J & K BOARD OF TECHNICAL EDUCATION ROLL No:

2MJ23

Class: - 2nd Semester (NEP)

Branch: - COMPUTER ENGG/IT

Subject: - BASIC ELECTRICAL AND ELECTRONICS ENGINEERING Time Allotted: - 3-Hrs

Max. Marks: - 100

- Note: There are THREE sections in the paper A, B, and C. Answer all the 10 parts of the question in Section -A, Each part carries Two mark and all the
- Answer any 4 questions out of 8 questions in Section -B. Each question carries 05 marks. II.
- Answer any 4 questions out of 8 questions in Section –C. Each question carries 15 marks.
- solve all the question of a section consecutively together. III. IV.

Section A (10x2=20 marks)

01 N	Aultiple Choice Questions	Marks
	Objective Type questions	2
Q1 I.	The ammeter is the instrument used to measure	
	(A) Current (B) Voltage (C) Power (D) Résistance	2
11.	In parallel connections, theis the same at all resistances. (a) Voltage (B) Current (C) Power	2
III.	Weber is the SI unit for Permiability (B) Permenance (e) Flux (D) Flux Density	-
IV.	Lenz,s Law is used to find (A) Direction of Induced EMF (B) Direction of Motion (C) Direction of Magnetic	2
V.	field (D) None In Lead Acid battery the Electrolye is (A) Sulphuric Acid (B) Nitric Acid (C) Hydrochloric Acid (D) Water	2
VI.	A group of cells is called (A) Battery (B) Vent cap (C) Hydrometer (D) Inverter	2
	A Zener diode is made to operate in AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	2
. Н	How many PN junctions a transistor have? (A) 1 (B) 2 (C) 3 (D) 0	2
Pe	Penstock is a part of (A) Turbine (B) Transformer (C) Alternator (D) Hydroelectric Power Plant	2
Th	he unit of frecuency is (A) Hz (B) Weber (C) Watt (D) Ampere	2

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SECTION B (Attempt any four) (4x5=20Marks)

SECTION D (Ass.	
What Is OHM's Law? Write down its expression.	5 5
Compare magnetic & electric circums	5
Describe the features and application of sold cen	5
Differentiate between AC and DC	5
Describe the forward and reverse bias characteristics	-
charecterstics figuration commonly used?	5
Why is the common emitter configuration common,	5.
Differentiate between transistor in CL	
Draw the circuit used to determine characteristics configuration. Also define various parameters in CE configuration.	15 A.
	What is OHM's Law? Write down its expression. Compare magnetic & electric circuit. Describe the features and application of solar cell Differentiate between AC and DC Describe the forward and reverse bias characteristics of diode. Draw and label these

SECTION C (Attempt any four) (15x4=60 Marks)

	SECTION C (Attempt any lour) (15x)	15
•	State Kirchoffs current and Voltage laws. Explain them with suitable circuits. State Kirchoffs current and Voltage laws. Explain them with suitable circuits.	15
21	State Kirchoffs current and Voltage laws. 2.7	
0/2	State Kirchoffs current and voltage in the following terms: Explain the following terms: i) Magnetic flux ii) Flux Density iii) Relative permeability iv MMF and v) i) Magnetic flux iii) Flux Density iii) Relative permeability iv MMF and v)	1
	i) Magnetic flux II) Flux Delisto, 2	15
	Magnetic leakage working of Lead Acid battery. Give the factor in AC	15.
Q3	i) Magnetic flux II) Flux Both Magnetic leakage Magnetic leakage Explain the construction and working of Lead Acid battery. Give its applications Explain the construction and working of Lead Acid battery. Give its applications Explain the construction and working of Lead Acid battery. Give its applications	15 15
Q4	Explain the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and working of Lead Acid battery. Give its appear to the construction and construct	15
	List various types of hetween conductors, insulators and	10.07
2 56	Explain the terms RMS value, Average variable Explain the terms RMS value, Average variable Explain the terms RMS value, Average variable Explain the terms RMS value, Explain hydroelectric power station in detail, and List various types of Power stations, Explain hydroelectric power station in detail, and List various types of Power station in detail, and semiconductors with the Explain the difference between conductors, insulators and semiconductors help of Energy level diagrams. Also draw and explain circuit used to the	08
	The fine por level with the second se	15
Q7	a) Write short here and CC configurations	
1	b) Compare co, sumbol of N channel JFE1, Also dist	24 - 1 24 - 1
Q8	a) Write short notes on Intrinsic and Extransic a) Write short notes on Intrinsic and Extransic b) Compare CE,CB and CC configurations compare CE,CB and CC configurations b) Compare CE,CB and CC configurations do not compare CE,CB and CC configurations b) Compare CE,CB and CC configurations do not comp	
	determine Character	
	그 마다는 물리 그 사람이 되는 이 사람들이 있는 것이 사람이 모르는 것이 되었다. 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그 그	

J & K BOARD OF TECHNICAL EDUCATION ROLL No:_

2MJ23

Class: - 2nd Semester (NEP)

Branch: - ALL

Subject: APPLIED MATHEMATICS -II

Max. Marks: - 100

Time Allotted: - 3-Hrs

Note: There are THREE sections in the paper A, B, and C.

