ST. ANNE'S COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE New Delhi, Affiliated to Anna University, Chennai)

Accredited by NAAC

ANGUCHETTYPALAYAM, PANRUTI – 607106

S.NO	CONTENT
1.	EXAMINATION POLICY
2.	GRIEVANCE REGISTER AND ANSWER SCRIPT

AROKIADASS RAJARATHANAM

Digitally signed by AROKIADASS RAJARATHANAM
DN: cn=AROKIADASS RAJARATHANAM c=IN o=PERSONAL
Reason: I am the author of this document
Location:
Date: 2024-12-23 18:16+05:30

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EXAMINATION POLICY

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EXAMINATION POLICY

The Examination Cell is headed by the principal and supportcd by a team of examination cell members. The team consists of the senior faculty as a coordinator who is assisted by one faculty from each department. The major responsibility of the Examination cell is to conduct all the examinations (both intemal and extemal examinations) in transparent and systematic manner.

l. Continuous Internal Assessment (CIA)

- ✓ The tentative schedule for Continuous Intemal Assessment (CIA) is indicated in college academic calendar. Exact schedule is fixed by planning and monitoring committee according to the AU academic schedule and are conveyed to the staff and students through circulars and whatsapp group.
- ✓ The course coordinator of each subject prepares a question paper based on the curriculum. Questions are taken in accordance with Anna University standards and follow Bloom's Taxonomy. The Question Papers are securitized by heads of the department to check the standard.
- ✓ The soft copies of the scrutinized question papers are uploaded in the staff login three days prior to the commencement of the examination. The exam cell members make enough question papers prior to the examination.
- ✓ The invigilation schedule is prepared by the Exam cell and circulated to the faculty well in advance. The assigned faculty do the invigilation duty as per the schedule. Hall arrangements and seating arrangements are prepared by the Exam cell members.
- ✓ Answer scripts are collected by the invigilators and handed over to the Exam cell along with attendance sheet after the exams. Exam cell hands over the answer scripts to the corresponding faculty within a day. The retest will be conducted by the course in charge, if required.
- ✓ In the beginning of each semester, exam cell prepares the stationary requirements and forward this to the administrative officer after approval of Principal.
- ✓ The grievances of CIA must be registered in the grievance register through their respective department exam cell member. Exam cell co-ordinator will convey to the respective staff member lo do the needy corrections.

- ✓ Marks need to be entered in the website on or before the next day by the course coordinator. Marks statements will be verified by the course coordinator, heads of the department and the Principal before uploading to the AU CoE portal.

2. Anna University Examination

- ✓ The end semester examination is conducted by the Anna University (AU) for all courses. The theory examinations will normally be of three hours duration.
- ✓ AU end semester examination is conducted for three hours. The invigilation schedule is prepared by the exam cell based on the AU time table. The assigned faculty member should perform the invigilation duty as per the schedule.
- ✓ Hall wise seating plan are prepared and displayed in the notice board.
- ✓ The time schedule and procedures are strictly followed as per the directions of Anna University.
- ✓ The grievances of university end semester examinations are carried out as per AU norms.

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ODD SEMESTER

GRIEVANCE REGISTER

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EXAMINATION GRIEVANCE ENTRY

PERIOD :JULY 23 -DEC 23

S.NO	DATE	NAME	REG.NO	DEPT/ YEAR	EXAM DATE	SUBJECT CODE/NAME	DATE OF EXAM	COMPLAINT	REMARKS WITH DATE
1.	10.11.2023.	K. DEEPIKA	422121106 009.	ECE/ III yr	9.11.2023.	VLSI.	9.11.2023 CIA-II	To increase Mark.	Rectified 10.11.2023.
2.	17.11.2023	A. DHIVYA	422121106 011	ECE/ III yr	16.11.2023	CEC3351 TIRF	CIA-II 16.11.2023	To increase Mark	Rectified 17.11.2023
3.	17.11.2023	S. SANJAI	422121106029	ECE/ III yr	16.11.2023	CEC 3351 TIRF	CIA-II 16.11.2023	To increase Mark.	Rectified 17.11.2023
4.	24.11.2023	M. NAYANTHARA	422123105 009.	EEE/ IYr	23.11.2023	HS3152 PE-I	CIA-1. 23.11.2023	To increase Mark.	Rectified 24.11.2023
5.	22.02.2024	K. SIVA RANJANI	422123106 034.	ECE/ IYr.	21.02.2024	HS3152 PE-I	CIA-II 21.02.2024	To increase Mark.	Rectified 22.02.2024.

V. Vimala Thangam 27/2/2024
EXAM CELL CO-ORDINATOR

PRINCIPAL

Dr.R.ARUKIADASS, M.E., Ph.D.
Principal,
St.Anne's College of Engineering & Technology
ANGUCHETTYPALAYAM.
Siruvathur-(Post), Panruti-(T.k),
Cuddalore-(Dist), Pin: 607 110.

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Continuous Internal Assessment			II				Unit Test	—				
Register Number	4	2	2	1	2	1	1	0	6	0	0	9
Department	ECE						Semester	5				
Subject Code			Subject Title	ULSI								
Date & Session	9/11/23	✱ F.N					No. of Pages used					

K. KAYALVIZHI	K. Kay 9/11/23
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
					i	i		ii	ii		iii	iii		Total
Q.No.	✓	Marks	Q.No.		✓	Marks T	Marks D	✓	Marks T	Marks D	✓	Marks T	Marks D	Total Marks
1	✓	2	11	a										
2	✓	2		b	✓	7								7
3	✓	2	12	a	✓	10								10
4	✓	2		b										
5	✓	1	13	a										
6	✓	0		b	✓	8								8
7	—		14	a										
8	✓	1		b	✓	9								~~6~~ 9
9	—		15	a										
10	—			b	✓	10								10
Total		10	16	a	✓	12								12
				b										
												Total		56

Grand Total	~~55~~ 66	Grand Total (in words)	Six Six
Name of the Examiner	B. Arun Kumar	Signature of the Examiner	B

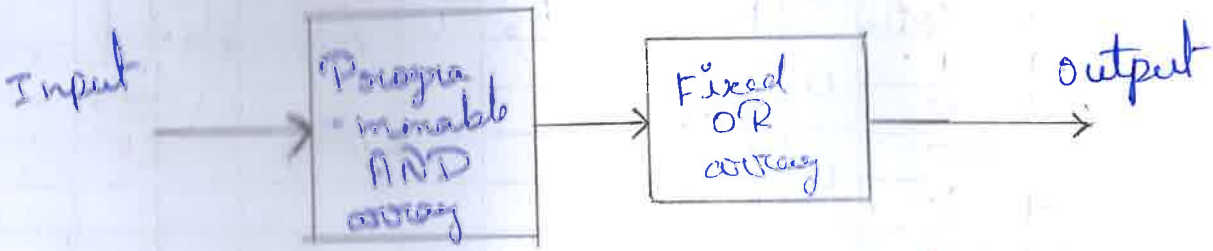
Part-C

16 a) PAL (Programmable Array logic)

⇒ Programmable array logic is a logic device when the program was fixed program

⇒ The Programmable Array logic has below two gates there are.

⇒ Programmable AND array and a fixed OR array.

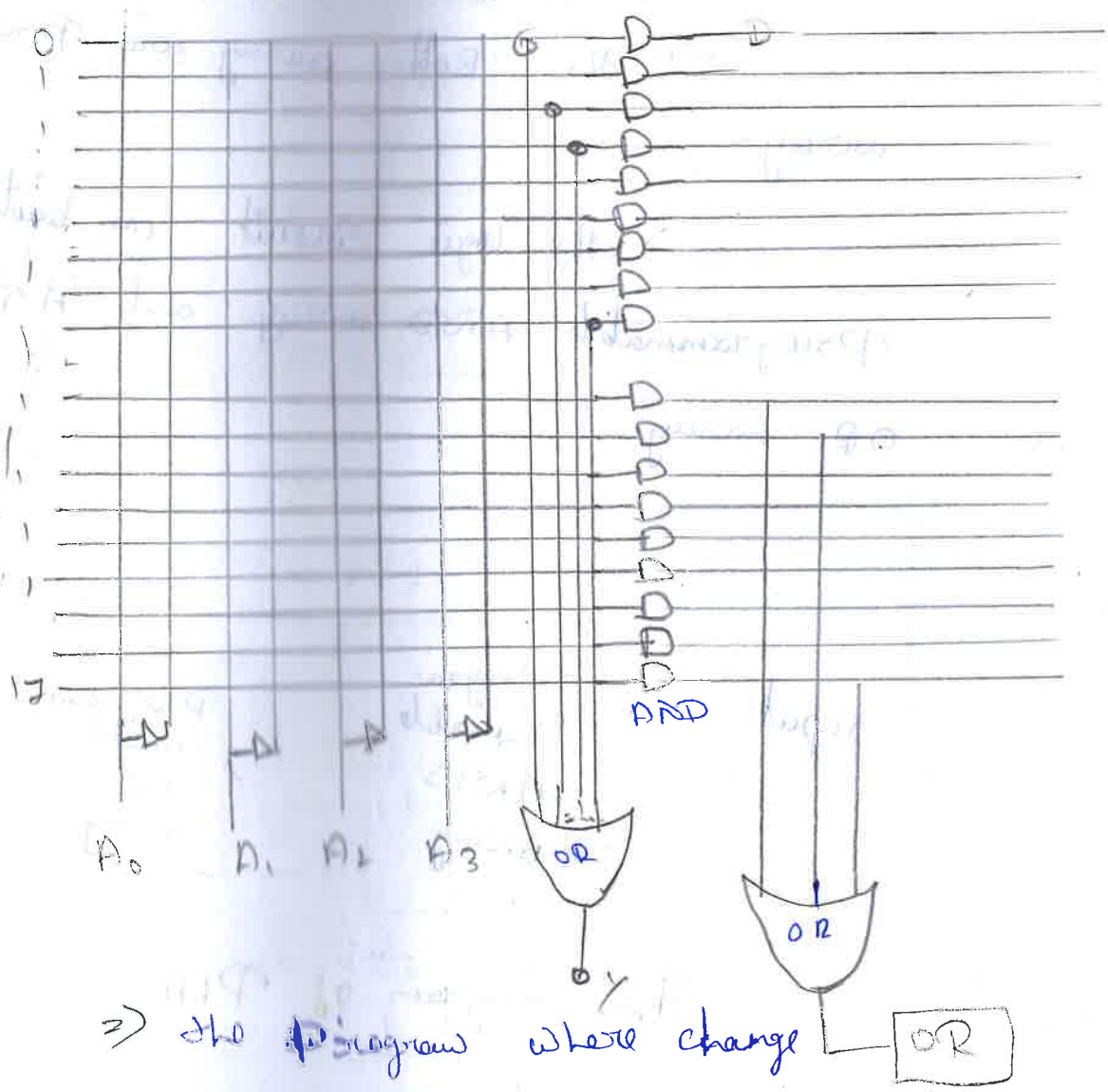


Block diagram of PAL

⇒ the input where Programmable and the OR array was fixed array

=> because the AND array can programable to user coding to the PAL is not fixable to change

Example of PAL



=> the diagram where change

By the AND array

=) the OR array was fixed array

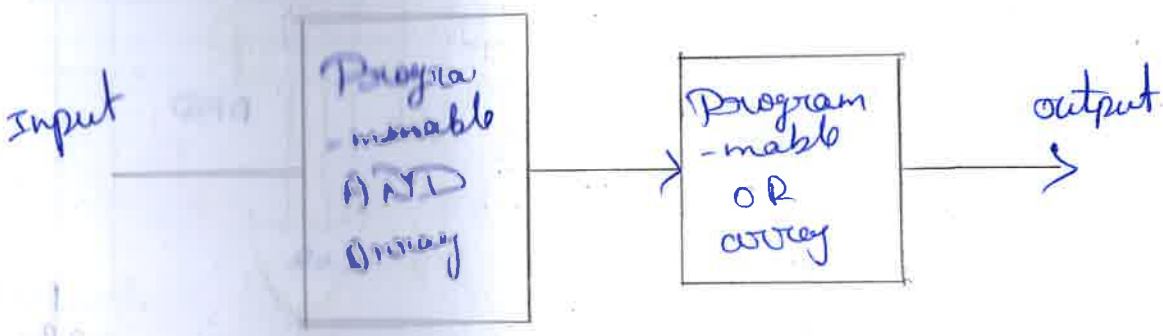
=) the Programmable Array logic is used to coding the Program

PLA (Programmable Logic Array)

=> The Programmable logic Array have two array

=> Both array are Programmable array

=> The logic circuit can built by Programmable AND array and A Programmable OR array.



Block diagram of PLA

=> The PLA was Programmed by the end user.

=> Both AND array and OR array was Programmed by the end user.

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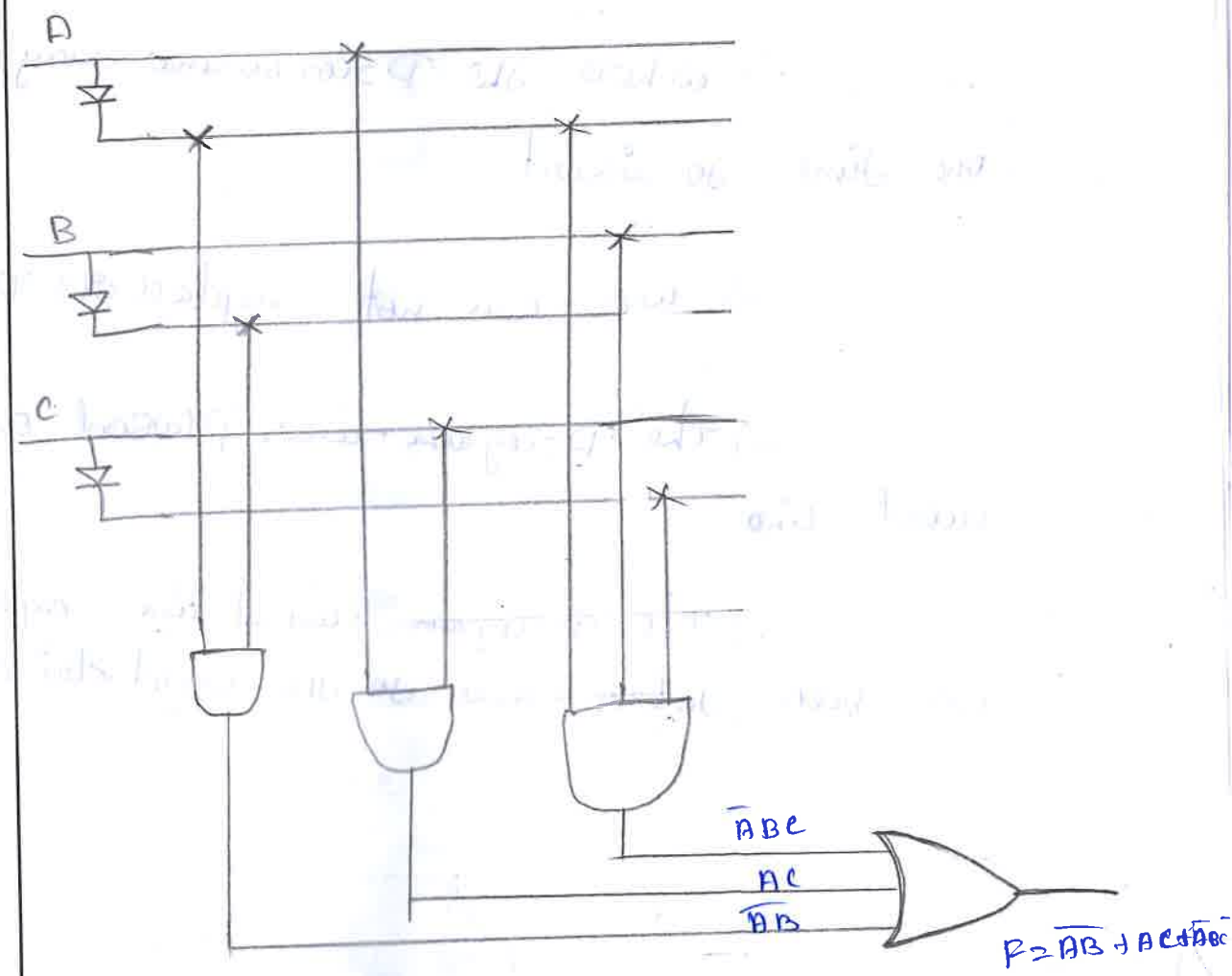
Example for PLA

$F = \overline{A}B + AC + \overline{A}B\overline{C}$



1) where we give input to the logic circuit it give the output of And array

2) OR if output of OR array

3) where the input and output are from the logic of expression

PROM (Programmable Read only memory)

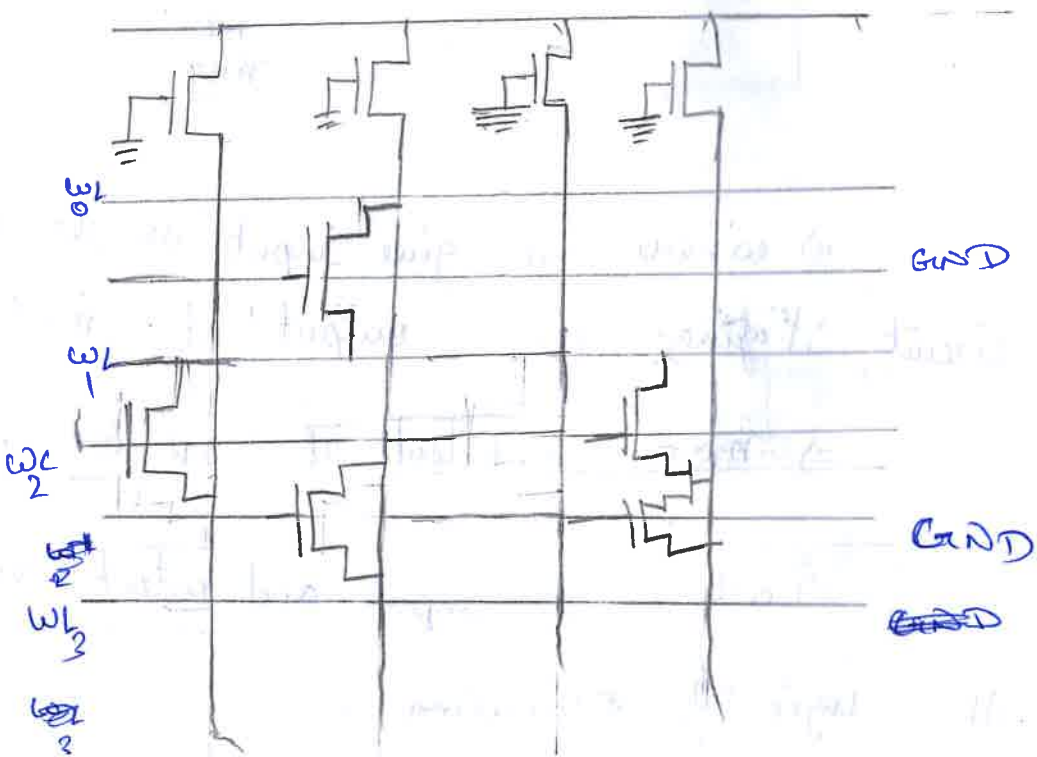
=) ROM defined as Read only memory

=) where the Programmer may only one time to insert

=) we can not replace the Program

=) the Program was passed on the word line

=) The Program word line capacitance has been taken care to the word drive



Part-B

15) **Boundary scan Testing**

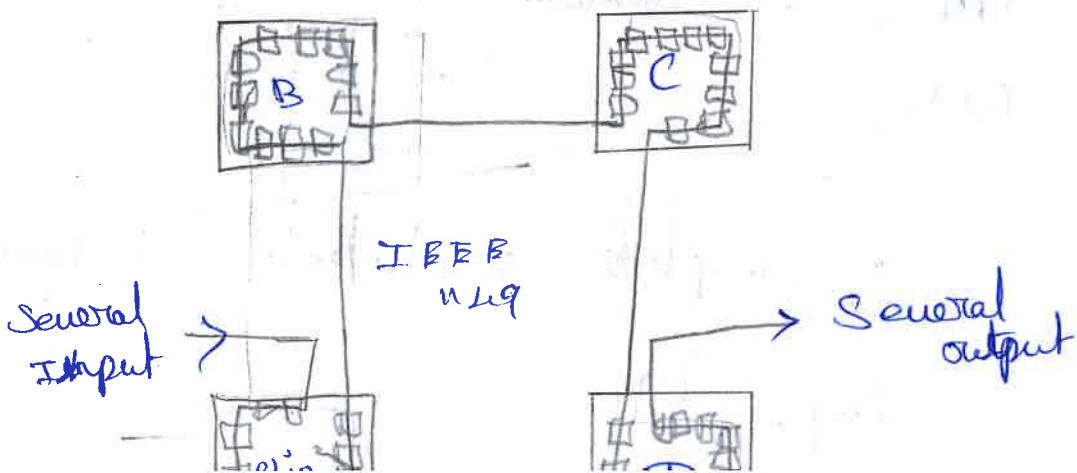
⇒ Boundary scan testing is the testing of Boundary end

⇒ A Boundary "A Bed of nails" to verifying the test

⇒ the Boundary was deloped by the Joint testing Access (JTPG)

