Voltage	230 V
current	4.34A
Frequency.	50 Hz

Apparatus Required:-

Sl No	APPARATUS	RANGE	QUANTITY
1	Voltmeter (Moving Iron)	(0-300V)	1
2	Voltmeter (Moving Iron)	(0-75V)	1
3	Voltmeter (Moving Iron)	(0-600V)	1
4	Ammeter	(0-2A)	1
5	Ammeter.	(0-20A)	1
6	Wattmeter (LPF)	10A, 300V	1
7	Wattmeter (UPF)	5A, 75V	1

· Circuit Diagram



) Procedure :-

). connections are made as shown in circuit Diagram

). Now apply the rated voltage to primary by giving supply from auto transformer

) Now apply rated ~~voltage~~ current in secondary and note down the value of Voltmeter, ammeter & wattmeter reading.

) When switch S_3 does not not show zero ~~deflection~~ deflection make the Voltmeter to zero by changing the secondary terminal,

) ~~Note/Also~~ calculate the ~~value~~ Efficiency for different load.

6. Tabular column

Sl.No	Load x	V_1 (volt)	A_1 (Amps)	W_1 (watts)	V_2 (volt)	A_2 (Amps)	W_2 (watts)	% η UPF
1	1 (UPF)	230	0.5	60x1=60	18	4.34	60x0.5 =30	91.74
2	0.75	230	0.5	60x1=60	15	3.22	50x0.5 = 25	90.70
3	0.5	230	0.5	60x1=60	12	2.15	55 x0.5 =28	88.10
4	0.25	230	0.5	60x1=60	10	1.07	60x0.5 =30	76.56

Calculations:

Wattmeter constant = $\frac{\text{Voltage reading} * \text{Ammeter reading} * \text{power factor}}{\text{Full scale deflection}}$

$W_1 = \frac{300 \times 5 \times 0.2}{300} = 1$ $\quad W_1 = 60$ watts

$W_2 = \frac{75 \times 10 \times 1}{1300} = 0.5$ $\quad W_2 = 30$ watts

$\% \eta = \frac{x * KVA * 1000 \times \cos\phi}{x * KVA * 1000 \times \cos\phi + W_1 + x^2 W_2}$

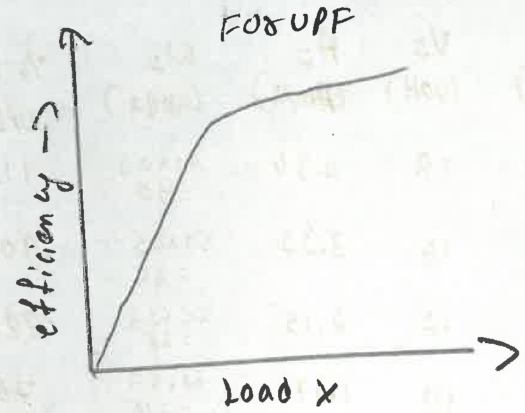
$= \frac{1 \times 1 \times 1000 \times 1}{1 \times 1 \times 1000 \times 1 + 60 + (1)^2 30} = 91.74\%$

$= \frac{0.75 \times 1 \times 1000 \times 1}{0.75 \times 1 \times 1000 \times 1 + 60 + (0.75)^2 30} = 90.70$

$= \frac{0.5 \times 1 \times 1000 \times 1}{0.5 \times 1 \times 1000 \times 1 + 60 + (0.5)^2 30} = 88.10$

$= \frac{0.25 \times 1 \times 1000 \times 1}{0.25 \times 1 \times 1000 \times 1 + 60 + (0.25)^2 30} = 76.56$