⇒ The Boundary scand and driven the chip to complete the set

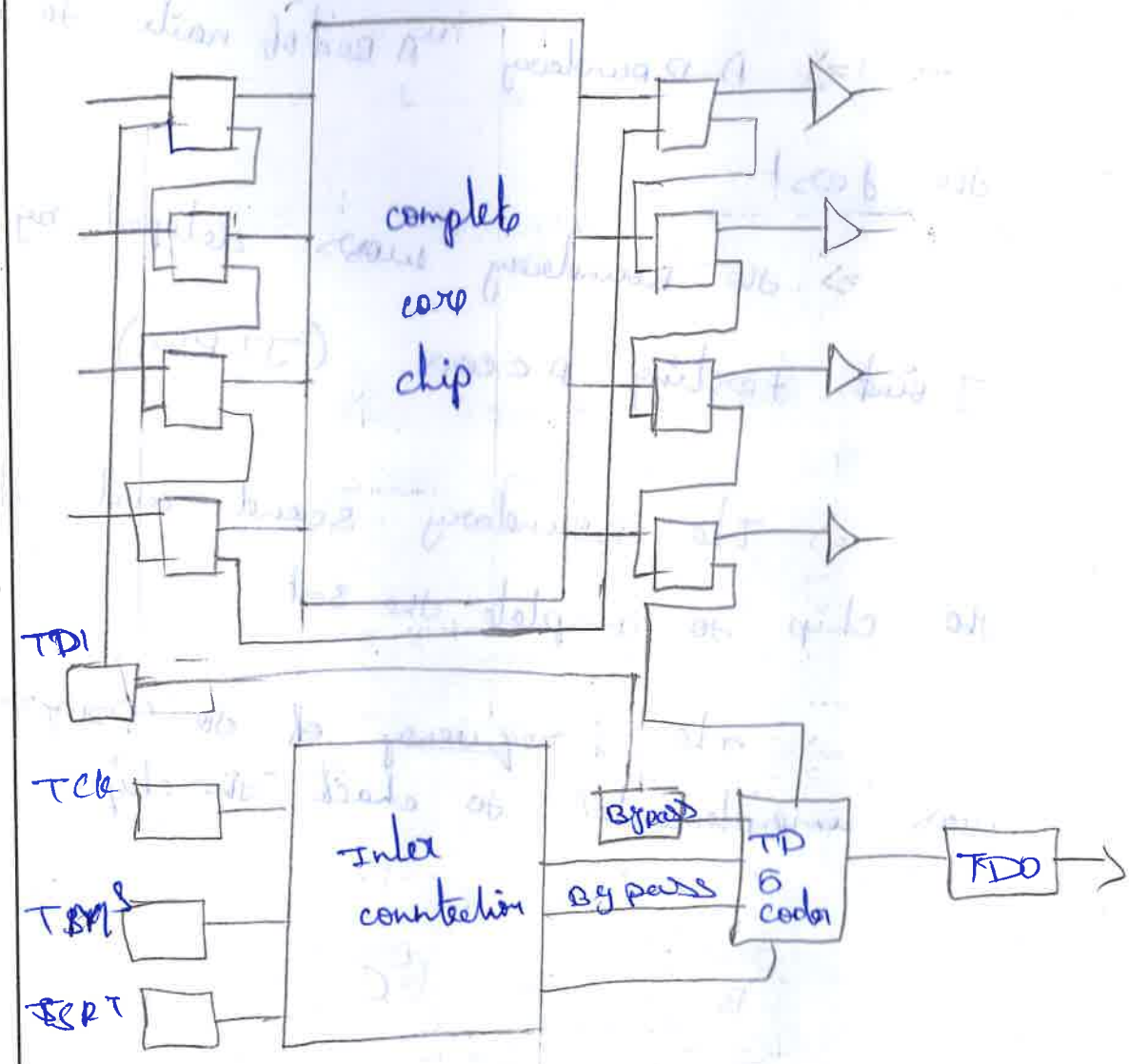
⇒ the frequency of the Program was emplemented to check the chip



=> The completb implementation Boundary Scanning is

=> It have four input and four output

=> TDA logic blocks.



: Completb architecture of Boundary Scanning.

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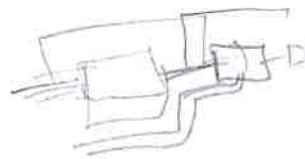
IOB SM CLB

14(b) FPGA Architecture :-

=> FPGA is the Architecture is used to generate the small size of chip

=> the FPGA contains three type of component are used



=> the three components are

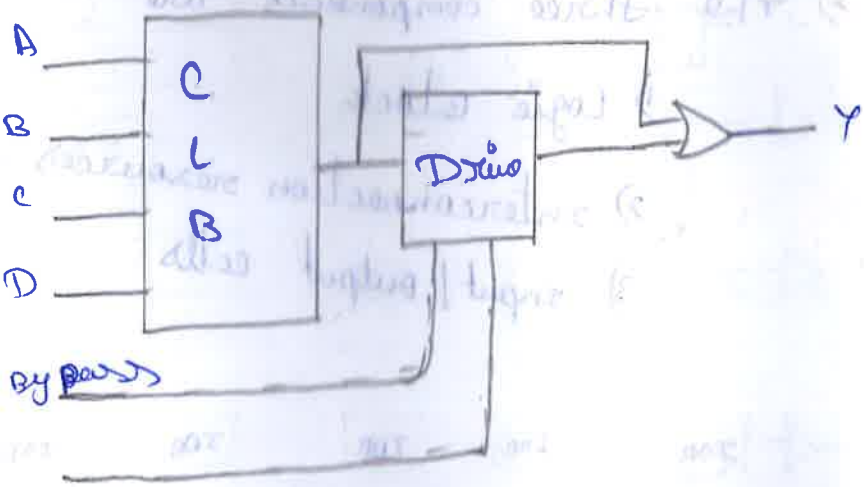
1) Logic Block
2) Interconnection resources
3) Input / output cells

Logic Blocks

=> the logic block depends upon the PCB

=> PAL & depends the Plogic block

=) It has have four input and one output



Interconnection resource

=) Inter connection resources has have four type.

=> there are

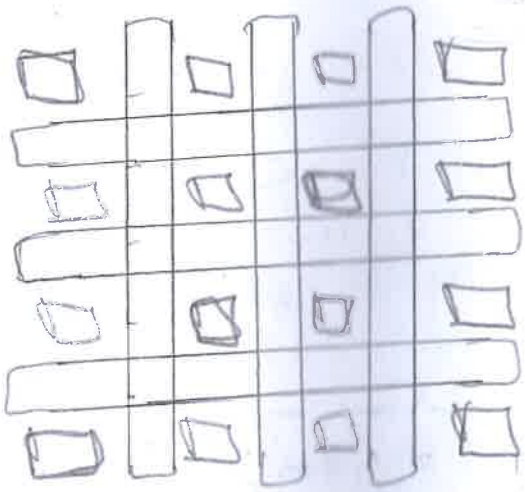
i) symetric Devices

ii) Row Based device

iii) sea of gates

iv) hierarchical device

1) symetrical device :-

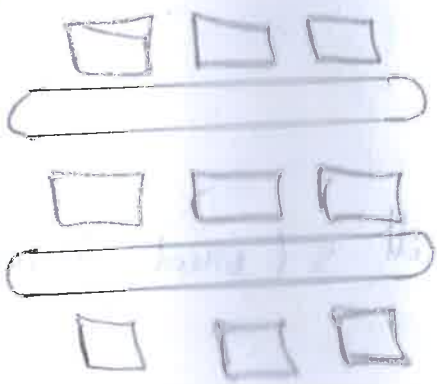


symetrical architecture

=> it is have row and colour based architecture.

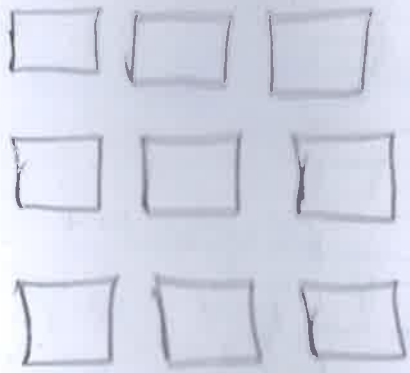
=> the materi architecture has same symetric.

ii) Row Based



=> It only Row Based architecture

iii) sea of gates



=> It is based on Row and colomn

Input / output cells

Input

=> the input cells is get information to the circuit

=> the input as Address and get to output

output

=> the output will stored in the memory of the circuit

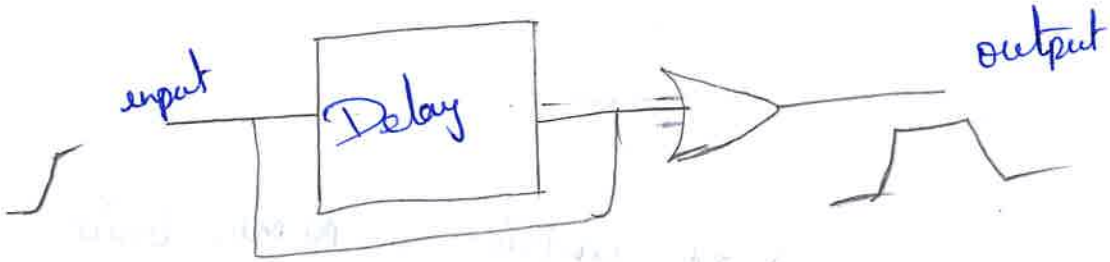
13 (b) Mono stable

=> Mono stable is the stable state device

=> It is called monostable because is only one of the stable state

=> the monostable has have delay condition

=> the delay state give input to the stable state.



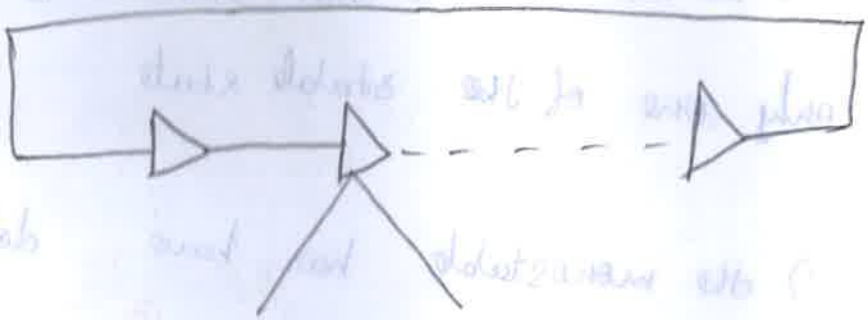
=> the input into the delay the delay state is give the output of the circuit

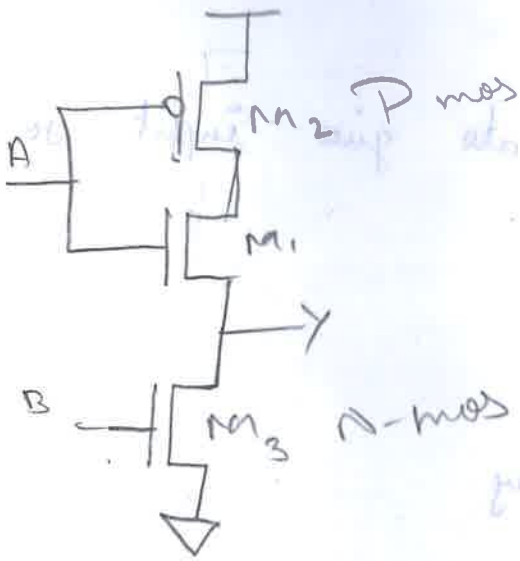
=> the delay output in the can stored

Astable sequential circuit

=> Astable is a Ring state device

=> It is not a stable state device





=> It contains 2-N mos device and one P-MOS device

=> The N-MOS is M_2

=> P-MOS is M_1

12 a) Power Dissipation

⇒ Power dissipation with the time interval

$$P(t) = I(t)\, V(t) \quad \rightarrow (1)$$

⇒ also the energy is capacitor with this

$$E = \int_0^{\infty} P(t)\, dt \quad \rightarrow (2)$$

⇒ also the energy is time travel with Power Average

$$P_{avg} = \frac{E}{T} \quad \rightarrow (3)$$

⇒ equation 2 sub in 3

$$P_{avg} = \frac{1}{T} \int_0^{\infty} P(t)\, dt \quad \rightarrow (4)$$

⇒ equation 1 sub in eq(4)

$$P_{avg} = \frac{1}{T} \int_0^{\infty} I(t)\, V(t)\, dt$$

where

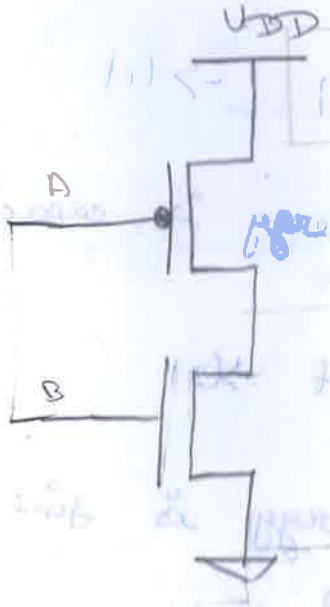
$$I(t) = C \frac{dv}{dt}$$

$$P_{avg} = \frac{1}{T} \int_0^{T} C \frac{dv}{dt} V(t)\, dt$$

$$= \frac{1}{T} \int_0^{T} V(t)\, V$$

$$E_c = C V_0^2$$

∴ circuit for CMOS



=>

=> where the energy for capacitance

$$E_c = \int_0^T C(t) V_{dd} \, dt$$

$$= C V_{dd} \int_0^T \frac{dv}{dt}$$

$$\boxed{E_c = C_L V_{dd}^2}$$

=> Power switching

$$P_{sw} = \frac{f_{sw} C_L V_{DD}^2}{T}$$

$$\boxed{P_{sw} = f_{sw} C_L V_{DD}^2}$$

Power dynamic

$$P_{dynamic} = P_{energy} + P_{switching}$$

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11) (b) Power consumption

=) Power consuption has have two type $P = VI$

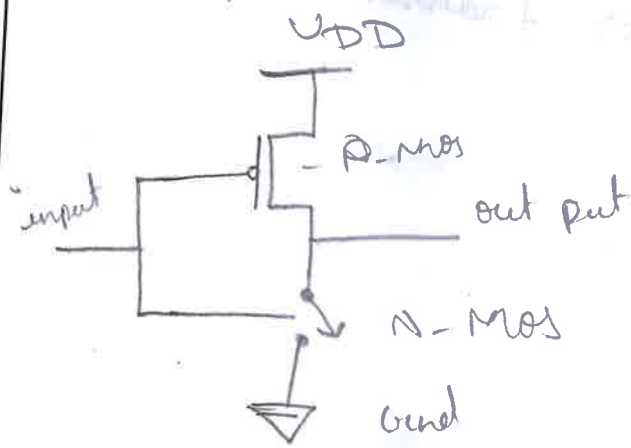
=) there are

1) static Power consumption

2) Dynamic Power consuption

=) the Power consuption has have two case

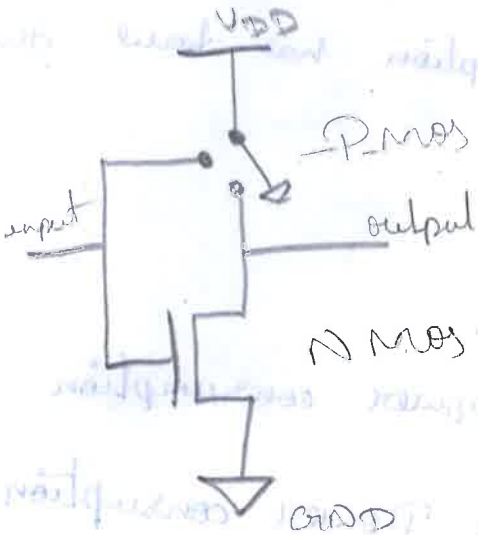
case (i)



=) when we give logic 0 in put the PMOS is ON

=) the N-MOS is OFF

case (ii)



=> when we give the logic 1 input the output is 0

=> N-MOS transistor is work

=> P-MOS transistor is off condiction

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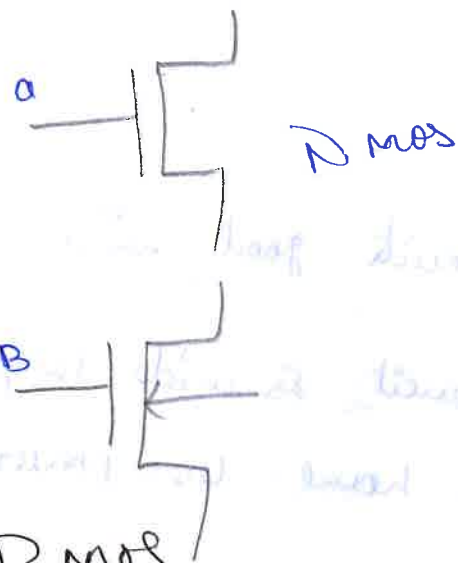
Part A

1) NMOS

=> the NMOS is the electrons of the majority carrier

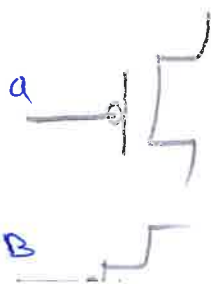
=> when the transistor of the high frequency in the on transistor is low frequency



PMOS

=> the PMOS is holes of majority of carrier

=> when the transistor of the high frequency the off transistor is high frequency



2 ⇒ Draw back of scaling

⇒ Scaling is reduce of cable & transistor in size 30% is their reduces in their every in 1½ year

⇒ the smallest transistor are current dissipated in no cost is cheaper.

3) Advantage of CMOS

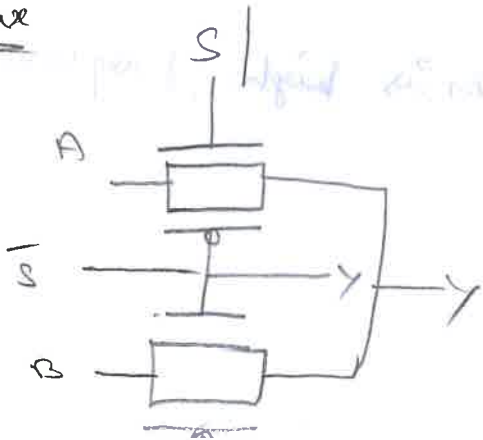
⇒ static CMOS circuits good noise

⇒ static CMOS circuit is made large of power

⇒ static CMOS is have less power

⇒ there are advantage of CMOS

4) 2:1 MUX



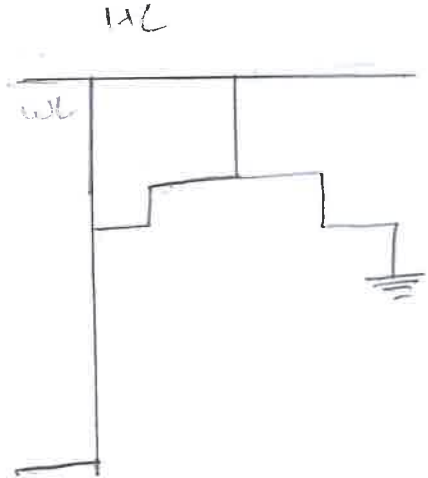
5)

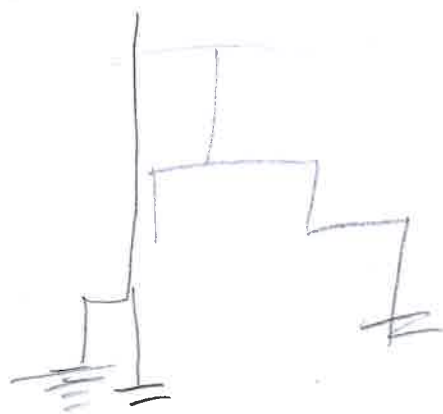
synchronous	Asynchronous
=> the synchronous is the both side in their fast	the Asynchronous is the fast and complex
synchronous is the design is big	Asynchronous is the design is very high

6 schmit trigger

=> the schmit trigger size wave to a square wave in the signal of the wave is low and fast

8 DRAM cell:-





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Continuous Internal Assessment	CIA - II					Unit Test						
Register Number	4	2	2	1	2	1	1	0	6	0	1	1
Department	ECE						Semester	V				
Subject Code	CEC 3351		Subject Title	Transmission Lines and RF System								
Date & Session	16.11.2023						No. of Pages used					

R-MANICKAVASAGAN	
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	0	11	a	✓	8								8
2		—		b										
3	✓	01	12	a	✓	12								12
4	✓	2		b										
5	✓	2	13	a	✓	5								~~0~~ 5
6	✓	1		b										
7	✓	1	14	a										
8	✓	2		b	✓	7								~~7~~ ~~8~~ 7
9	✓	1	15	a	✓	12								12
10	✓	2		b										
Total		12	16	a		—								—
				b										
												Total		424
Grand Total		~~50~~	Grand Total (in words)		FIVE SIX									
Name of the Examiner	56 VLT				Signature of the Examiner			V.LA						

PART-A

5. **Smith chart**

Smith chart is the graphically representation tool. It is used in radio wave transmission line. Smith chart is obtained by constant resistance ra circles and constant reactance xa circles.

4. **VSWR = 1.5**

$$VSWR = \frac{1+|K|}{1-|K|} = 1.5$$

$$1+|K| = 1.5 - 1.5|K|$$

$$|K| + 1.5|K| = 1.5 - 1$$

$$2.5|K| = 0.5$$

$$\boxed{|K| = 0.2}$$

6) **Merits of Double stub matching**

* It is applicable for one frequency
* It is propagate in open wire line and

7) Wave guide

* Wave guide is allows the metallic tube of cross section for the transmission line.

8) TM wave

* Transverse magnetic wave which of the ~~mg~~ magnetic ~~fld~~ field are transverse is called Transverse magnetic wave. Electric field E_z is propagation direction and no magnetic field H_z is propagation direction. $E_z \neq 0$, $H_z = 0$.

9) Modes of bipolar transistor

* Normal (active) mode
* Saturation mode
* cut-off mode
* Inverse mode

10) Requirement of power amplifier

- It has
- It has to have sufficient gain
- It has to sufficient power capability
- It has to stable

PART - B

11.

a) Wave form Distortion

- Wave form Distortion is the transmission in series impedance and shunt admidance is given by

$$Z = R + j\omega L$$

$$Y = G + j\omega C$$

Where

$$\gamma = \alpha + j\beta = \sqrt{ZY}$$

$$= \sqrt{(R + j\omega L)(G + j\omega C)}$$

$$= \sqrt{RG - \omega^2 LC + j\omega(LG + RC)}$$

16/11/23

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Squaring on both sides

$$(\alpha+j\beta)^2 = \left[\sqrt{RG - \omega^2 LC + j\omega(LG+RC)}\right]^2$$

where

$$(a+b)^2 = a^2+b^2+2ab$$

$$\alpha^2+\beta^2+j2\alpha\beta = RG-\omega^2LC+j\omega(LG+RC)$$

equate the real and imaginary parts

$$\alpha^2-\beta^2 = RG-\omega^2LC \quad -(1)$$

$$2\alpha\beta = \omega(LG+RC) \quad -(2)$$

where

$$\alpha^2+\beta^2 = \sqrt{(\alpha^2-\beta^2)+(2\alpha\beta)^2} \quad -(3)$$

Adding the equation (1) and equation (3)

$$\alpha^2-\beta^2+\alpha^2+\beta^2 = RG-\omega^2LC\sqrt{(\alpha^2-\beta^2)+(2\alpha\beta)^2}$$

$$2\alpha^2 = RG-\omega^2LC\sqrt{(\alpha^2-\beta^2)+(2\alpha\beta)^2}$$

$$2\alpha^2 = R\omega + \omega^2 LC \sqrt{(R\omega - \omega^2 LC) + \omega(L\omega + RC)}$$

$$\alpha^2 = \frac{R\omega - \omega^2 LC \sqrt{(R\omega - \omega^2 LC) + \omega(L\omega + RC)}}{2}$$

where subtracting the equation

$$\beta = \frac{\omega^2 LC - R\omega \sqrt{(R\omega - \omega^2 LC) + \omega(L\omega + RC)}}{2}$$

---

12) a) Voltage and current on the dissipation less line

Voltage and current on the dissipation less line is given by

$$E = \frac{E_R(Z_R - Z_0)}{2Z_R}\left[e^{ns}\left(\frac{Z_R - Z_0}{Z_R + Z_0}\right)e^{-ns}\right]$$

$$I = \frac{I_R(Z_R + Z_0)}{2Z_0}\left[e^{ns}\left(\frac{Z_R - Z_0}{Z_R + Z_0}\right)e^{-ns}\right]$$

where

$$\gamma = j\beta \qquad \alpha = 0 \qquad Z_0 = R_0$$

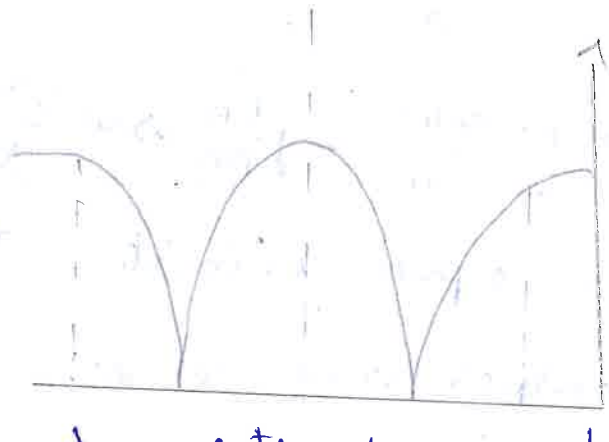
$$E = \frac{E_R(Z_R - R_0)}{2Z_R}\left[e^{j\beta s}\left(\frac{Z_R - R_0}{Z_R + R_0}\right)e^{-j\beta s}\right]$$

$$I = \frac{I_R(Z_R + R_0)}{2R_0}\left[e^{+j\beta s}\left(\frac{Z_R - R_0}{Z_R + R_0}\right)e^{-j\beta s}\right]$$

where $e^{\gamma s}$ is the incident wave in towards the load.

$e^{-\gamma s}$ is the reflected wave in backwards the load.

voltage and current are the transmission line at the any point is fixed maximum or minimum such wave is called as standing wave.



node Anti node node

$$I = I_R \cosh \gamma s - \frac{E_R}{Z_0} \sinh \gamma s$$

where $\alpha = 0$ $\gamma = j\beta$ $Z_0 = R_0$

$$E = E_R \cosh j\beta s + I_R R_0 \sinh j\beta s$$

$$I = I_R \cosh j\beta s + \frac{E_R}{R_0} \sinh j\beta s$$

where $\cosh(j\omega) = j\cos\omega$ $\sinh(j\omega) = j\sin\omega$

$\beta = \frac{2\pi}{\lambda}$ sub in equation

$$E = E_R \cos\beta s + jI_R R_0 \sin\beta s$$

$$I = I_R \cos\beta s + j\frac{E_R}{R_0} \sin\beta s$$

$$E = E_R \cos\frac{2\pi s}{\lambda} + jI_R R_0 \sin\frac{2\pi s}{\lambda}$$

$$I = I_R \cos\frac{2\pi s}{\lambda} - j\frac{E_R}{R_0} \sin\frac{2\pi s}{\lambda}$$

When the open circuit I_R is zero.

current values also zero.

$$E = E_R \cos\frac{2\pi s}{\lambda}$$

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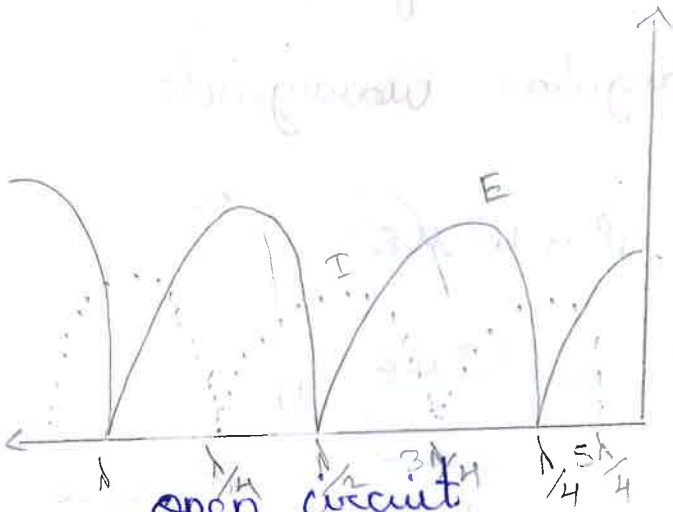
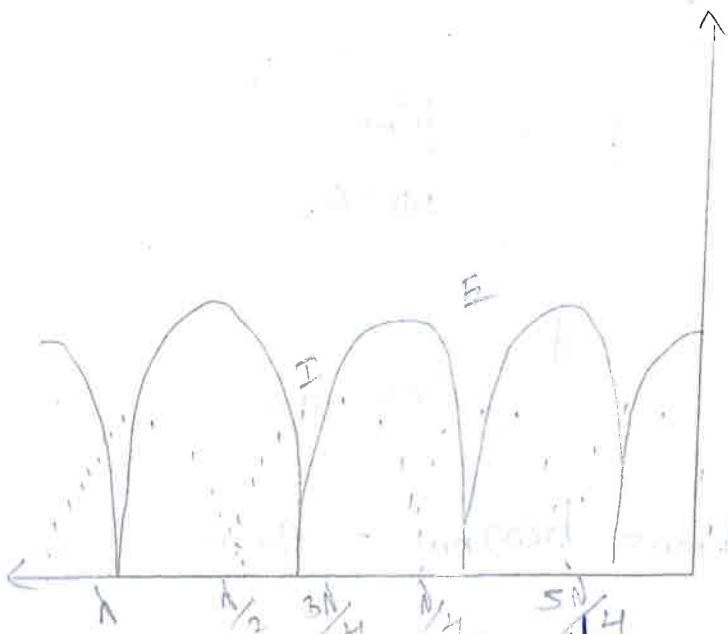


open circuit

When the short circuit for E_R is zero. voltage values are zero.

$$E_{sc} = j I_R R_0 \sin \frac{2\pi s}{\lambda}$$

$$I_{sc} = I_R \cos \frac{2\pi s}{\lambda}$$



short circuit

14. b) characteristics of TM and TE wave in rectangular waveguide

$$h^2 = \gamma^2 + \omega^2 \mu\varepsilon$$

$$\gamma^2 = h^2 - \omega^2 \mu\varepsilon$$

$$\gamma = \sqrt{h^2 - \omega^2 \mu\varepsilon}$$

where $\gamma = \alpha + j\beta$

$\alpha = 0$

$\gamma = j\beta$

$$\beta = j\sqrt{\omega^2 \mu\varepsilon - h^2}$$

$$\beta = \sqrt{\omega^2 \mu\varepsilon - h_{nm}^2}$$

$$h_{nm}^2 = \omega_c^2 \mu\varepsilon$$

$$\omega_c^2 \mu\varepsilon = h_{nm}^2$$

$$4\pi^2 f_c^2 \mu\varepsilon = h_{nm}^2$$

$$f_c^2 = \frac{h_{nm}^2}{4\pi^2 \mu\varepsilon}$$

$$f_c = \frac{h_{nm}}{2\pi\sqrt{\mu\varepsilon}}$$

$$h_{nm} = h(a)_{nm} = q_{nm}$$

$$h_{nm} = q_{nm}$$

$$f_c = \frac{h_{nm}}{2\pi a \sqrt{\mu\varepsilon}}$$

where $\frac{1}{\sqrt{\mu\varepsilon}} = c$

$$f_c = \frac{c\, h_{nm}}{2\pi a}$$

$$\lambda_a = \frac{c}{f_c} = \frac{2\pi a}{c\, h_{mn}}$$

phase velocity V_{ph}

$$V_{ph} = \frac{\omega}{\beta}$$

$$= \frac{\omega}{\sqrt{\omega^2 \mu\varepsilon - h^2_{nm}}}$$

$$= \frac{\omega}{\sqrt{\omega^2 \mu\varepsilon - \omega^2_c \mu\varepsilon}}$$

$$= \frac{\omega}{\omega\sqrt{\mu\varepsilon}\sqrt{1 - \frac{\omega^2_c}{\omega^2}}}$$

$$= \frac{c}{}$$

$$\lambda_g = \frac{2\pi}{\beta}$$

$$= \frac{2\pi}{\sqrt{\omega^2 \mu\varepsilon - \omega_c^2 \mu\varepsilon}}$$

$$= \frac{2\pi}{\omega\sqrt{\mu\varepsilon}\sqrt{\left(1 - \frac{\omega_c^2}{\omega^2}\right)}}$$

$$= \frac{2\pi}{2\pi f_c \sqrt{\mu\varepsilon}\sqrt{\left(1 - \frac{\omega_c^2}{\omega^2}\right)}}$$

$$= \frac{c}{f_c\sqrt{\left(1 - \frac{f_c^2}{f^2}\right)}}$$

where $\lambda_0 = \frac{c}{f_c}$

$$= \frac{\lambda_0}{\sqrt{\left(1 - \frac{f_c^2}{f^2}\right)}}$$

$$\lambda_g = \frac{c^2}{v_{ph}} = \frac{c}{\sqrt{1 - \frac{f_c^2}{f^2}}}$$

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15. Bipolar junction transistor (BJT)

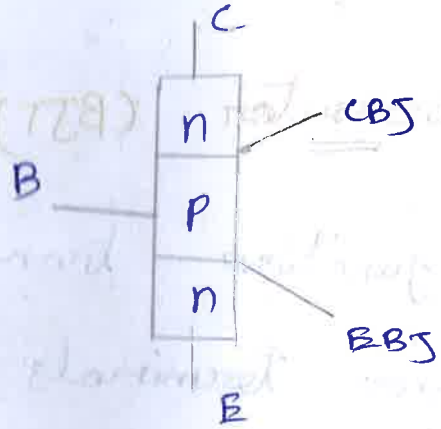
* The Bipolar junction transistor is consider on three terminals. when two terminals are current follows is controlled by the third terminal.

* BJT is applicable in oscillator, detector and amplifier.

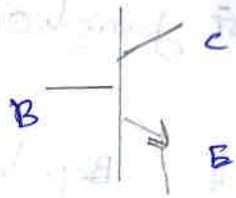
* BJT is consist of two type of materials are n-type and p-type material.

* It is consist of three factors and two junction point. factor of BJT is base, emitter and collector.

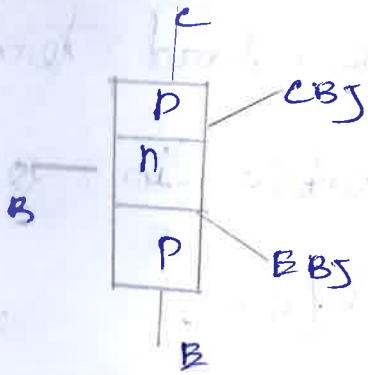
* Junction of the BJT is Emitter base junction (EBJ) and collector



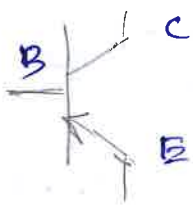
npn transistor



circuit symbol



PNP transistor



circuit symbol

There are three type of configurations as

Common base configuration (CB) and

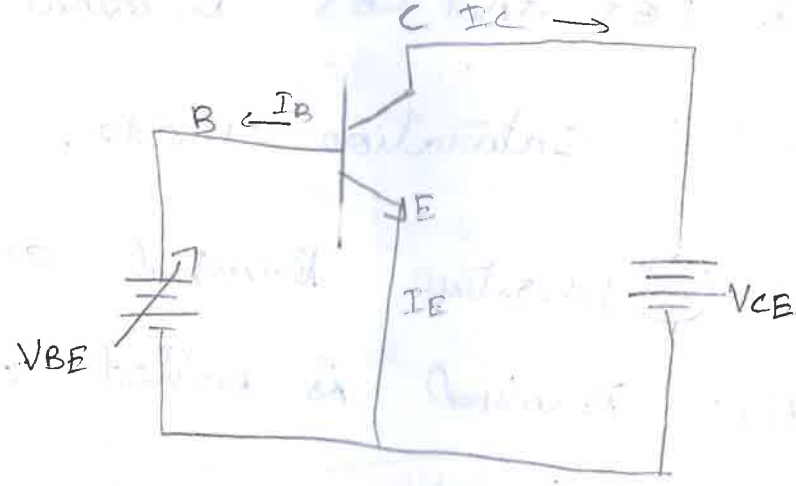
Common Emitter configuration (CE) and

common collector configuration (CC).

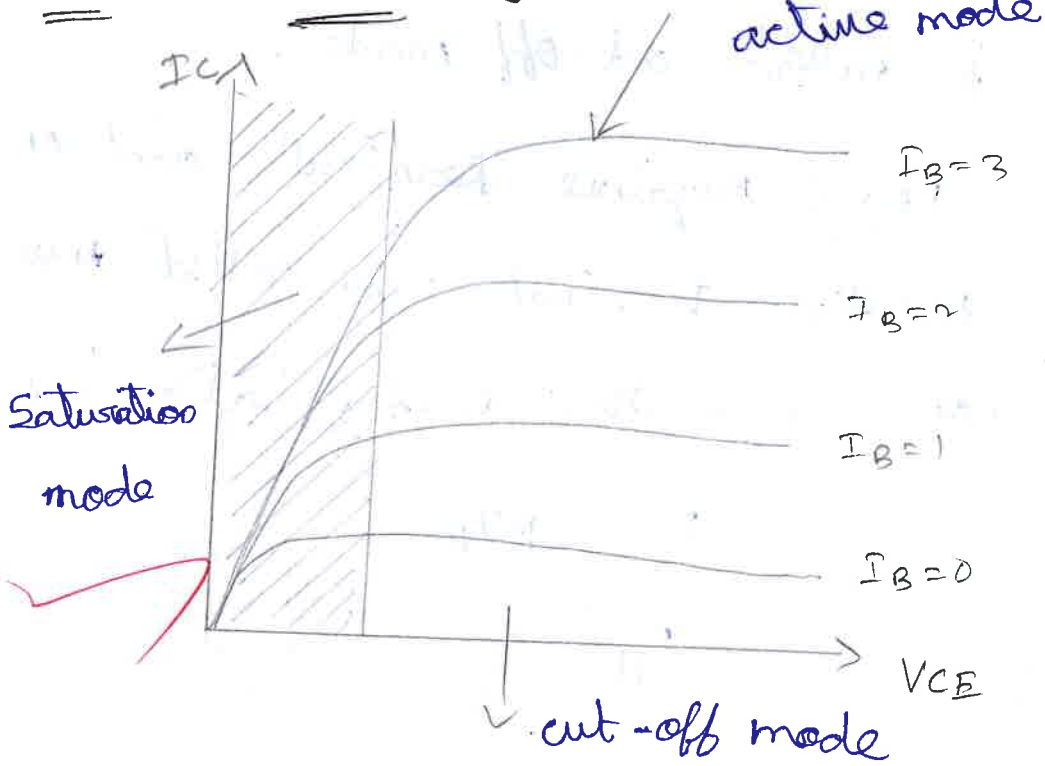
Then most commonly used is common

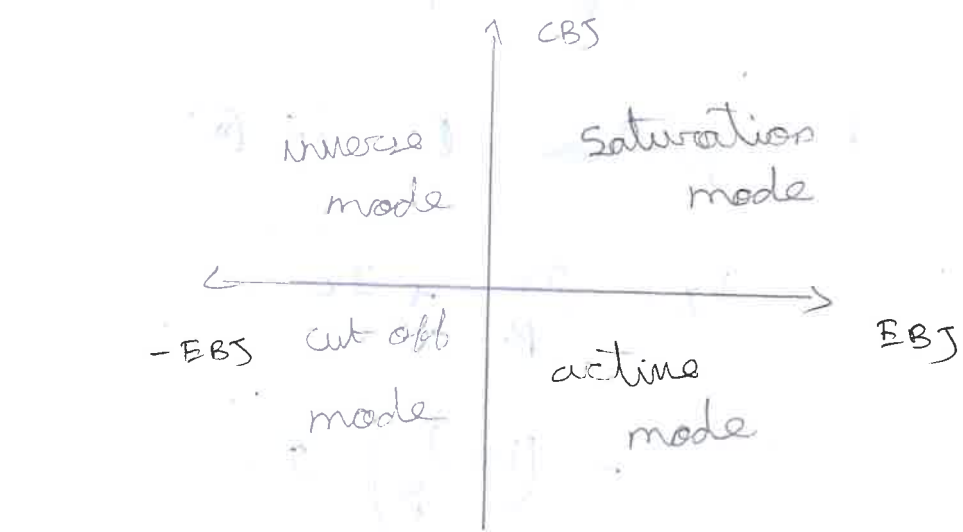
emitter configuration. ~~is~~ Emitter is

connected to the ground terminal.



BJT characteristics





Both EBJ and CBJ terminal are positive is called saturation mode.

EBJ is positive terminal and CBJ is negative terminal is called active mode.

Both EBJ and CBJ terminal are negative is called cut-off mode.

EBJ is negative terminal and CBJ is positive terminal is called inverse mode.

⇒ common emitter configuration is given by

$$I_C = \beta I_B$$

$$I_B = \frac{I_C}{\beta} \quad -(1)$$

where

$$I_E = I_B + I_C \quad -(2)$$

Sub equation (1) in (2)

$$I_E = \frac{I_C}{\beta} + I_C$$

$$= \left(1 + \frac{1}{\beta}\right) I_C$$

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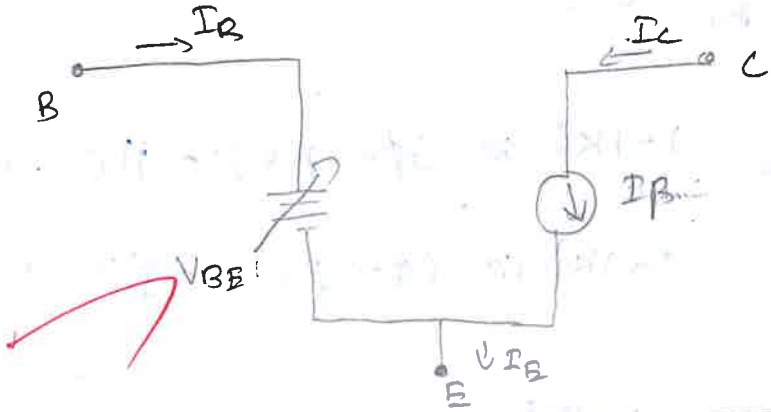
$$= \left(\frac{\beta}{1+\beta}\right) I_C$$

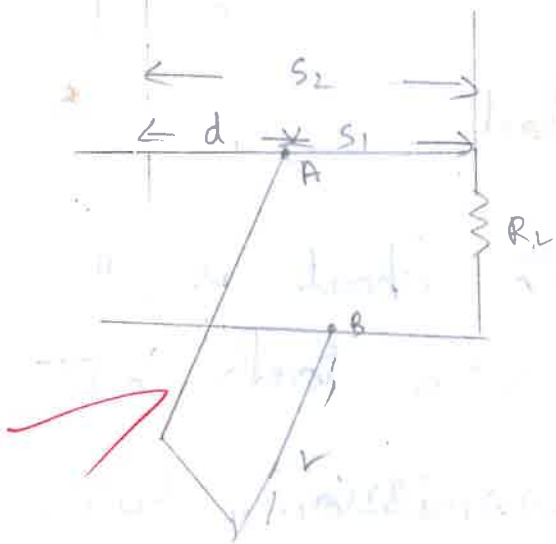
$$I_E = \left(\frac{\beta}{1+\beta}\right) I_C$$

where $\frac{\beta}{1+\beta} = \alpha$

$$\boxed{I_E = \alpha I_C}$$



13. a) Single stub matching



Single stub is connected to the load

impedance expression is given by

$$Z_s = R_0 \left[\frac{1 - |K| \angle \phi - 2\beta s}{1 + |K| \angle \phi - 2\beta s} \right]$$

Admittance expression is given by

$$Y_s = \frac{1}{Z_s} = G_0 \left[\frac{1 - |K| \angle \phi - 2\beta s}{1 + |K| \angle \phi - 2\beta s} \right]$$

$\therefore \frac{1}{R_0} = G_0$

$$G_{ns} = \frac{1 - |K| \cos(\phi - 2\beta s) - j|K| \sin(\phi - 2\beta s)}{1 + |K| \cos(\phi - 2\beta s) - j|K| \sin(\phi - 2\beta s)}$$

$$G_0 = \frac{1 - |K|}{1 + |K| \cos(\phi - 2\beta s) - j|K| \sin(\phi - 2\beta s)}$$

---

9. Smith chart

Smith chart is the graphical representation tools. * It is applicable in transmission line.