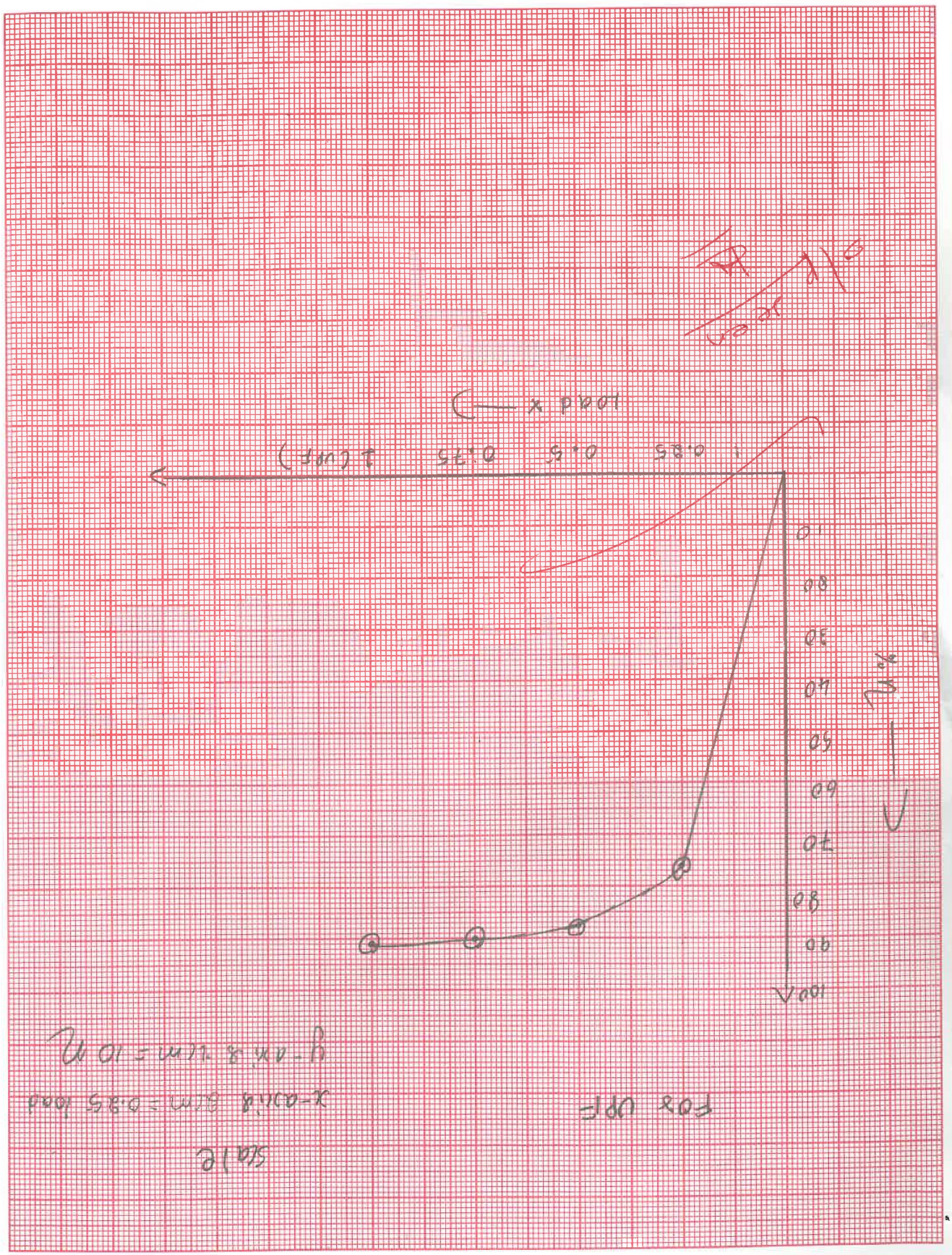
Nature of graph

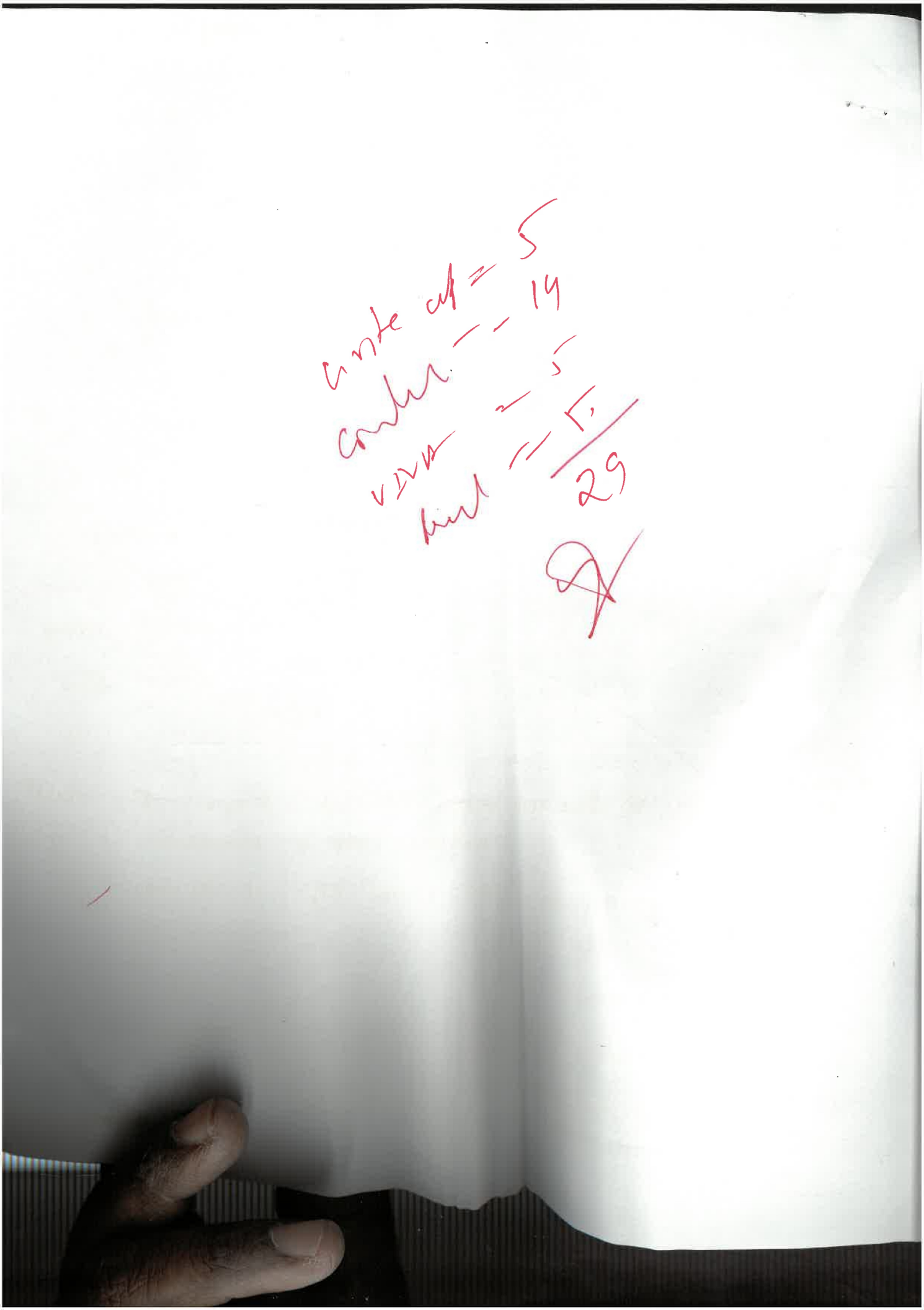


Result :- The sumpner's test (or) back to back test on two identical 1ϕ transformers is ~~proof~~ verified.

The efficiency for various load is proved.

Date :




Write up = 5
Conduct = 14
Viva = 5
Total = 24/29

C O N T E N T S

Sl. No.	Date	Particulars	Date of Submission	Marks Obtained	Initials of Staff	Page

CERTIFICATE

This is to certify that Smt/Sri. ANUSHA · R .....

satisfactorily completed the course of assignment prescribed by the.....

.....*University for the Semester*.....04.....*degree*

Course in the Year 20..18.....*20*..19.....

Marks	
Max	Obtained
20	19

Signature of the Student

Head of the Department

Signature of Staff Member incharge of the Batch

Oct 3rd 2017 -

Date Page

(02) V→02

2. Salesman(salesman-id, name, city, commission)
customer(customer-id, cust-name, city, grade,
salesman_id)
orders(ord-no, purchase-amt, ord-date, customer_id,
salesman_id)

```
create table salesman(
salesman-id number primary key,
name varchar2(20), city varchar2(20),
commission varchar2(20));

create table customer(
customer-id number primary key,
cust-name varchar2(20), city varchar2(50), grade
varchar2(20),
salesman-id references salesman(salesman_id)
on delete cascade);

create table orders(
ord-no number, purchase-amt number,
ord-date date,
customer_id references customer(customer_id) on
delete cascade,
salesman-id references salesman(salesman-id) on
delete cascade);
```

Insertion :-

```
insert into salesman values(1,'John','Blore','20%');
insert into salesman values(2,'Peter','Mlore','25%');
insert into salesman values(3,'Anu','Blore','15%');
```

~~insert into~~

```
insert into customer values(10,'Affu','Blore','A',1);
insert into customer values(20,'Liki','Mlore','B',2);
insert into customer values(30,'Ashu','Blore','A',1);
```

```
insert into orders values(100,'1000','17-May-2017',10,1);
insert into orders values(101,1500,'1-June-2017',20,2);
insert into orders values(102,2000,'31-Aug-2017',30,3);
```

Date Page

1. Count the customers with grades above Bangalore's average.

```
select grade, count(distinct customer_id)
from customer
group by grade
Having grade > (select avg(grade) from
customer
where city = 'Blore');
```