(1) Application of Transmission line

* To propagate the waves in coaxial caple line open wire line.

ST. ANNE'S

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Continuous Internal Assessment			II				Unit Test		-			
Register Number	4	2	2	1	2	1	1	0	6	0	2	9
Department	ECE						Semester		05			
Subject Code	CEC 3351		Subject Title	TRANSMISSION LINES AND RF SYSTEM								
Date & Session	16/11/2022 FN						No. of Pages used		16			

V. SHANMUGAM.	V.
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark to show the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C										
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	11	a	✓	9								9
2	✓	2		b										
3	✓	2	12	a										
4	✓	1		b	✓	10								~~9~~ 10
5	✓	2	13	a		-								-
6	✓	0		b										
7	✓	2	14	a		-								-
8	✓	2		b										
9	✓	1	15	a	✓	12								12
10	✓	~~0~~ 2		b										
Total		15	16	a	✓	3								~~0~~ 3
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Grand Total		~~50~~ 50	Grand Total (in words)		FIVE									
Name of the Examiner		V.VMT	Signature of the Examiner		VMT									

S. Sanjai.

PART-B

11) a) WAVE FORM DISTORTION

$$Z = \sqrt{R+j\omega L} \quad \text{——— (1)}$$

$$Y = \sqrt{G+j\omega C} \quad \text{——— (2)}$$

Totally writing the eqn

$$(\alpha+j\beta) = \sqrt{ZY}$$

$$= \sqrt{(R+j\omega L)(G+j\omega C)}$$

$$= \sqrt{RG - \omega^2 LC + j\omega(LG+RC)}$$

taking square root on both side.

$$(\alpha+j\beta)^2 = \left[\sqrt{RG-\omega^2 LC+j\omega(LG+RC)}\right]^2$$

$$\alpha^2 - \beta^2 + 2\alpha\beta = RG - \omega^2 LC + j\omega(LG+RC) \quad \text{——— (3)}$$

Separate the Real and imaginary part of the equation

$$\alpha\beta = RG - \omega^2 LC$$

$$\alpha\beta = j\omega(LG+RC)$$

$$(\alpha+\beta) = \sqrt{\alpha^2+\beta^2} \quad \text{——— (4)}$$

$$= \sqrt{(RG-\omega^2 LC)^2 + (j\omega(LG+RC))^2}$$

Adding eq (3) with eq (5)

$$\alpha^2 - \beta^2 + j2\alpha\beta + \sqrt{(RG - \omega^2 LC)^2 + (j\omega(LG + RC))}$$

$$2\alpha = \left(\beta + \sqrt{(RG - \omega^2 LC)^2 + (j\omega(LG + RC))^2}\right)$$

$$\alpha = \frac{\left(\beta + \sqrt{(RG - \omega^2 LC)^2 + (j\omega(LG + RC))^2}\right)}{2}$$

* In this equation the wavelength of transmission is differs from the frequency of phase delay is called "Distortion".

$$\beta = \frac{\left(RG + \sqrt{(\beta - \omega^2 LC))^2 + (j\omega(LG + RC)^2}\right)}{2}$$

$$\beta = \frac{\left(RG + \sqrt{((\beta - \omega^2 LC))^2 + (j\omega(LG + RC))^2}\right)}{2}$$

* This equation shows the phase delay of the transmission line due the the distortion.

* This equation clearly the wave form distortion in transmission line.

12. b) Input impedence of dissipation less line.

* The voltage and current input impedence are

$$E_S = \frac{E_R(Z_R+R_0)}{2Z_R}\left(e^{j\beta s} + |K|e^{-j\beta s}\right) \quad \text{---- (1)}$$

$$I_S = \frac{I_R(Z_R+R_0)}{2R_0}\left(e^{j\beta s} - |K|e^{-j\beta s}\right) \quad \text{---- (2)}$$

rewrite the equation (1) and (2).

$$E_S = E_R \cos\beta s + jI_R R_0 \sin\beta s$$

$$I_S = I_R \cos\beta s + j\frac{E_R}{R_0}\sin\beta s$$

Therefore the total dissipation less Z_S is.

$$Z_S = \frac{E_S}{I_S}.$$

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$$Z_S = \frac{\frac{E_R(Z_R+R_0)}{2Z_R}\left(e^{j\beta_S} + |k|e^{-j\beta_S}\right)}{\frac{I_R(Z_R+R_0)}{2R_0}\left(e^{j\beta_S} - |k|e^{-j\beta_S}\right)}$$

Put

$$E_R = I_R Z_R$$

$$Z_S = \frac{\frac{I_R Z_R (Z_R+R_0)}{2Z_R}\left(e^{j\beta_S} + |k|e^{-j\beta_S}\right)}{\frac{I_R(Z_R+R_0)}{2R_0}\left(e^{j\beta_S} - |k|e^{-j\beta_S}\right)}$$

$$= \frac{I_R(Z_R+R_0)\left(e^{j\beta_S} + |k|e^{-j\beta_S}\right)}{\frac{I_R(Z_R+R_0)}{R_0}\left(e^{j\beta_S} - |k|e^{-j\beta_S}\right)}$$

$$Z_S = R_0\left[\frac{\left(e^{j\beta_S} + |k|e^{-j\beta_S}\right)}{\left(e^{j\beta_S} - |k|e^{-j\beta_S}\right)}\right]$$

$$Z_R = \frac{\left(1\angle\beta_S + |k|\angle\phi\angle\beta_S\right)}{1\angle\beta_S + |k|\angle\phi\angle\beta_S)}$$

Dividing $1\angle\beta_S$ on both numerator and denominator

$$Z_S = \frac{(|K| + \phi \angle \beta S)}{(|K| + \phi \angle \beta S)}$$

The maximum dissipation less line

$$Z_{S_{max}} = \frac{(|K| + \beta S > \phi)}{(|K| + \beta S > \phi)}$$

$$Z_{S_{max}} = \frac{(1 + |K|)}{(1 - |K|)}$$

The minimum dissipation is

$$Z_{S_{min}} = \frac{(|K| + \beta S > \pi)}{(|K| + \beta S > \pi)}$$

$$Z_{S_{min}} = \frac{(1 - |K|)}{(1 + |K|)}$$

The dissipation less line in input is

$$E_S = E_R \cos \beta S + \tan I_R R_0 \beta S$$

$$I_S = I_R \cos \beta S + \frac{E_R}{R_0} \tan \beta S$$

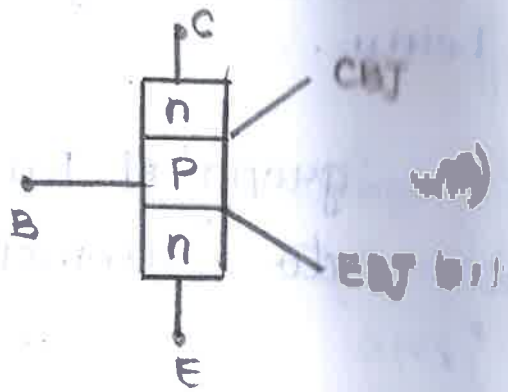
15) a) bipolar junction transistor. (BJT)

* Bipolar junction transistor (BJT) is a non linear three terminal semiconductor device.

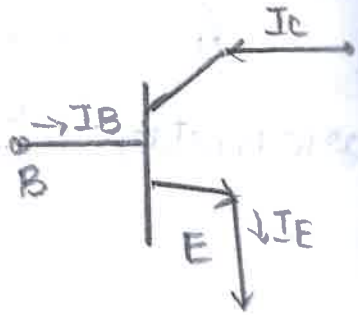
* The current flow through between the two terminal is controlled by another.

* BJT are usually used in amplifier, oscillator, switching device, etc.

* BJT has three layers of semiconductor of used (n-p-n) either (p-n-p).

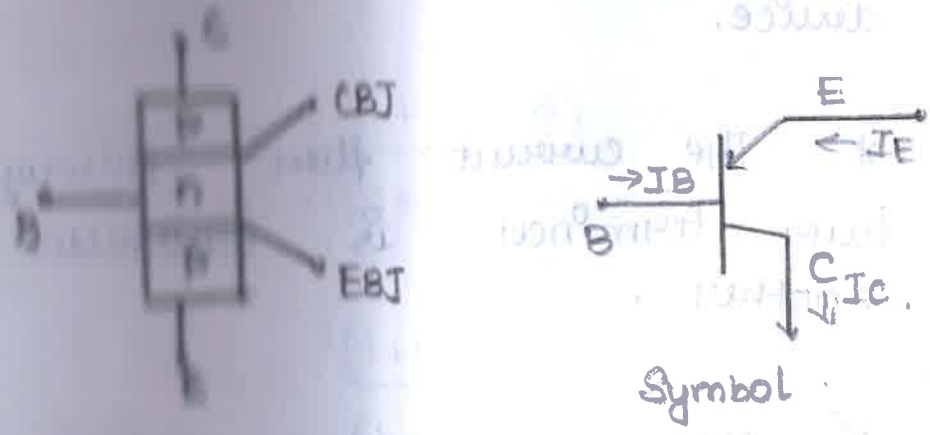


layout diagram of n-p-n BJT



b) Symbolic diagram of n-p-n BJT.

* BJT have two junction such as collector - Base junction (CBJ) and emitter - Base junction (EBJ).



Graphical Representation of BJT.

* The circuit connection of BJT is connected then the I-V characteristis of BJT is obtained by graph. shown in below.

* To plot the graph of BJT, first it was connected to "common emitter configuration".

* The source voltage (two) are given to VBE and it was plot based on parameter (IB) of the circuits.

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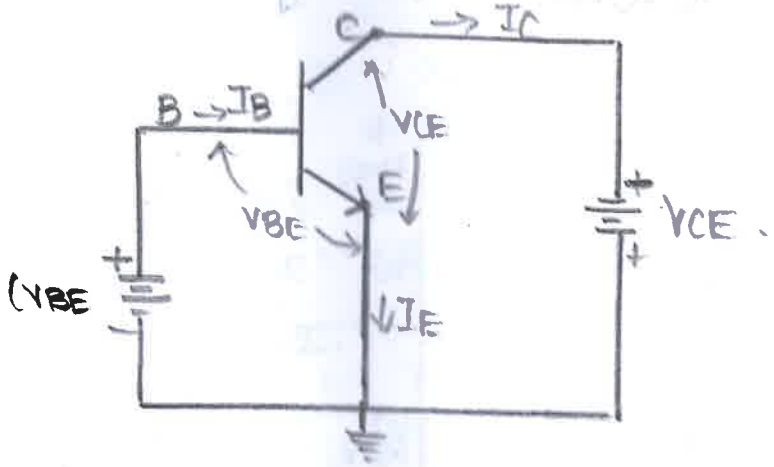
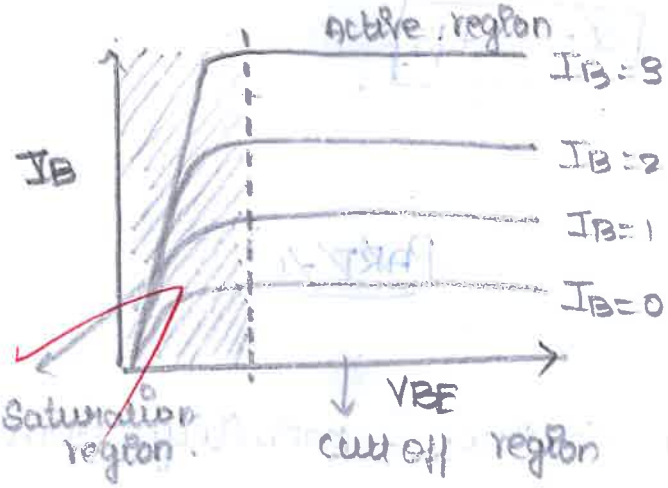


BJT in common emitter configuration.

I-V characteristic of BJT.



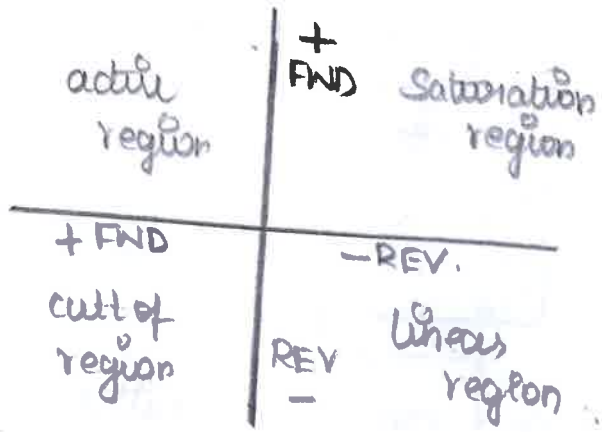
BJT is Biasing under the two DC voltage is given to the circuit on VBE and VCE.

TYPES OF Biasing

* It has two type based on the condition of Biased BJT.

FWD BIASING

* Forward Biasing
* Reverse Biasing.



$\alpha = 1 + 1/\beta$

$\alpha = 1 + \beta$

PART-C

16) a) High electron mobility transistor.

* High electron mobility transistors are conduction electron in high level.

PART-A

1. Application of transmission line.

* They are used to change energy from one circuit to another.

* They are used as matching device

* They are used to measuring device.

* They are used as circuit elements such as Resistor, capacitors, Inductors.

2. phase distortion.

* phase distortion is defined as the wavelength of the transmission line is less than the frequency of phase line is called as phased distortion.

3. Smith chart

* Smith chart is a graphical representation, to solve the transmission line frequency problem.

- It is based on superposition of reflection circle ar and [illegible] circle ar.

5. [illegible] of Smith chart

- It is used to measure VSWR and [illegible] coefficient.
- It is used to find wavelength of [illegible] line.
- It is used to find standing wave ratio.

6. [illegible] guide:

- [illegible] guide is a Hollow metallic conducting tube with cross section. It allows wave to propagate into the tube for transmission.

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8. TM wave

* ~~The~~ In TM wave the electric field strength of the wave is "transverse". The magnetic field H is not present to direction of propagation.

$H=0 \quad E\neq 0$.

9. diffrent mode of bipolar transistor

* There are two different mode based on the condition of basing

  * Forward Biasing
  * Reverse Biasing.

10. requirements of power amplifier.

* Modulator
* Bandpass filter
* ~~Or~~ oscillator.

4. given

$$VSWR = 1.5$$

$$\frac{1+|K|}{1-|K|} = 1.5$$

$$(1+|K|) = (1.5)(1-|K|)$$

$$|K|+|K| = (1.5)(1-|K|)$$

$$2|K| = 1.5$$

$$|K| = \frac{1.5}{2}$$

$$|K| = 0.75$$

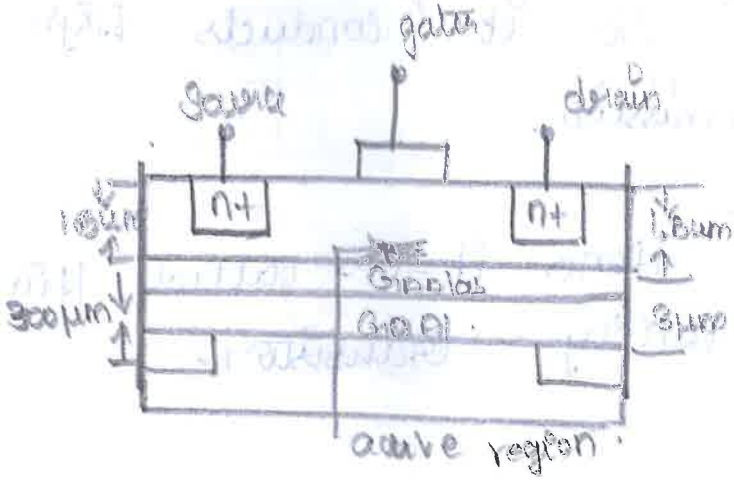
PART-C

16) a) electron mobility transistor.

* electron mobility transistor have high conduction of electron in the transistor.

** The semiconductor layer NAlAs and NaAs. are higher semiconductor region.

* The diagram for the high mobility transistor.



* It has several steps to construction

CONSTRUCTION:

* The high electron mobility transistor has constructed by semiconductor layers.

* The GaAlAs and GaAs material are presented under the active region of the layer.

* So it conducts the high electron from the source.

* The space of the layer is 300μm and 1.5μ and of source layer.

* The size of depletion side layers of 1.3μm and 3μm.

* As it conducts high electron of emission.

* Hence it is called high electron mobility transistor.

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Continuous Internal Assessment			1				Unit Test					
Register Number	2	0	2	3	E	E	E	0	0	9		
Department	EEE						Semester	I				
Subject Code	HS 3152		Subject Title	PROFESSIONAL ENGLISH - I								
Date & Session	23.11.2023 [FN]						No. of Pages used					

Dr. M. Ravitha Manjunaganan	MM 23/11/23
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	12	11	a	✓	6 2/2								62
2	✓	0	(11b)	b										
3	✓	12	12	a										7
4	✓	13	(12)	b	✓	7								
5	✓	1	13	a	✓	5								~~8~~ 5
6	✓	12	(13)	b										
7	✓	2	14	a										
8	✓	2		b										
9	✓	1	15	a										
10	✓	12		b										
Total		132	16	a										
				b										18 1/2
												Total		~~19~~ ~~13~~
Grand Total		~~30~~ 32	Grand Total (in words)		Three Two (64)									
Name of the Examiner	P. ALBERT RAJ				Signature of the Examiner	P. ALBERT								

1. Frame "wh" question:

1. when did they conducted the interview?

2. ~~How long time do would like~~

2. How long do you like to stay in the hostel?

2. 1. Grennius

2. Illiterate

3. Adi

4. Greekthology

3. 1. function x malfunction

2. mobile x immobile

3. regular x Irregular

4. sufficient x unsufficient

4. 1. has

2. has

3. were

4. has

5. preposition:

from

to

for

of

6. 1. are living

2. catches

3. is preparing

4. are

7. Yes or NO questions:

1. Did he attend the meeting?

2. Did he decide to leave his wife?

8. 1. who

2. where.

9. 1. productively

2. break

10. question tag

1. aren't it?

2. are they?

part - B.

11. FROM: 23.11.2023

xxx,
Department representive,
II year, polymer technology.

TO:
Department HOD
II year Department of polymer technology
chennai - 600045

Dear madam,

Sub: report on the one-day Industrial visit to MRF Tyres.

On receive the a letter of permission from MRF Tyres, Manali, chennai. with two faclity membrane went go to on the industrial visit on 28.11.2023.

we all assembled at the college of S.CAM. and we left on the college van.

we reached the company at 10AM. charge of the protection Engineer - in-charge at the entrance and gave brief introduction to company. we give mask to be wearing. it took around from at one session. The next and explain the process of involve in the making it types. a work from Everyone wearing the mask. The workers are concentrated in ~~se~~ work. They are leave to as end 2.00pm. They premises and left the factory 3.00pm.

It is a Interesting and successful we get few applications of polymer technology. we expers thank to HOD from go it and the official ~~was~~ who department

Thank you

yours faithfully,

sd,

12. b) Email writing

FROM:

Abi @ gmail.com

TO:

Kamala @ gmail.com

Sub: Congratulating your promotion.

Thanking you information me about your promotion to team leader within a short span time three promotion place occupaying it takes it atleast six months of time for getting promotion, since you have permissions promoted. It is have nicely one of you. I wish good luck your getting promotion. step by step of C.M level before you reach in 3 years. you potential in the right way.

I pray to the almight to bless with good health take care

Lovingly,

8) since of undefinite in the internet in 1960s. and with documented networking technology global service. Internet used for more purpose in the world. The population as well as are fellows Business, Entertainment, Education and e-commanee online shopping in all process.. Internet uses as a Information for Business. Internet uses in a mobile phone. Internet uses in the corona time used on the online classes. Internet used in production. Internet used in computer and mobile phone, Education and more purposes in the world.