4. Create a view that finds the salesman who has the customer with the highest order of a day.

```
create view elitsalesman as
select b.ord_date, a.salesman_id, a.name
from salesman a, orders b where
a.salesman_id = b.salesman_id
and b.purchase_amt = (select max(purchase_amt)
from orders c where c.ord_date = b.ord_date
);
```

```
select * from elitsalesman
```

ord_date	salesman_id	Name
17-May-17	1	John
01-Jun-17	2	Peter
31-Aug-17	3	Anu

Tables :-

salesman_id	Name	city	commission
1	John	Blore	20%
2	Peter	Mlore	25%
3	Anu	Blore	15%

customer_id	cust_name	city	grade	salesman_id
20	Liki	Mlore	B	2
10	Affu	Blore	A	1
30	Ashu	Blore	A	1

ord_no	purchase_amt	ord_date	customer_id	salesman_id
100	1000	17-May-17	10	1
101	1500	01-Jun-17	20	2
102	2000	31-Aug-17	30	3

18/20

3/10/18

Date 1 Page

2 Employee (SSn, name, address, sex, salary, SuperSSN, Dno)
Dept (Dno, Dname, MgrSSN, MgrstartDate)
Dlocation (Dno, Loc)
project (pno, pname, plocation, Dno)
works_on (ssn, pno, Hours).

create table department (Dno number primary key, Dname varchar(30), MgrSSN varchar(20), MgrstartDate Date);

create table employee (ssn varchar2(30) primary key, name varchar(20), address varchar(30), sex char(1), salary number, superssn varchar(30), Dno references department (Dno) on delete cascade));

create table Dlocation (Dno references Department (Dno) on delete cascade, loc varchar(30));

create table project (pno number primary key, pname varchar(30), plocation varchar(20), Dno references department (dno) on delete cascade);

create table works_on (ssn references employee (ssn) on delete cascade, pno references project (pno) on delete cascade,

tion varchar(30), Hours number);

tion:

into employee values(101, 'Anu', 'Blore',
10000, 201, 10);
into emp(oyee values(102, 'Abhi', 'Chennai',
20000, 203, 11);
into emp(oyee values(103, 'Affu', 'Mysore',
30000, 201, 10);

t into department values(10, 'ISE', 111,
0-JUN-2017');
into department values(11, 'ECE', 112,
11-JUN-2017');
into department values(10, 'ISE', 111,
14-JULY-2017');

insert into project values(1, 'XYZ'
);
insert into project values(
);
insert into project values(
);

insert into location(

Date Page

(3). actor(act_id, act_name, act_gender)
director(dir_id, dir_name, dir_phone)
movies(mov_id, mov_title, mov_year, mov_lang
dir_id)
movie_cast(act_id, mov_id, role)
rating(mov_id, rev_stars)

1. list the titles of all movies directed by 'Hitchcock
2. update rating of all movies.

create table actor(act_id number primary key
act_name varchar(30), act_gender char(1));

create table director(dir_id number primary key,
dir_name varchar(30), dir_phone number);

Create table movies(mov_id number primary key,
mov_title varchar(30), mov_year number,
mov_lang varchar(30),
dir_id references director(dir_id) on delete
cascade);

create table movie_cast(act_id number,
mov_id number, role varchar(30),
primary key(act_id, mov_id),
foreign key(act_id) references actor(act_id),
foreign key(mov_id) references movies(mov_id)
);

```
create table rating (mov-id number,
rev-stars number,
primary key (mov-id),
foreign key(mov-id) references movies(mov_id));
```

Insertion:

```
insert into actor values(101, 'Anushka', 'F');
insert into actor values(102, 'Prabhas', 'M');
insert into actor values(103, 'Puneeth', 'M');

insert into director values(60, 'Hitchkock',
                            9035622);
insert into director values(61, 'Steven', 9781);
insert into director values(62, 'Rajmouli', 854);

insert into movies values(200, 'Bahabuli', 2015,
                          'Telgu', 62);
insert into movies values(201, 'Akash', 2000,
                          'kannada', 60);
insert into movies values(202, 'Bahabali-2',
                          2016, 'Telgu', 62);

insert into movie-cast(101, 200, 'Heroin');
insert into movie-cast(102, 200, 'Hero');
insert into movie-cast(103, 201, 'Hero');

insert into rating values(200, 5);
insert into rating values(202, 4);
```

Date Page

```
insert into rating values (202, 4);
```

Queries:-

```
select mov-title
from movies
where dir-id in (select dir-id
                 from director
                 where dir-name = 'Hitchkock');

update rating
set rev-stars = 5
where mov-id in (select mov-id from
                 movies
                 where dir-id in (select dir-id from
                                  director
                                  where dir-name = 'Rajmouli'
                                  ));
```

Output:-

(1)
```
mov-title
Akash
```

(2)
```
rev-stars
5.
```

20/20
Good

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BANGALURU-560 083.