10. Part A. Question Tag:

1. The buses are always crowded, aren't ~~it~~ they?

2. They are not visiting their grandparents, ~~are they~~?

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Continuous Internal Assessment			II				Unit Test	–				
Register Number	4	2	2	1	2	3	1	0	6	0	3	4
Department	ECE						Semester	01				
Subject Code	HS8152		Subject Title	Professional English								
Date & Session	21.02.23	[F.N]					No. of Pages used					

V. YOGAMBARI Name of the Hall Superintendent	21/02/23 Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	11	a										
2	✓	2		b	✓	8	9							8 9
3	✓	2	12	a	✓	9								9
4	✓	2		b										
5	✓	2	13	a	✓	7	9							7 9
6	✓	2		b										
7	✓	2	14	a										
8	✓	1		b										
9	✓	2	15	a										
10	✓	2		b										
Total		19	16	a										
				b										
												Total		27
Grand Total		46 ~~45~~	Grand Total (in words)		Forty Six = 92									
Name of the Examiner	P.ALBERT RAJ				Signature of the Examiner			P. Albert Raj						

PART-B

11. b) Keep the Environment Clean and green.

i) Plant saplings and wherever possible and grows trees.

ii) Do not cut the trees, in the name of development.

iii) Use green fuels and bio fuels for transportatio for industrial and domestic purposes.

9

iv) Maintain the vehicles in good condition.

v) Segregate of waste at source and dispose the garbage properly.

vi) Avoid using Plastic bags.

vii) Do not spit in the public places.

viii) Protect the water bodies by not dumping waste into them.

ix) Keep Our Surrorendings clean.

x) Keep Our enviroment clean and green.

12. D

Recommendation

Healthy Lifestyle

i) Exercise should be done on a daily basis. A 30-40 minute walk / jog with some friends is highly recommended.

ii) A nutritious meal with lot of proteins, fibers and less carbohydrates, fats and sugar must be taken.

iii) One should be conscious of the gained weight. Measure should be taken to lose the excess weight.

9

iv) Screen time should be reduced as much as possible. To be practical, One who has to sit before the computer should stand up and walk around at least for 2 minutes once in 30-40 minutes.

v) It is necessary to keep oneself hydrated by drinking lot of water.

vi) It can comprise vegetables or fruits, milk

PART-B

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12. A) Recommendation

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iv) Screen time should be reduced as much as possible. To be practical, One who has to sit before the computer should stand up and walk around at least for 2 minutes once in 30-40 minutes.

v) It is necessary to keep oneself hydrated by drinking lot of water.

vi) It can comprise vegetables or fruits, milk

vii) Seven to eight hours of quality sleep should be maintained.

viii) which helps in boosting ones immune system.

ix) Reading habit can be inculated rather than spending time on gadgets.

x) Positive thinking has to be nurtured essentially to face any kind of problem, challenge with confidence.

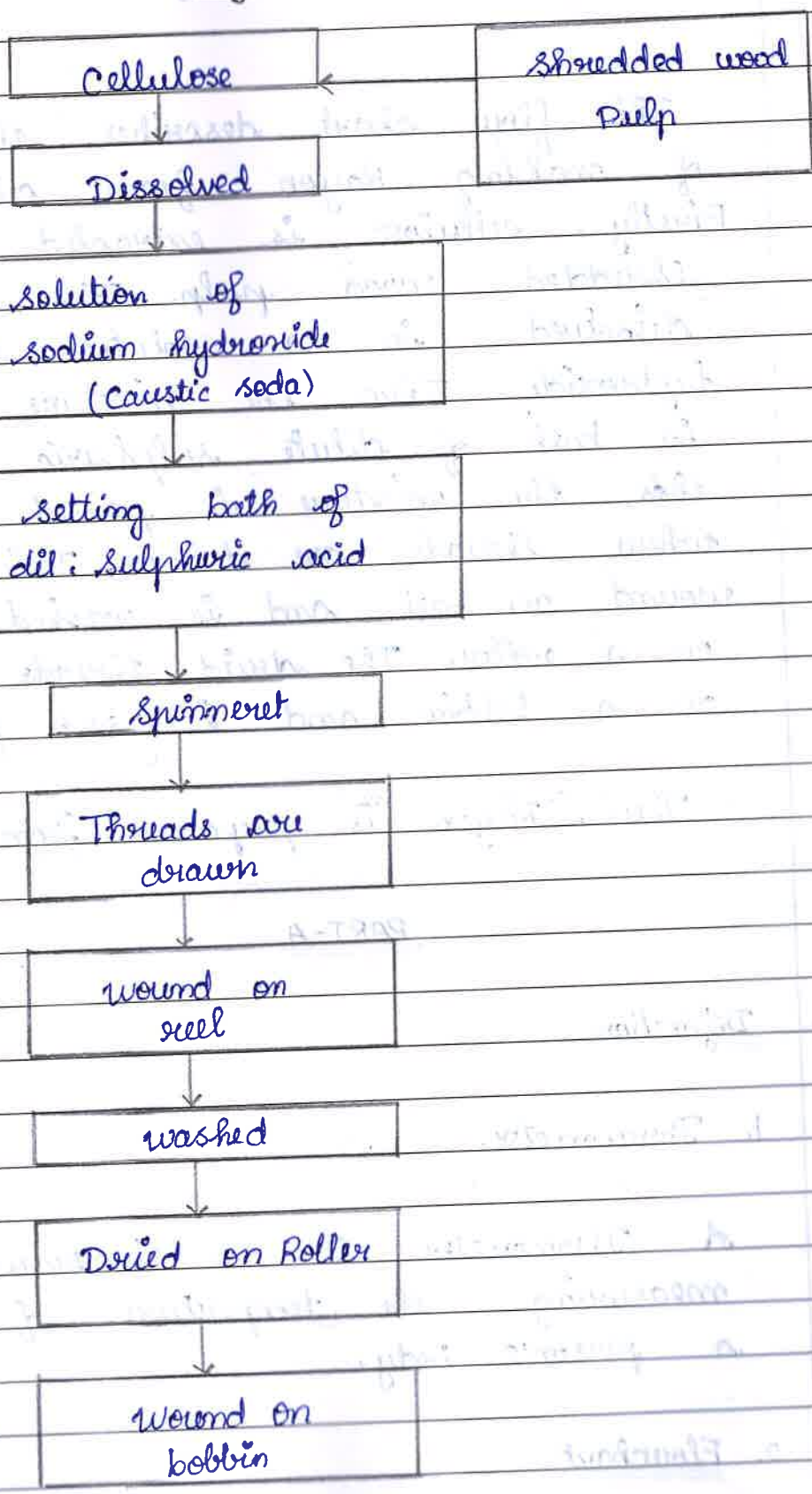
REG.NO. 4 2 2 1 2 3 1 0 6 0 3 4

Page No. 4

21/12

13. a) Flowchart

Rayon.



Title :

The process of making Rayon.

This flow chart describes the process of making Rayon from cellulose. Finally, cellulose is extracted from the shredded wood pulp. Then, cellulose is dissolved in a solution of sodium hydroxide. Then, the mixture is immersed in bath of dilute sulphuric acid. After this, the mixture is passed into spinneret. where threads are drawn. This threads is wound on reel and is washed and dried on a motor. The dried threads on wound on a bobbin and is sent for distribution

∴ Thus, Rayon is prepared from Cellulose.

PART-A

1. Definition

1. Thermometer.

A Thermometer is an instrument for measuring the ~~temperture of air~~ or a person's body.

2. Flowchart.

A Flowchart is a diagram that shows the sequence of ~~operations~~ or a progression

through a process or system.

2. Articles.

1. an
2. the
3. the
4. the

3. Collocation.

1. heavy
2. Opportunity.
3. devoted
4. check

4. Phrasal verb

1. called off
2. switch on
3. brought up
4. Put up with

5. Relative Pronoun.

1. where
2. who
3. which
4. when

6. Homophones

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

7. Adjectives

1. [illegible]
2. [illegible]
3. taller
4. [illegible]

8. Degree of comparison.

1. No other boy is so tall as sanjay any other boy in the class.

2. China is more popular than any other country in the world.

9. Compound nouns.

1. Railway station.
2. Traffic light.
3. Book store.
4. Bus stop.

10. Content words.

1. English, musical, language.
2. We, living, chennai, 2000.

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EVEN SEMESTER

GRIEVANCE REGISTER

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EXAMINATION GRIEVANCE ENTRY

PERIOD :JAN 24 -DEC 24

S.NO	DATE	NAME	REG.NO	DEPT/ YEAR	EXAM DATE	SUBJECT CODE/NAME	DATE OF EXAM	COMPLAINT	REMARKS WITH DATE
1.	23.4.2024.	E. EZHILARASAN	422122104013	CSE/ II YEAR.	23.4.2024.	GE 3451 –	23.4.2024 CIA-I	To increase MARK.	Rectified 24.4.2024.
2.	25.4.2024.	A. JEGATHESWARI.	422121105020	EEE/ III YEAR.	24.4.2024.	EE 3007	24.4.2024 CIA-II	To increase mark	Rectified 25.4.2024.
3.	27.4.2024.	S. HARISH	422122105009	EEE/ II YEAR.	25.4.2024.	EE 3402.	25.4.2024 CIA-I	To increase mark.	Rectified 27.4.2024.
4.	1.5.2024.	M. DHIVYADHARSHAN	422122104008	MECH/ II YEAR.	30.4.2024.	ME 3491	30.4.2024 CIA-I	To increase mark.	Rectified 1.5.2024.
5.	5.6.2024.	T. JENIFER DENCY	422122105010	EEE/ II YEAR.	3.6.2024.	EE 3401	3.6.2024 CIA-II	To increase mark.	Rectified 5.6.2024.

V. Venkatesan
20/6/2024
EXAM CELL CO-ORDINATOR

PRINCIPAL

Dr.R.ARUKIADASS, M.E., Ph.D.
Principal,
St.Anne's College of Engineering & Technology
ANGUCHETTYPALAYAM
Siruvathur-(Post), Panruti
Cuddalore-(Dist), Pin

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Continuous Internal Assessment	1						Unit Test	-					
Register Number	4	2	2	1	2	2	1	0	4	0	1	3	
Department	CSE						Semester	04					
Subject Code	GE 3451			Subject Title	ESS								
Date & Session	23.04.2024 / FN						No. of Pages used	12					

Dr. M. KAVITHA MAYILVAGANAN	M. Kavitha
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	~~11~~ 6	a	✓	4	✓	6						10
2	✓	1		b										
3	✓	1	~~12~~ 7	a										
4		1		b	✓	6								6
5	✓	2	~~13~~ 8	a										
6				b	✓	6								~~03~~
7			14	a										
8				b										
9			15	a										
10				b										
Total		06 (28)	16	a										
				b										
											Total			~~19~~ 22
Grand Total		~~28~~ 28	Grand Total (in words)		Two eight									
Name of the Examiner	S. Romya				Signature of the Examiner	S. [signature]								

Part-A.

5 thermal pollution

Thermal pollution is the heat of water to produce electricity and lower the water oxygen level that harmful to the human beings and aquatic life.

Part - B

6 a)

i) Value of biodiversity.

consumptive value

Productive value

Social value

Ethical value

Asthetic value

option value

Consumptive value

It is a direct utilization of biodiversity to modern in nature. The major parts are plants, food and fuel.

eg:

Medicinal plant - Bamboo, neem, honey comb, herbs etc.

Food - Seasonal fruits, Vegetable, chicken, Fish, duck etc.

fuel - Biomass, coal, petroleum etc.

Productive value

The several products are synthesized by the biodiversity of products in modern society. The major parts are plants, animals and by product:

eg:

plants - wood, cotton, oilseed, food etc.

Animal - leather, Silk, Wool, tusk etc.

Social Value.

It is a biodiversity of social aspect. It have lot of animals and plants, productive and consumptive values are closly related to social concern.

eg:

Holy plants: Banana, neem etc.

Holy animals: Tiger, peacock, lion etc.

Asthetic value

It is beautiful and wonderful of modern in society. plants and animal are beauty, joy, and recreation process etc.

eg:

neem leave, Mango leave used to decorate flower, ornamental plants are used for festivals.

elephant and horse are used to

REG.NO. 4 2 2 1 2 2 1 0 4 0 1 5

option Value

The option value is a potential of biodiversity that presently unknown and they need to known. The option value of biodiversity are species they are proved to be on valuable species after somedays.

eg: The major disease in our country don't have medicine and they found for that like AIDS and cancer.

ii) Threats of Biodiversity.

Deforestation

Deforestation is used to destroy the forest for human purpose like industries, government project etc.

Government project:

Roads
Railways
Airways.

Industries

paper mill
Rice mil

urbanisation

Food and fuel.

Hunting (Poaching)

Hunting is used to kill the Animal for several purposes. Hunting are classified in to two types.

* Subsidence
* Commercial.

Subsidence

It is used to kill the animal for food is called subsidence

Commerical

It is used to kill the animal for illegal trades. leather and skin called commerical.

Human population

over exploitation from human beings in our country they destroy the plants and animals in our day today life.

Commercial activities

wealth of wildlife

importer of wildlife

Agriculture Farming

They have land to use for planting for foods

Aquatics

Aquaculture.

It is a aquatic life.

eg: Fish

algae

7 b)

i) Solid waste Management.

urban (or) municipal waste

Industry waste

Hazards waste.

urban waste

Construction waste

Biomedical waste

Commercial waste

Biodegradable waste

Non-Biodegradable waste

Human waste.

Human waste

Human waste is used to produce large amount of foods and snacks.

Construction waste.

It is produce large quantity of raw materials.

eg: Steel, Bricks and cement.

Commerical waste.

It is produced by some small workers.

eg: plastic bad, food, market, paper etc.

Biomedical waste.

It is produce by some clinic and hospital.

eg: needle, tablets and plastic bags etc.

Biodegradable waste.

It is used to urban the solid waste to degradable by micro-organism is called Biodegradable waste.

eg: paper, cloth. etc

Non-Biodecradable waste

It is used to urban the solid waste to not decraidable by micro-organism is called non-Biodecradable waste.

eg: plastic bag, needle and tablets etc.

Industries waste

Nuclear power plant

thermal power plant

Nuclear power plant

It produce large quantity of heat.

thermal power plant

It produce large amount of electricity.

eg; heating the water.

other Industries

paper mill, Rice mill, Sugar mill they are producing large amount of waste.

Hazards waste:

Acid which are inorganic salts

eg: cancer.

Skin Alergy

neck pain

8 b)

Noise pollution

It is unwanted sounds for all living organism and also harmful our health.

Causes

Industries pollution
Transport Pollution
Neighbourhood Pollution

Industries pollution

It gives large amount of sound that are affect the workers like tensions and ear problems. It have lot of machine in our country. It also have tenique sound produced. In our world one company causes health problem of lot of workers. Factory are produced 90 to 100 DB Sound.

Transport pollution

It gives large amount of pollution like petrol engine, desial engine vechicle. Nowdays All are having own vechicle that suffer Traffic also and polluted human healths. Each one member having unique Vechicle that produce lots of sound road side they are affected. The vechicle are car, bike, lorry, desial engines etc.

Neighbourhood pollution

It produce lot of sound like TV, FM and ultrasonic wave etc. The human having a 60 to 80 DB Sound. That are in our day to day life going in our mobile they all speaking with our tension so produce loud to speak another person they causes the noise pollution.

Effect.

It affect the Human health care

It produce harmful toxic gas.

It affect the human ears by ultrasonic sound.

It causes the human bone broken muscle affect and tension.

control measure of noise pollution

The don't use individual one person to travel the own vechile because that causes noise pollution

Industries are running at all time that's why don't run at any time because cause noise pollution

Individual person can use one mobile that also noise pollution

So we use lot of

one vechicle, Tv and Radio etc that's only don't have noise pollution highly.

Part: A

1 Eco system

That represent prevention of one particle to another till the condition of same particle is called eco-system.

eg:

biotic - Living organism
Abiotic - Non-living organism

3 Air pollutants

Source

Transported Vechicle
Animal manure
Industrial gas.

Effect

Toxic gas
Affect the water

REG.NO. 4 2 2 1 2 2 1 0 4 0 1 5

2 genetic and species

Species

The hot-spots of geographic area which process high endemic species.

genetic

It is genetic disorder in our human body.

6 a(ii) Solution for the threats

Human could affect the any animals, plants and by products thats the solution for the threats

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Continuous Internal Assessment	CIA - II						Unit Test	–				
Register Number	4	2	2	1	2	1	1	0	5	0	2	0
Department	BE-EEE						Semester	VI				
Subject Code	EE-3007			Subject Title	SMART GRID							
Date & Session	24/04/24 & F.N						No. of Pages used	13				

M. SYED MUBARAK	
Name of the Hall Superintendent	Signature of the Hall Superintendent

A. Jaythony

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C *													
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	11	a										
2	✓	2		b	✓	12								12
3	✓	2	12	a										
4	✓	2		b	✓	12								12
5	✓	2	13	a										
6				b	✓	13								~~13~~ 13
7			14	a										
8				b										
9			15	a										
10				b										
Total		10	16	a										
				b									Total	~~30~~ 37
Grand Total		~~90~~ 94	Grand Total (in words)		nine four									
Name of the Examiner		ARTHI-T	Signature of the Examiner											

PART - A

1. SUBSTATION AUTOMATION :

A substation automation is a system that is collection of hardware and software components. the substation automation is automates repetive, tedious and error prone activities and improved system reliability and efficiency.

2. BENEFITS OF SMART GRID :

* Enhance cyber security
* fault detection
* Enhance Reliability
* Real time data analysis
* Improved efficiency

3. ELECTRIC VEHICLE :

The electric vehicle is the type of vehicle that is works entirely electricity with the

4. DISTRIBUTION TRANSFOMER :-

* the high efficiency distribution transformer is designed : loss less of energy and the using componets are high effiient meteriels are designed and low latency characteristi

5. WAN :-

* The WAN is defined as the "Wide area network".

* the WAN is also connected in large areas such as city's, stations, buildings, Industries

* the group of lan's is connected with WAN

PART - B

6)

B) WIDE AREA MONITORING, PROTECTION & CONTROL :-

the Wide area network is also depend upon the three characteristics these are

* Monitoring
* Protection
* control.

WIDE AREA MONITORING :-

* the Wide area monitoring is assigned by smart grid technologies.

* the reliable sensors and pmu(s) are connected.

* these sensors and pmu's are monitoring the relal time data's

* it is also improved the system efficiency

WIDE AREA PROTECTION

* the wide area protection is protected from the cyber attacks.

* so the system is reliable and life full of give better efficiency

* so the whole area is full of secured condition

WIDE AREA Control

* the wide area control is assigned by smart grid technology

* and the area have automatic control from cyber threats

* the area is full of control and secured.

PMU :-

* the PMU is called as phasor measurment unit.

* it is used to estimate magnitude and phase angle of an electrical phasor quantity.

* the resulted phasor is also called as synchro phasor.

* the pmu is practically high cost for placement.

KEY PRIVE :

RENEWABLE ENERGY INTEGRATION :

* In the smart grid the renewable energys are connected in grid lines

* so it is better load management capabilities and improved efficiency

SYSTEM MONITORING :

* the Smart grid technologies the wide area monitoring is allows real time data measurments.

* and also monitoring more accurate data.

SYSTEM PERFORMENCE :

* It is also enhanced reliability and improved efficiency

* and also offers hardware and software components.

BENIFITS:-

* Enhance cyber sequrity
* fault detection
* Enhance relaibility
* Real time measurments
* Improved effiency.

E - VEHICLE:-

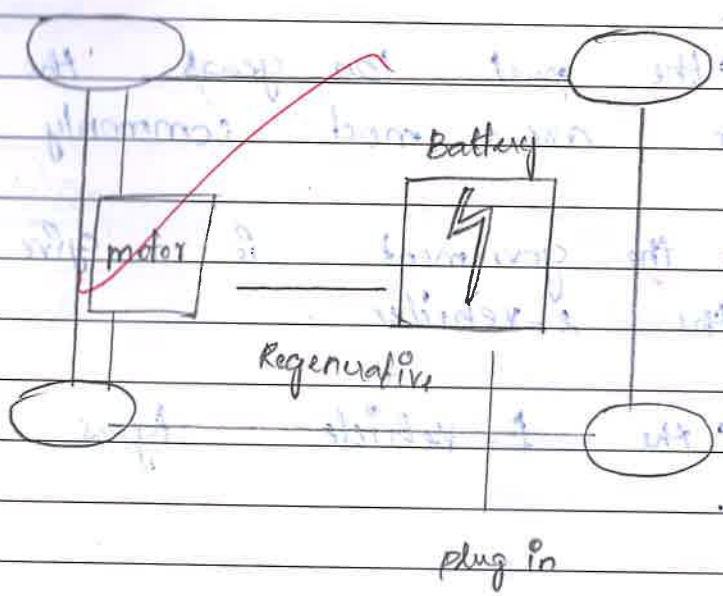
* the electric Vehicle is the type of Vehicle is used the whole entirely is system full of electricity.
* the Vechile is driving with the help of large motors and batteries.
* the past 100 years the electric Vehicles are most commonly use.
* the gorvment is give the importance of the e-vehicles
* the E- Vehicle types is also given below.

the four type of E-Vehicle is

* Plug in electric Vehicle.
* Hybrid electric Vehicle
* plugin Hybrid electric Vehicle
* fuel cell electric Vehicle.

PLUGIN ELECTRIC VEHICLE (PEV's) :

* the plug in electric Vehicle's are run with batteries and motors.
* the Vehile batteries is charged in grid substation.
* It has zero emission gas. so eco friendly.



REG.NO.

Page No. 8

WORKING :-

* the motor battary is produced dc power but the motor is converted ac power

* it also work in Ac

* the press pedal the pedal is signal through the controller

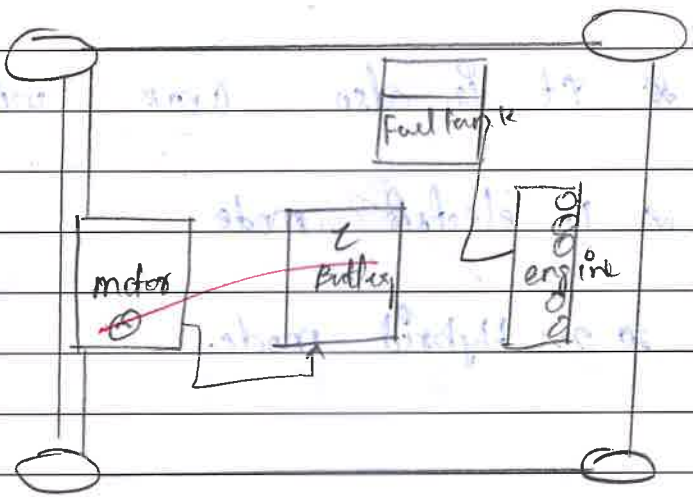
* the controler is reduced the frequency also speed reduce

* the car is stoped.

PLYBRID ELECTRICAL VEHICLE :-

* the Hybrid electric vehicle is also connet with motor battery and Engine

* not connect to plug in.



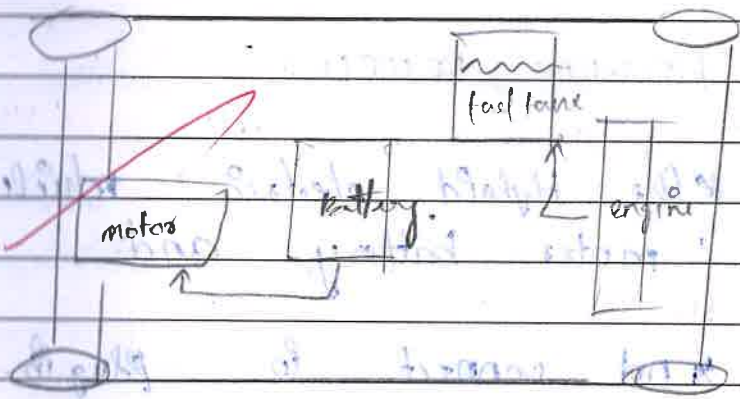
Working:

* It is also work with engine and batteries

* during the brake the Regenerative mode is charged the batteries.

PLUG IN HYBRID EV:

* the plugin Hybrid electrical vehicle both batteries and engine.



Working:

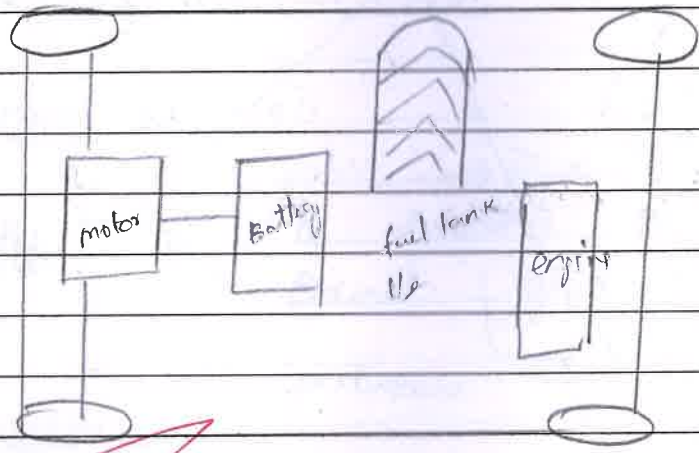
* It is also work with two modes

* 1. electric mode

* 2. Hybrid mode.

FUEL CELL ELECTRIC VEHICLE :

* the fuel cell electric vehicle also used fule cells.



* this is not commonly use because the hydrogen gas is easily combustioned.

* But it is give good millage compared to others.

PART - C

8) b) LAN :

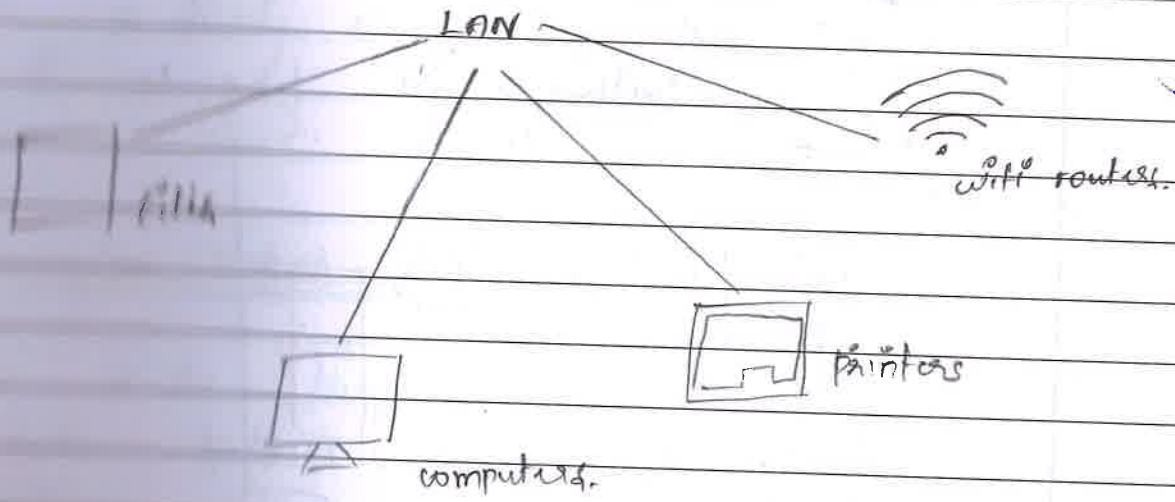
* the LAN is defined as the local area networks.

13/9

* that is connected in small area (geographic areas)

* such as building or group of Buildings

and it is also used to sharing files and datas sequiredly.



COMPONENTS OF LAN

ARCHITECTURE:

* The LAN is also connected in small geographic areas such as small building or group of buildings

* The LAN is connected star, mesh, bus connections

* It is find out the devices connections.

* and also the the device performance rates.

REG.NO.

Page No. 12

PRIVATE OWNER SHIP :.

* the LAN ownership are occupied private communication

* it is known only the LAN owner and LAN connecter.

HIGH DATA TRANSFER :.

* the LAN is transfer the data from 10 mbs to several gigabytes.

CONNECTIVITY :.

* to connects the all internet devices it is offers the high speed data transfer and low latency.

COMPONENTS OF LAN :.

DEVICES :

* the connected devices are smart phones. computers, tabs, home appliances, routers, printers etc...

CENTRELIZED :.

* the LAN is also connected in centralized part of the connection

** it gives the system reliability

ACCESS POINTS:-

* It is also offers the wireless connection of the remotely users.

INTERNET CARDS:-

* It is also connect with wired connections of it is given by ethernet connections.

BENEFITS OF LAN:-

BROADBAND SHARING:-

* It can be used to easily shared files and other documentations without pentraves.

BENEFITS:-

* It is also offers the system reliable performances

* High speed data sharing with low latency capabilities it having.

POINTERS:-

It can be used to pointers to point the documents easily.

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Continuous Internal Assessment	I						Unit Test	-					
Register Number	4	2	2	1	2	2	1	0	5	0	0	9	
Department	EEE						Semester	04					
Subject Code	EE3402			Subject Title	Linear Integrated Circuits								
Date & Session	25/04/24 & F.N						No. of Pages used	11					

S. BALABASKAR	
Name of the Hall Superintendent	Signature of the Hall Superintendent

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	6 / 11	a										
2	✓	2		b	✓	13								13
3	✓	2	7 / 12	a	✓	12								12
4	✓	2		b										
5	✓	2	8 / 13	a										
6				b	✓	~~10~~ 12								~~10~~ 12
7			14	a										
8				b										
9			15	a										
10				b										
Total		10	16	a										
				b										
											Total			~~35~~ 37
Grand Total	~~45~~ 47		Grand Total (in words)		Three Seven									
Name of the Examiner	D. UMAMAHESWARI		Signature of the Examiner											

S. Harish

Part - A

1) The Ideal characteristics of OP-Amp

* Infinite voltage gain
* Infinite Input impedance
* Zero Output impedance
* Infinite CMRR
* Infinite bandwidth
* Infinite Slew Rate
* Zero PSRR

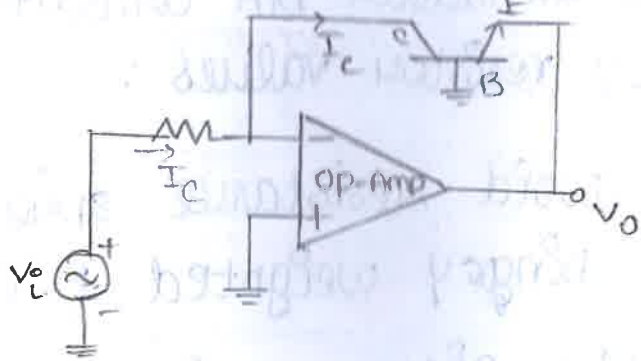
2) * Gain of the integrators decreases with frequency increases. Gain of the differentiator increases with frequency.

* The input impedance of the integrator is constant while differentiator decreases with frequency.

3) * Basic requirement of good Instrumentation Amplifier.

* High Output Impedance
* Low input impedance
* High CMRR
* Low power consumption
* High Slew Rate
* Low Thermal

4) * The collector is virtual ground and bases in ground transistor voltage current relationship in op-amp.



$$I_C = I_S\left(e^{qV_E/KT} - 1\right)$$

$$I_E = I_S\left(e^{qV_E/KT} - 1\right)$$

output voltage

$$V_o = -\frac{KT}{q}\ln\left(\frac{V_i}{R_1 I_S}\right) \Rightarrow V_o = -\frac{KT}{q}\ln\left(\frac{V_i}{V_{Ref}}\right)$$

---

5) * For accurate analog to digital converters which analog voltage is constant during conversion cycle.

* The input voltage is constant during conversion time using sample and Hold circuit.

Part - C

8) b) The working principle of R-2R ladder Type DAC

* The R-2R ladder DIA convertor are using only two resistor values.

* The avoid resistance spreads draw backs to bingry weighted to DIA convertor.

* Likdy Binary resistors DAC, uses Shunt resistor can Binary weighted current and common Reference voltage. Instead resistor to Binary resistor DAC

* Each bit of the Binary weight corresponding switch inverting input Terminal in Op-Amp.

* The 2R ladder are connected in Parallel and one op-Amp and Resistor and virtual ground.

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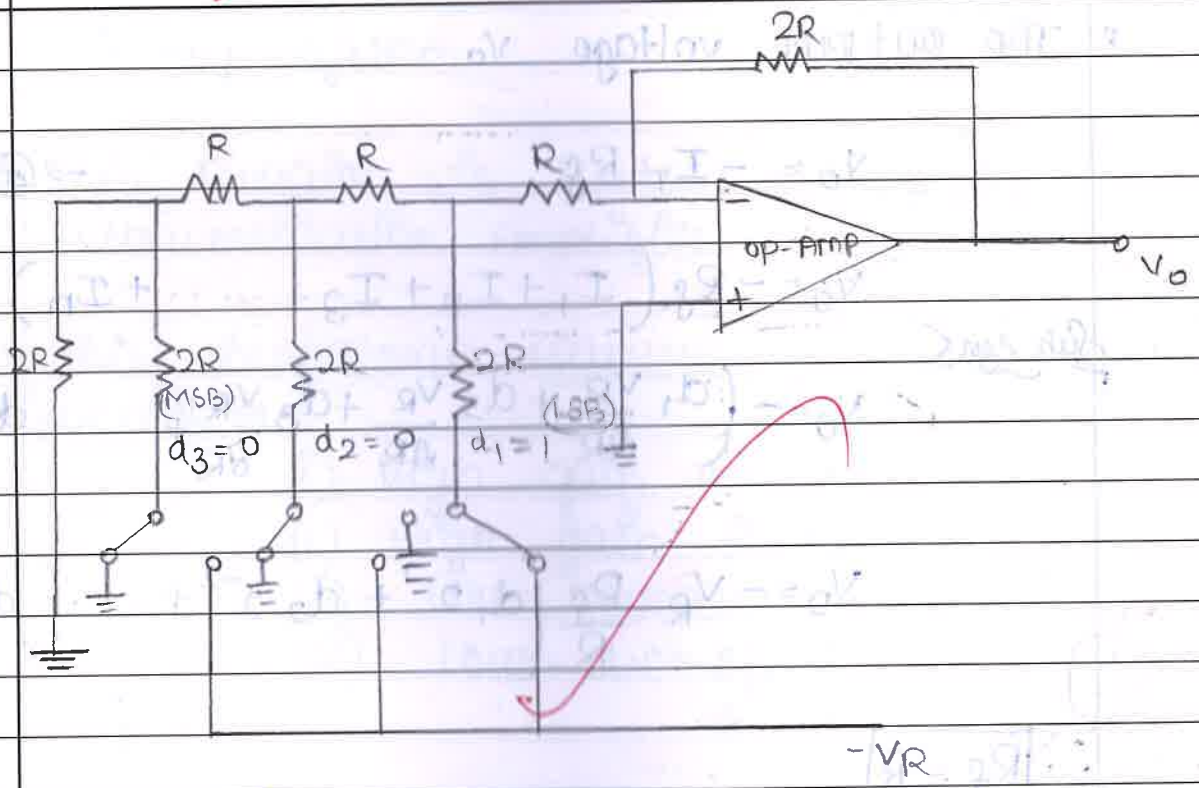
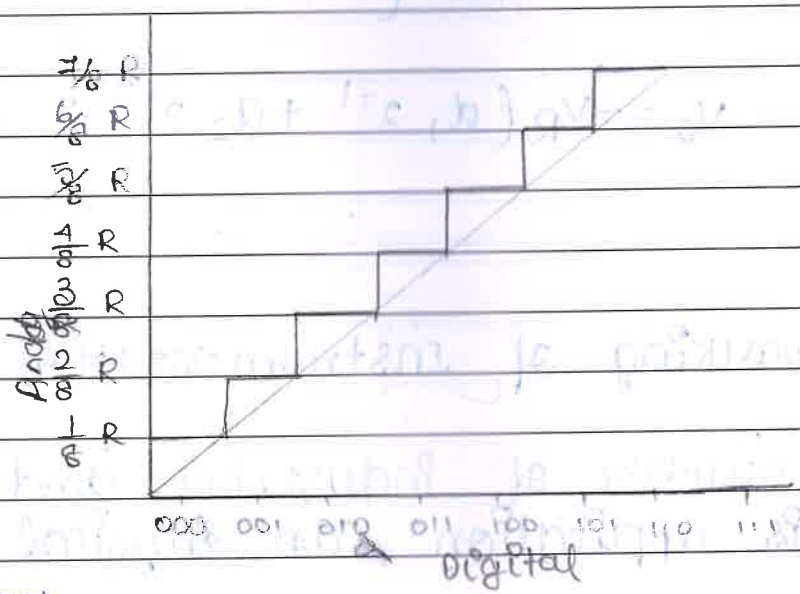


∴ R- 2R ladder Type DAC



We know

$$I_1 = \frac{V_R}{2R} \rightarrow (1)$$

$$I_2 = \frac{V_R}{4R} \rightarrow (2)$$

$$\rightarrow (3)$$

$$I_3 = \frac{V_R}{8R}$$

* The output voltage V_o

$$V_o = -I_T R_f \quad \rightarrow (4)$$

$$V_o = -R_f (I_1 + I_2 + I_3 + \ldots + I_n) \quad \rightarrow (5)$$

Sub eqns

$$V_o = -\left(d_1 \frac{V_R}{2R} + d_2 \frac{V_R}{4R} + d_3 \frac{V_R}{8R} + \ldots d_n \frac{V_R}{2^n R}\right)$$

$$V_o = -V_R \frac{R_f}{R}\left(d_1 2^{-1} + d_2 2^{-2} + \ldots d_n 2^{-n}\right)$$

$\therefore \boxed{R_f = R}$

$$V_o = -V_R \frac{R}{R}\left(d_1 2^{-1} + d_2 2^{-2} + \ldots d_n 2^{-n}\right)$$

$$\boxed{V_o = -V_R\left(d_1 2^{-1} + d_2 2^{-2} + \ldots d_n 2^{-n}\right)}$$

7) a) Working of Instrumentation Amplifier.

* In number of industrial and one is application can physical quantities.

* some typical examples the measurement and control temperature, water flow, Humidity, light intensity etc.

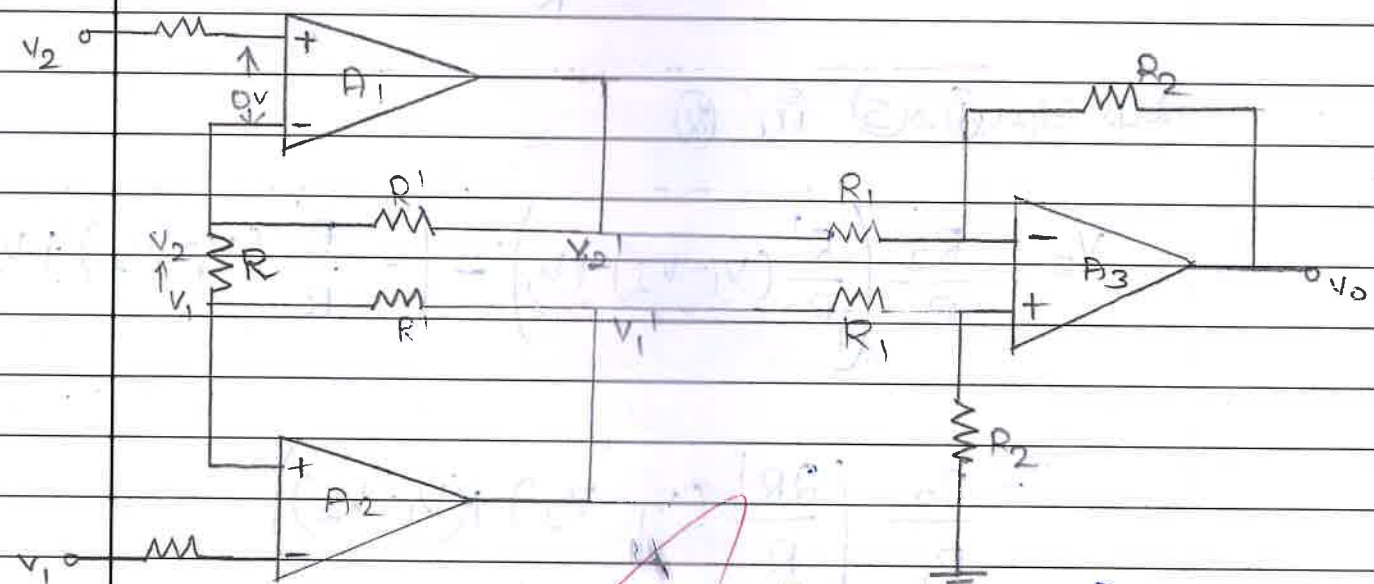
* These physical quantities are usually used with the help of transducers.

* The output of the Transducer is

display system.

* This function is performed by the instrumentation Amplifier.

* The important features of Instrumentation Amplifier
  i) High gain accuracy
  ii) High gain stability
  iii) Low temperature coefficient
  iv) Low d.c offset.



Instrumentation Amplifier

* The output voltage Vo is calculated

$$\frac{R_2 V_1'}{R_1 + R_2}$$

* The (-) terminal of the op-Amp the output voltage

$$V_o = -\frac{R_2}{R_1} V_2' + \left(1 + \frac{R_2}{R_1}\right)\left(\frac{R_2 V_1'}{R_1 + R_2}\right) \rightarrow (2)$$

$$V_o = \frac{R_2}{R_1}(V_1' - V_2') \rightarrow (3)$$

* Since no current flow through op-Amp

$$I = (V_1 - V_2)/R \rightarrow (3)$$

We know Subeqn (3)

$$V_1' = R'I + V_1 = \frac{R'}{R}(V_1 - V_2) + V_1 \rightarrow (4)$$

$$V_2' = -R'I + V_2 = -\frac{R'}{R}(V_1 - V_2) + V_2 \rightarrow (5)$$

Sub eqn (4) & (5) in (2)

$$V_o = \frac{R_2}{R_1}\left(\frac{R'}{R}(V_1 - V_2) + V_1\right) - \left(-\frac{R'}{R}(V_1 - V_2) + V_2\right)$$

$$= \frac{R_2}{R_1}\left(\frac{2R'}{R}(V_1 - V_2) + (V_1 - V_2)\right)$$

$$\boxed{V_o = \frac{R_2}{R_1}\left(1 + \frac{2R'}{R}\right)(V_1 - V_2)}$$

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* The differential gain in Instrumentation Amplifier can be varied.

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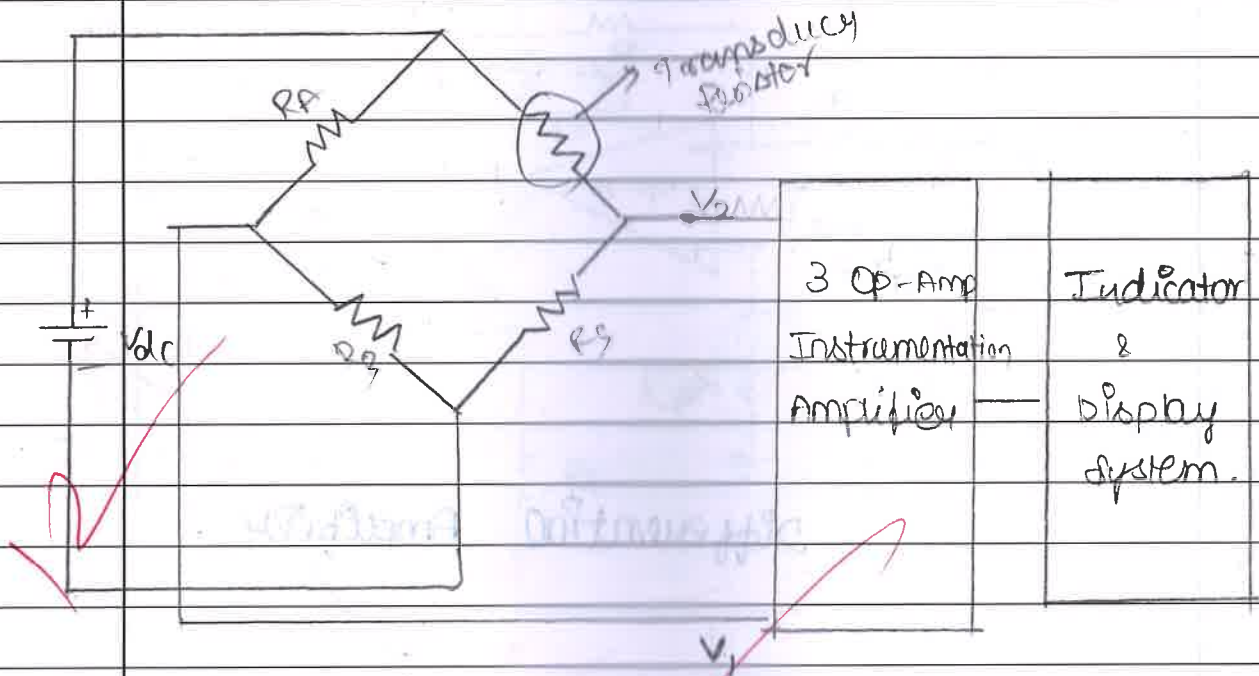
Page No.....



* The consists of three op-Amp used this circuit basic of differential amplifier circuit.

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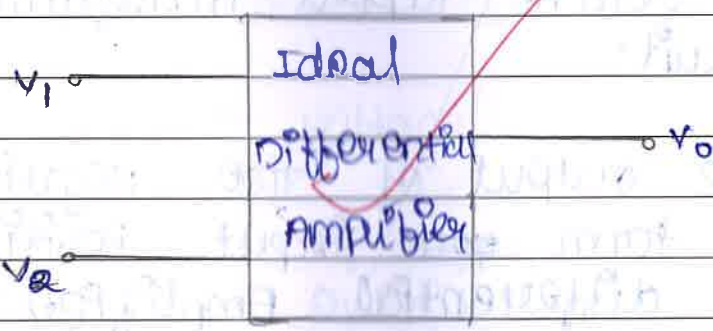
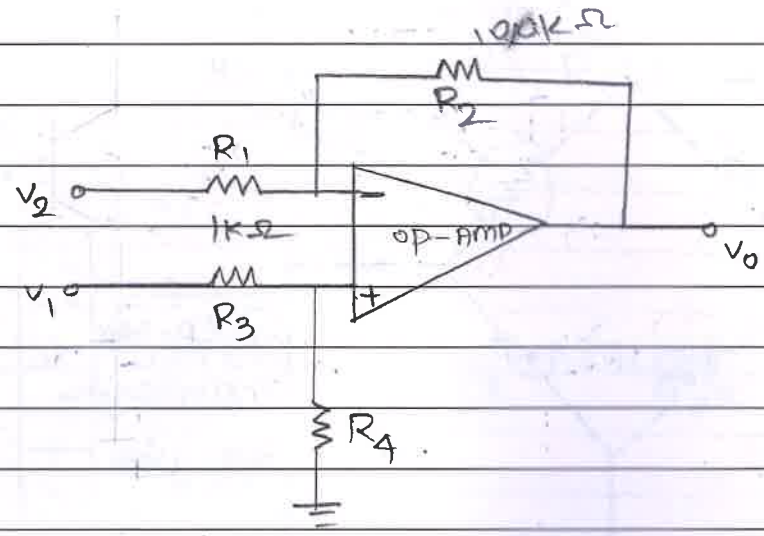
b) b) Differential Amplifier.

* Differential Amplifier difference between two input signal V_1 & V_2 and output V_0



* The output voltage is proportional to the two input signal V_1 & V_2

$V_0 \propto V_1 V_2$



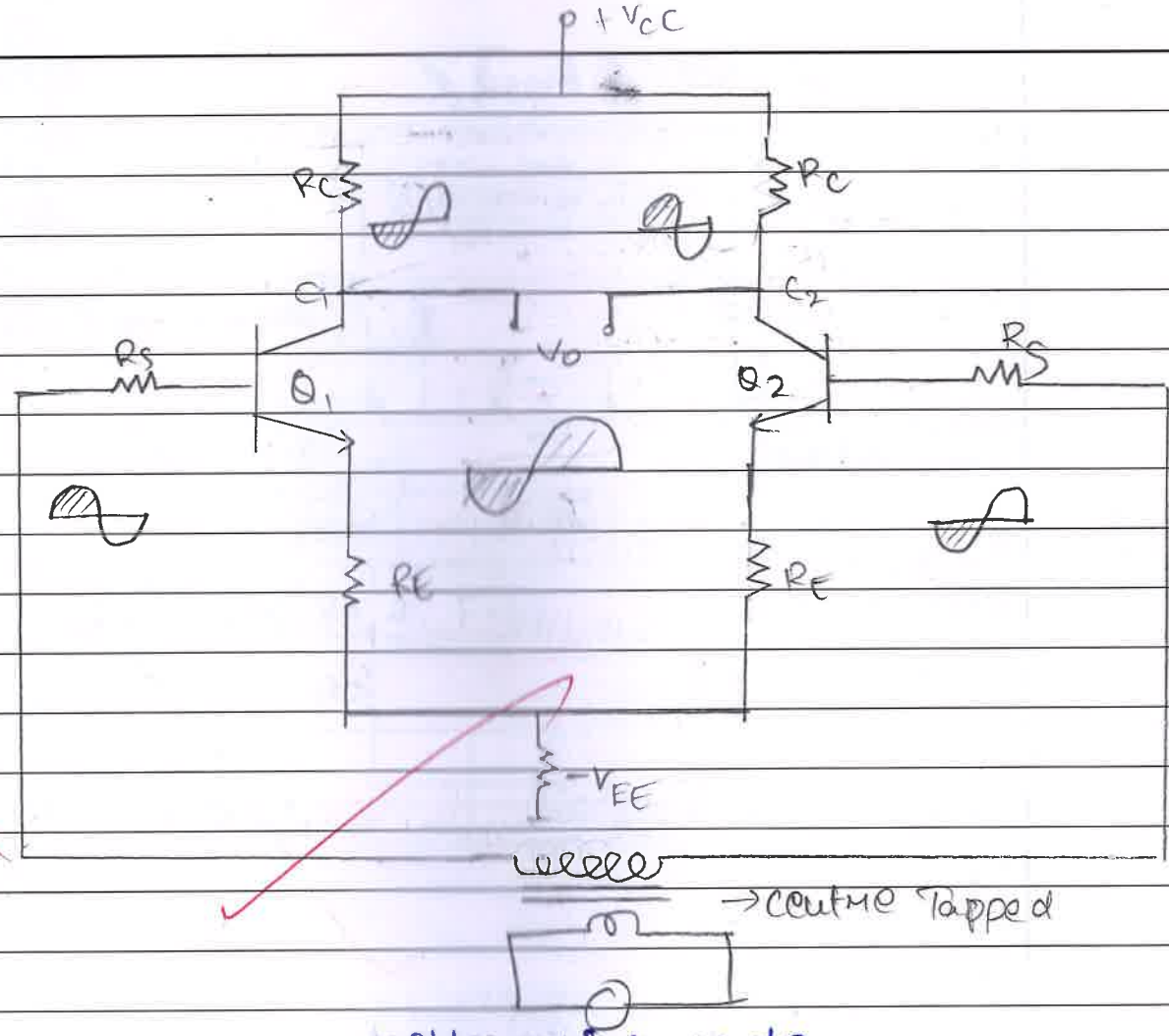
Differential Amplifier.

* There are two Types of operation.
  * Differential Mode operation
  * common Mode operation.

i) Differential Mode operation

* The two Transistor are Q_1 and Q_2 and Resistor the Input supply $+V_{CC}$
* The centre tapped Transformer used in circuit.
* The output of the negative sine wave form Input Positive cycle to get differential Amplifier.
* Differential Mode Gain

$$A_d = V_0(V_1 - V_2)$$



Differential Mode

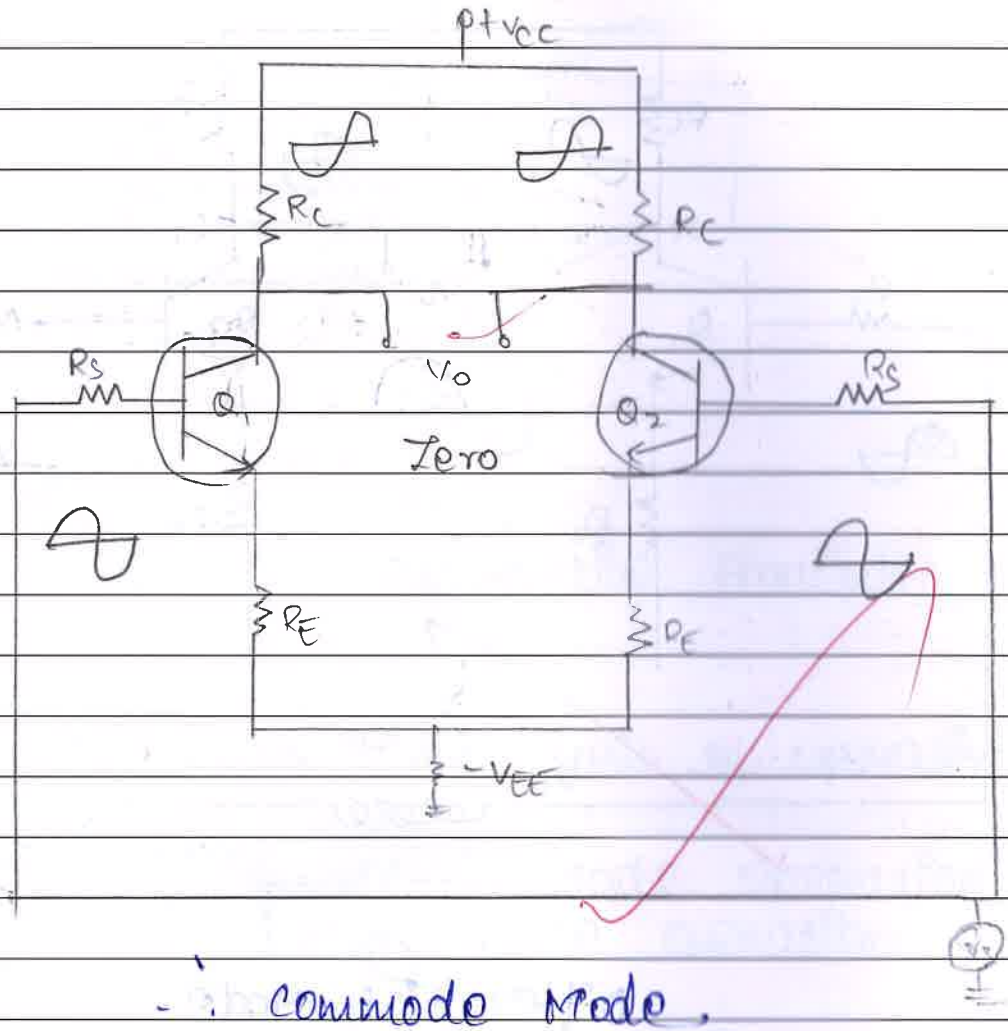
ii) Common Mode (A_c)

* The two Resistor and Transistor Q_1 and Q_2 and CE configuration.

* The output voltage is zero.

* The Input of supply $+V_{CC}$ and V_{EE} are grounded two positive cycle input to Finaly V_o is zero.

BEE
11



∴ Common Mode.

— X —

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Continuous Internal Assessment				I		**Unit Test**				I				
Register Number	4	2	2	1	2	2	1	1		4	0	0	3	
Degree/Branch	MECHANICAL								**Semester**	III				
Subject Code	ME3491		**Subject Title**	STRENGTH OF MATERIALS										
Date & Session	30/04/2024 & FN					**No. of Pages used**				11				

K. Rackesh Jawahar	K. Rackesh 30/04/24
Name of the Hall Superintendent	**Signature of the Hall Superintendent**

Instruction to the Candidate: Put a tick mark (√) for the questions attended in the tick mark column against each question in Valuation Box

Part - A			Part - B									
Qn. No.	√	Marks	Qn. No.		i √	i Marks	ii √	ii Marks	iii √	iii Marks	Total Marks
1	√	2	11	a	√						12
2	√	2		b							
3	√	2	12	a							
4	√	2		b	√						~~11~~ 13
5	√	2	13	a	√						14
6				b							
7			14	a							
8				b							
9			15	a							
10				b							
Total		10	16	a							
				b							
										Total	39 ~~37~~
Grand Total	~~41~~ (49)		Grand Total (in Words)		Forty Nine						

L. Josephine

PART – A

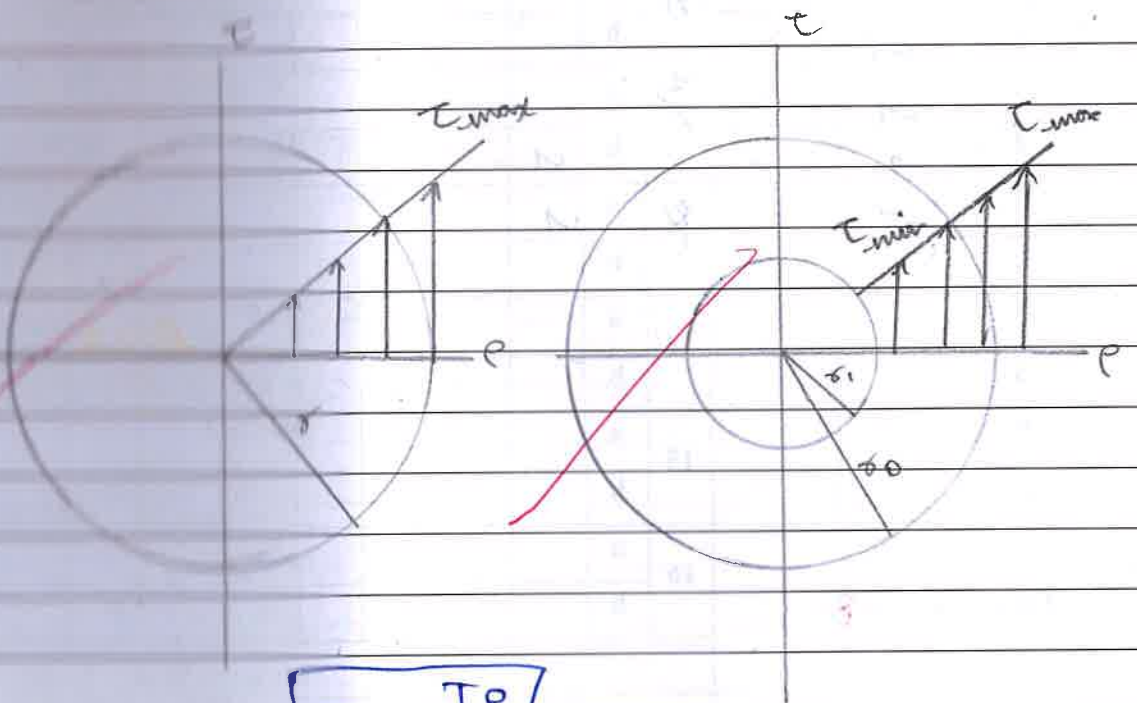
1. Hollow shaft is preferred over a solid shaft for transmission?

(i) The torque transmitted by the hollow shaft is greater than the solid shaft.

(ii) For same material, length and weight.

(iii) The weight of the hollow shaft is less compared to the solid shaft.

2. Write bow's equation for hollow shaft subjected to torsion.



$$\therefore \boxed{\frac{\tau}{r} = \frac{T}{J}}$$

3. Types of helical springs :-

the helical spring are classified into;

(i) open coil helical spring

(ii) closed coil helical spring

4. Thin cylindrical shell due to an internal pressure

* It may split up into through length.

* It may split up into 2 cylinder.

5. thin & thick shell :-

thin	thick
* $d/10 \leq t \leq d/15$	* $t \geq d/15$
* longitudinal stress is uniformly distributed	* longitudinal stress is varying
* Radial stress is induced in very small (negligible)	* the finite value of radial stress is induced.

PART - B

$\delta = 18 \text{ cm} \Rightarrow 180 \text{ mm}$

$E = 8 \times 10^4 \text{ N/mm}^2$

$d = 30 \text{ mm}$

$W = 3 \text{ kN} \Rightarrow 3 \times 10^3 \text{ N}$

Weight of the drop (w) =

$$\delta = \frac{64 \, w R^3 N}{E d^4}$$

$$180 = \frac{64 \, w (100)^3 \times 16}{8 \times 10^4 \times (30)^4}$$

$$w = \frac{180 \times 8 \times 10^4 \times 30^4}{64 (100)^3 \times 16}$$

$$w = 11390.6 \text{ N}$$

REG.NO.

Page No.....

Height of the drop (h) :-

$$P(h + S) = \frac{1}{2} w S$$

$$3 \times 10^3 \times (h + 180) = \frac{1}{2} \times 11390.6 \times 180$$

$$(h + 180) = \frac{1025154}{2 \times 10^3}$$

$$h + 180 = 341.71$$

$$h = 161.71 \text{ mm}$$

$$h = 0.16171 \text{ m}$$

Result :-

$$h = 161.71 \text{ mm}$$
$$= 0.16171 \text{ m}$$

7. (b) Given data:

$d = 1\,m \Rightarrow 1000\,mm$

$t = 1.2\,cm \Rightarrow 12\,mm$

$\delta v = 175\,cm^3 \Rightarrow 175 \times 10^3\,mm$

$E = 200\,GN/m^2 \Rightarrow 200 \times 10^3\,N/mm^2$

$1/m = 0.3$

To find:

Intensity of pressure (P) = ?

circumferential stress (σ_c) = ?

increase in diameter (δd) = ?

Solution:

$$\delta v = \frac{\pi P d^4}{8tE}\left[1 - 1/m\right]$$

$$175 \times 10^3 = \frac{\pi P (1000)^4}{8 \times 12 \times 200 \times 10^3}\left[1 - 0.3\right]$$

$$175 \times 10^2 = \frac{\pi \times P \times (1000)^4}{8 \times 12 \times 200 \times 10^3}(0.7)$$

$$P = \frac{175 \times 10^3 \times 8 \times 12 \times 200 \times 10^3}{\pi \times (1000)^4 \times 0.7}$$

$$\boxed{P = 1.527 \text{ N/mm}^2}$$

$$\sigma_c = \frac{Pd}{4t}$$

$$= \frac{1.527 \times 1000}{4 \times 12}$$

$$\boxed{\sigma_c = 31.81 \text{ N/mm}^2}$$

$$\delta d = \frac{Pd^2}{4tE}\left[1 - \frac{1}{m}\right]$$

$$= \frac{1.527 \times (1000)^2}{4 \times 12 \times 200 \times 10^3}\left[1 - 0.3\right]$$

$$= \frac{1.527 \times (1000)^2 \times 0.7}{4 \times 12 \times 200 \times 10^3}$$

$$\delta d = 0.1113 \text{ mm}$$

N/mm^2

N/mm^2

mm

PART-C

Same material, length, torque

$d_H = \frac{2}{3} D_H$

$d_H = 0.667 D_H$

Compare the weight of shafts,

$\frac{W_S}{W_H} = ?$

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Solution:-

Diameter is based on the shear stress/ stiffness/ strength :-

$$\tau = \frac{16\,T}{\pi d_s^3}$$

$$d_s^3 = \frac{16\,T}{\pi \times \tau}$$

$$d_s^3 = 5.09 \left[\frac{T}{\tau}\right]$$

$$d_s = \left[5.09 \times \frac{T}{\tau}\right]^{1/3}$$

$$\boxed{d_s = 1.72 \times \left[\frac{T}{\tau}\right]^{1/3}}$$

External diameter of the hollow shaft :-

$$\tau = \frac{16\,T}{\pi}\left[\frac{D_H}{D_H^4 - d_H^4}\right]$$

$$= \frac{16\,T}{\pi}\left[\frac{D_H}{D_H^4 - (0.667\,D_H)^4}\right]$$

$$= \frac{16\,T}{\pi}\left[\frac{D_H}{\quad}\right]$$

$$= \frac{16T}{\pi} \cdot \frac{D_H}{D_H^4 \left[1 - 0.198\right]}$$

$$\tau = \frac{16T}{\pi} \cdot \frac{D_H}{D_H^4 \times 0.802}$$

$$D_H^3 = \frac{16T}{\pi \times \tau \times 0.802}$$

$$D_H^3 = 6.35 \times \left[\frac{T}{\tau}\right]$$

$$D_H = \left[6.35 \times \frac{T}{\tau}\right]^{1/3}$$

$$\boxed{D_H = 1.85 \times \left[\frac{T}{\tau}\right]^{1/3}}$$

Internal diameter of hollow shaft:

$$d_H = 0.667 D_H$$

$$= 0.667 \times 1.85 \times \left[\frac{T}{\tau}\right]^{1/3}$$

$$\boxed{d_H = 1.23 \times \left[\frac{T}{\tau}\right]^{1/3}}$$

weight ratio :-

$$\frac{W_S}{W_H} = \frac{\rho_S \, l_S \, A_S}{\rho_H \, l_H \, A_H}$$

$$\frac{W_S}{W_H} = \frac{A_S}{A_H}$$

$$= \frac{\frac{\pi}{4}(d_S)^2}{\frac{\pi}{4}(D_H)^2 - \frac{\pi}{4}(d_H)^2}$$

$$= \frac{\frac{\pi}{4}(d_S)^2}{\frac{\pi}{4}(D_H^2 - d_H^2)}$$

$$= \frac{\left[1.72 \times \left(\frac{T}{\tau}\right)^{1/3}\right]^2}{\left[1.85 \times \left(\frac{T}{\tau}\right)^{1/3}\right]^2 - \left[1.23 \times \left(\frac{T}{\tau}\right)^{1/3}\right]^2}$$

$$= \frac{2.96 \times \left(\frac{T}{\tau}\right)^{2/3}}{3.42 \times \left(\frac{T}{\tau}\right)^{2/3} - 1.51 \times \left(\frac{T}{\tau}\right)^{2/3}}$$

$$= \frac{2.96 \times \left(\frac{T}{\tau}\right)^{2/3}}{\left(\frac{T}{\tau}\right)^{2/3} \times [3.42 - 1.51]}$$

$$= \frac{2.96}{1.91}$$

$$\frac{W_S}{W_H} = 1.54$$

Sem - I

Result:

$$\frac{W_2}{W_1} = 1.54$$

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Continuous Internal Assessment	II						Unit Test	–				
Register Number	4	2	2	1	2	2	1	0	5	0	1	0
Department	EEE - II year								Semester	04		
Subject Code	EE 3401			Subject Title	TRANSMISSION AND DISTRIBUTION							
Date & Session	03-06-2024 / FN								No. of Pages used	11 pages.		

D. RAO THILAK	3/6/24
Name of the Hall Superintendent	Signature of the Hall Superintendent

10
100

Instruction to the Candidate: Put a tick mark (✓) for the questions attended in the tick mark column against each question in Valuation Box

PART - A			PART - B &C												
Q.No.	✓	Marks	Q.No.		i ✓	i Marks T	i Marks D	ii ✓	ii Marks T	ii Marks D	iii ✓	iii Marks T	iii Marks D	Total Marks
1	✓	2	6/11	a	✓	12								12
2	✓	2		b										
3	✓	2	7/12	a										
4	✓	2		b	✓	07								07
5	✓	2	8/13	a	✓	~~00~~ 06								~~00~~ 06
6				b										
7			14	a										
8				b										
9			15	a										
10				b										
Total		10	16	a										
				b										
											Total			19 25

Grand Total	19 35	Grand Total (in words)	Three five
Name of the Examiner	V Yogambari	Signature of the Examiner	

PAR-A

1) Corona :-

The phenomenon is hissing noise and production of ozone gas in an transmission line is known as corona.

2) effect of leading load power factor :-

* The leading load power factor on voltage regulation of an short transmission line.

* It reduces the losses of transmission line.

3) limitation of solid type cables:-

* It carries current its conductor temperature increases and the transmission compound expands. This action stretches the line sheath which may damage.

* when the load on the decreases conductor cols thus forming vecuum. Due to the conductor outside air may which the gap this dielectric strength.

* solid type cables used maximum upto 66 KV.

4) Two different method of grading of cables.

* Inter - sheath grading

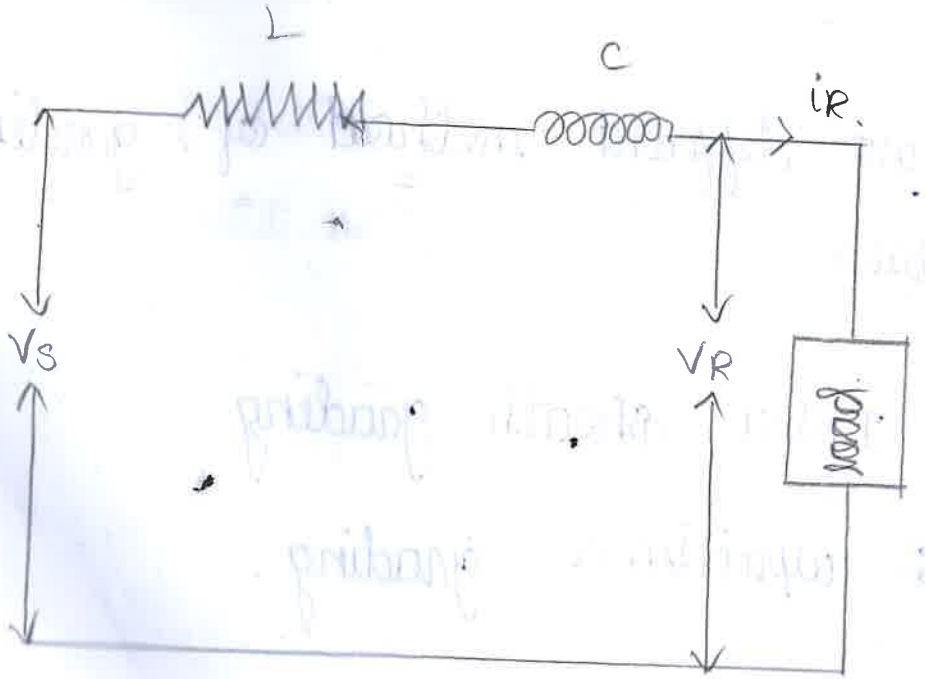
* capacitance grading.

5) Kelvin's law :-

The annual expainture load on variable part of system should be system cost of energy. wasted in the reduced in system.

PART-B

06 a) Derive the expression for sending and receiving end power of transmission line in terms of voltages and ABCD constant.



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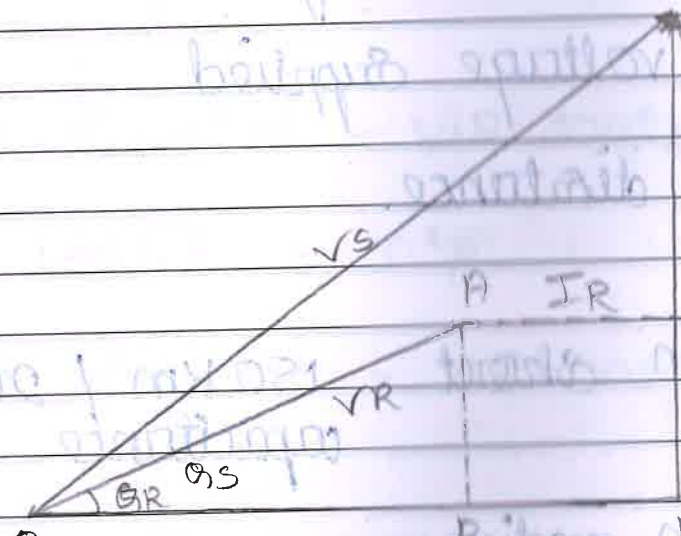


phas diagram

=> R => loop resistance
X_L => loop reactance
I => load current
$\cos\phi_R$ => Receiving end power factor

$\cos\phi_S$ => Sending end power factor

V_S => sending end voltage

V_R => Receiving end voltage.

voltage regulation :-

$$V_R = \frac{V_S - V_R}{V_R} \times 100$$

txn depanding on

⇒ voltage supplied

⇒ distance.

⇒ txn short 150 km / 20 KV
capacitance method

⇒ txn medium 50 km - 150 km / 100 KV
R, L, C taken

⇒ txn long >150°/c > 150 KV all
parameter are analyzed
regnon's method.

$$(OC)^2 = (OD)^2 + (DC)^2$$

$$\boxed{V_S^2 = (OE + ED)^2 + (DB + BC)^2} \rightarrow (1)$$

$$= (V_R \cos\phi_R + IR)^2 + (V_R \sin\phi_R + IX_L)^2$$

$$V_S = \sqrt{(V_R \cos\phi_R + IR)^2 + (V_R \sin\phi_R + IX_L)^2}$$

$$\frac{OD}{OC} = V_R \cos\phi_R + IR$$

Approximate expression:-

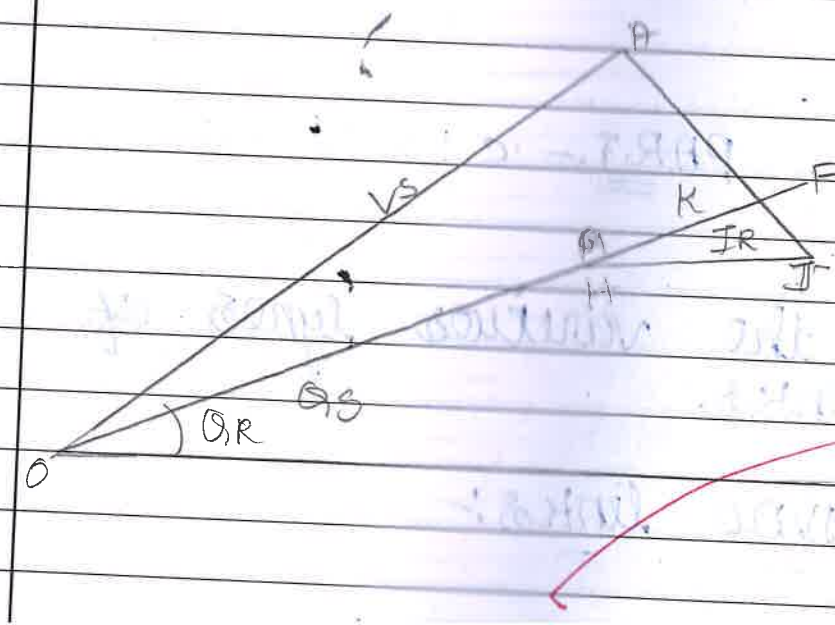
power delivered = $V_R I_R \cos\phi_R$

line losses = I^2R

power sent out = $V_R I_R \cos\phi_R + I^2R$

$$\text{percentage of transmission efficiency} = \frac{\text{power delivered}}{\text{power sent out}} \times 100$$

$$= \frac{V_R I_R \cos\phi_R}{V_R I_R \cos\phi_R + I^2R} \times 100.$$



$$\vec{V_R} = R + j0$$

$$\vec{I} = I\angle -jR$$

$$= I(\cos\phi_R - j\sin\phi_R)$$

$$\vec{Z} \Rightarrow jX_L$$

$$\vec{V_S} = \vec{V_R} + \vec{IZ}$$

$$= (R + j0) + (I(\cos\phi_R - j\sin\phi_R) + jX_L)$$

$$= \sqrt{(IR^2 + (V_R\cos\phi_R + jX_L\sin\phi_R)^2 + (V_R\cos\phi_R + X_L\sin\phi_R)}$$

$$\boxed{V_S = IR + V_R\cos\phi_R + X_L\sin\phi_R}$$

PART - C

08) Discuss the various types of HVDC links.

MONO HVDC links:-

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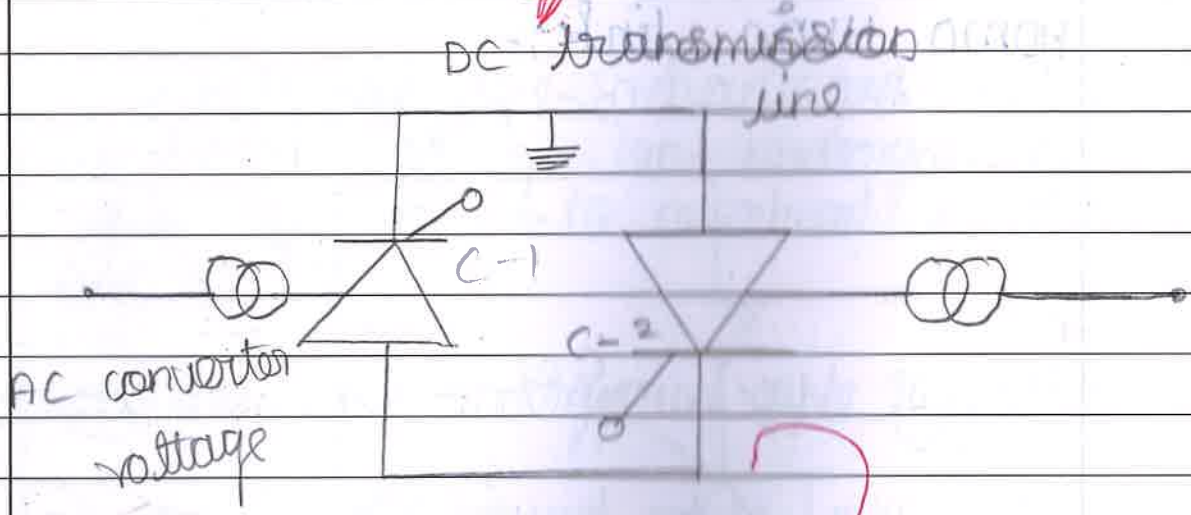
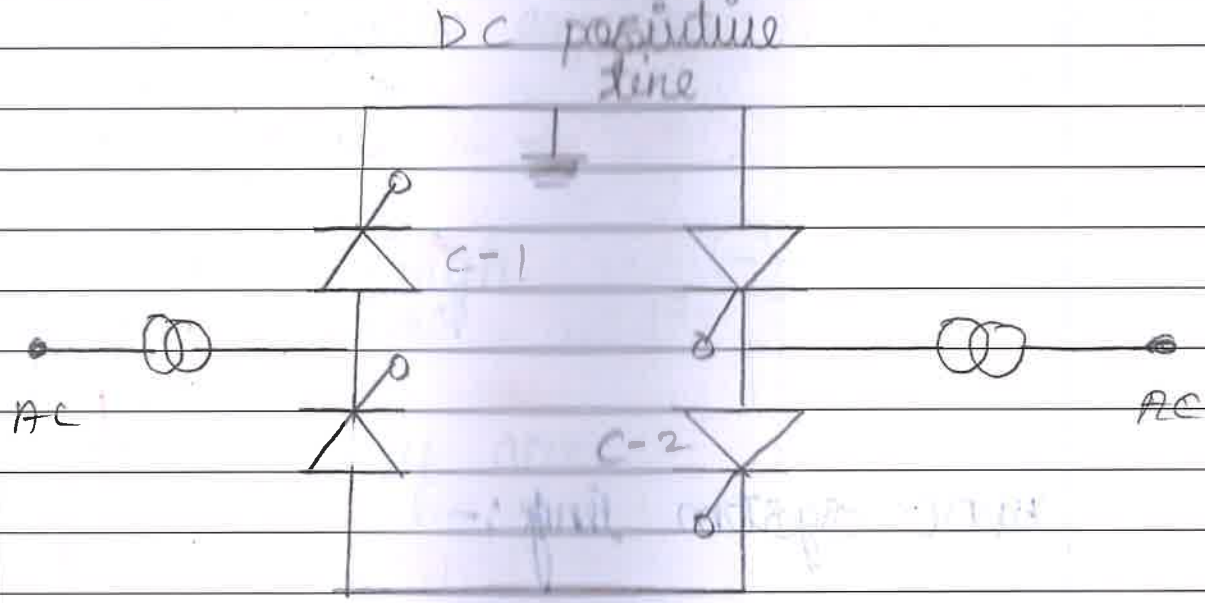
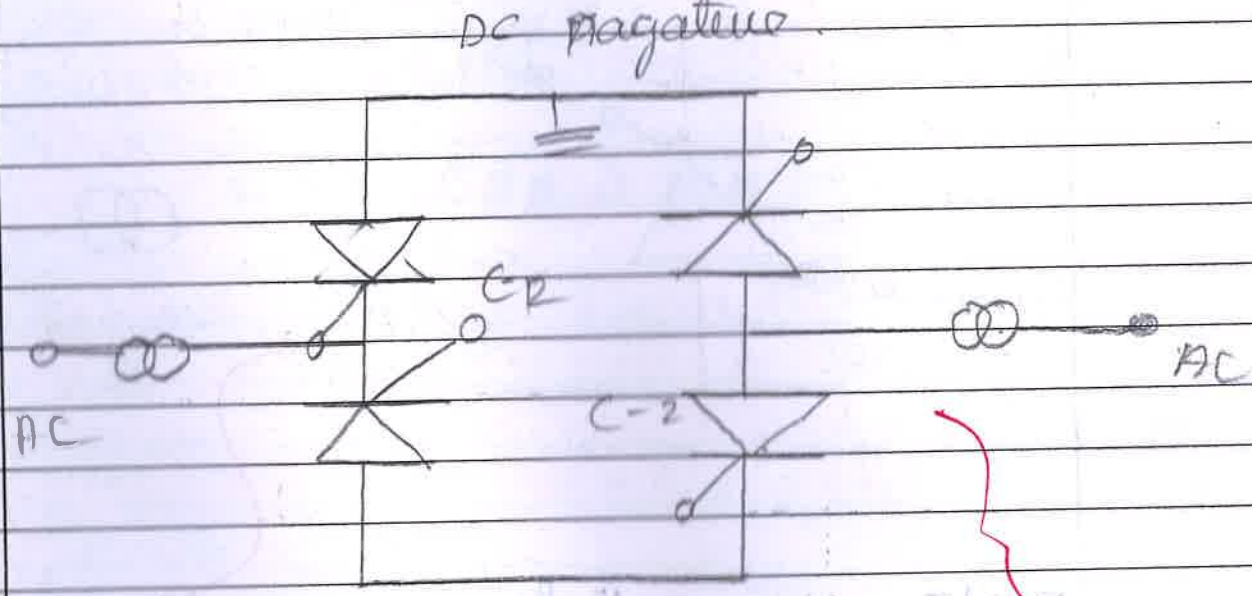


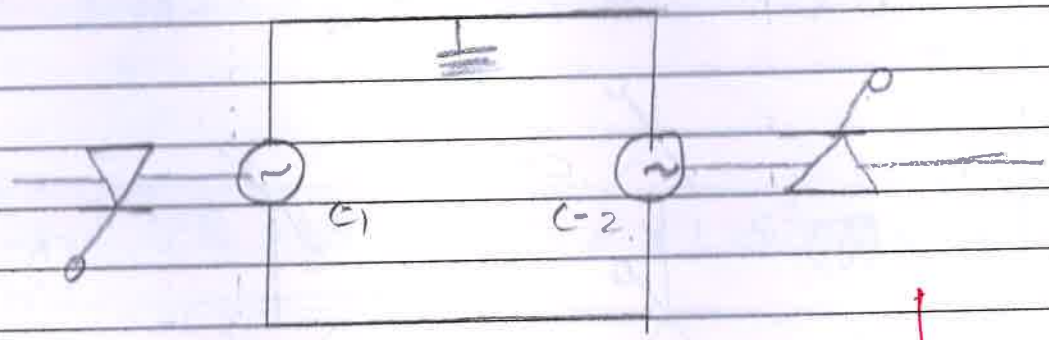
Bipolo HVDC link :-



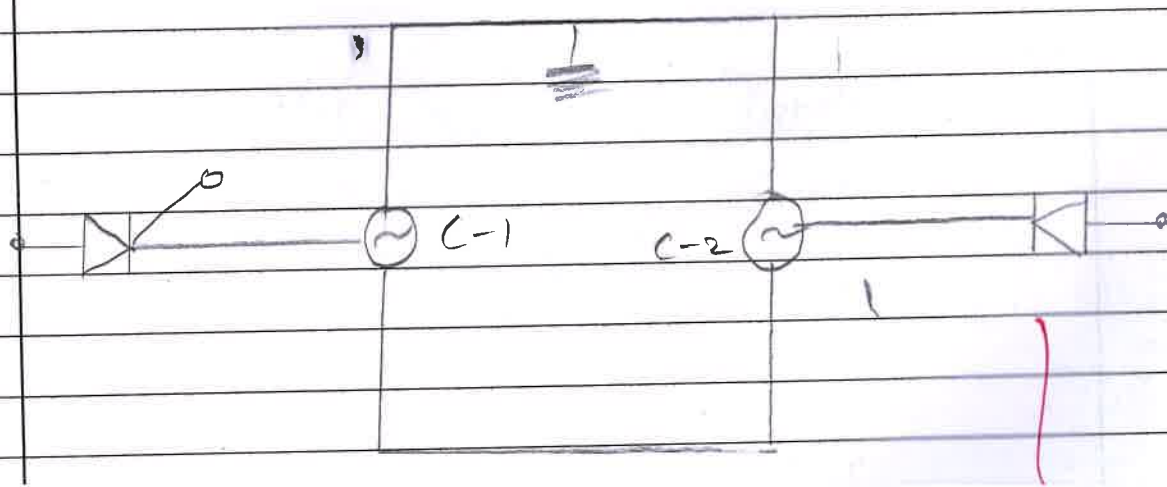
HDMD HVDC link:-



Back to Back HVDC (coupling) System link:-



HVDC System link:-



07 b) what are the advantages of various equivalent of a bar underground cable compared to overhead transmission line?

compared for underground cable to overhead :-

Factor	underground cable	overhead transmission
public safety	more safety	less safty
Initial cost	more expensive	comparetively low.
Flexibility	high	low.
Fault	very rare	easily
Fault of repairs.	difficult of located for repairs	easily located for repairs.
Inter prence	NO Interference	It causes of electromagnetic is Interference.

The underground cable and the transmission line for the advantages of.

* The will be underground cable causes to the uses of the underground cable.

* The cable is a very difficult located for the repairs.

* The transmission line is a cost is very low of the line.

* public safety is a very less of the transmission line.

* underground cable is a Initial cost is very high and more expensive. public safety is a more safety.

* Interference is a very difficult of the no Interference of the transmission line for the comparatively of the underground cable.