- Answer all the 10 parts of the question in Section –A. Each part carries Two mark and all the 10 parts have objective type questions.
- II. Answer any 4 questions out of 8 questions in Section –B. Each question carries 05 marks.
- III. Answer any 4 questions out of 8 questions in Section -C. Each question carries 15 marks.
- IV. Solve all the question of a section consecutively together.

Section A (10x2=20 marks)

Qno1		Marks
I.	$\int e^x$ is equal to	2
	a)1 b)0 $Q e^x$ d)-1 $\int \frac{1}{\sqrt{1-x^2}} dx$	
II.	$\int \frac{1}{\sqrt{1-x^2}} dx$	2
	$\int \frac{1}{\sqrt{1-x^2}} dx$ a) $\sin^{-1} x$ b) $\cos^{-1} x$ c) $-\frac{1}{\sqrt{\cos^{-1} x}}$ d) None of these	
111.	$\int_{1}^{2} \log x dx$	2
	at 2 log2-1 b) 2 log 2 + 1 c) 2 log 2 - 3 d) none of these	1
IV.	Two lines are said to be perpendicular if the product of their slope is equal to:	2
	a)1 b)-1 c)1/2 d)0	
V.	Two lines are said to be parallel if the difference of their slope is a) -1 b) 1 d) none of these	2
VI.	If A is a skew Symmetric matrix then A^2 is a skew Symmetric c)Skew symmetric d) none of these	2
VII.	The matrix which follows the conditions m=n is called?	2
	a) Square matrix b) Rectangular matrix c) Scalar matrix d) Diagonal matrix	
/111.	The trace of the matrix is defined as	2
	a) Sum of all the elements of the matrix b) Sum of all non-zero elements of matrix c) d) none of these	
IX.	Mode refers to the value within a series that occurs number of times.	2
	_a./a) Maximum b) Minimum c) Zero d) Infinite	

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	is not	a measure of	central tender	n cy					
	a)Mod	ło	b)M		Median	X.	Range		
	ајиос	So	ction R (Attempt an		5=20 Mark	cs)		
	2	36	CHOIL D (5
1	Integrate $\int \sqrt{x}$				1.2	r [*]	f	- <u>B</u>	5
-	Integrate $\int x$ s If A(-2,1), B(2	$\frac{\sin x}{2}$	2 4) are th	no noints, Fir	nd the angle	between BA	and BC.		5
	If A(-2,1), B(2	,3) and C(-	2,-4 j ai c u	ic point.				<u> </u>	5
_	Determine the		Cit line t		oint (-4, -3) a	and parallel t	o x-axis.	E E	
	Determine the	equation o	$\frac{1}{16}$ the line u	arough mo po	n)				5
	If $A = \begin{bmatrix} 3 & 5 \\ 7 & -9 \end{bmatrix}$	and $B =$	$\begin{bmatrix} 0 \\ 2 \end{bmatrix}$, F	ind (4A – 5	В ј.	1 that AI	ie cymmeti	ic if and	5
,	If $A = \begin{bmatrix} 7 & -9 \end{bmatrix}$ If A and B are	symmetric	c matrices	of the same (order then s	how mar m) is symme-	1011	
	1 : C A D D /	Λ.							5
	The Arithmet	ic mean of	7,9,5,2,4, 0	3, X IS given o	0 00 7.1111	The last	-	· h	5
3	Find the mean	from the da	ita				105 (2	42-49	ال
)	Class	0-7	7-14	14-21	21-28	28-35	35-42	42-49	
	1 1							120	$\exists 1$
	interval				177	[1	143	28	11
	Frequency	19	25	36	72	51 (4×15=60 l	43 Marks)	28	A.
	Frequency	1 W. 14	Section	36 C (Attempt	72 any four)			28	
1		1 W. 14	Section	36 C (Attempt	72 any four)			28	
	Frequency Evaluate \int lo	$g(1+x^2)d$	Section	C (Attempt	72 any four)			128	
1	Frequency Evaluate ∫ lo	$g(1+x^2)d$ $\frac{dx}{dx}$ by part	Section Ix tial fraction	C (Attempt	any four)	(4x15=60 l	Marks)		
	Frequency Evaluate ∫ lo	$g(1+x^2)d$ $\frac{dx}{dx}$ by part	Section Ix tial fraction	C (Attempt	any four)	(4x15=60 l	Marks)		3
2	Frequency Evaluate \int lo Evaluate $\int \frac{1}{x(t)}$ Find the equators of the	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$	Section Ix tial fraction parabola	C (Attempt n method. whose focus	any four)	(4x15=60 l	Marks)		
2	Frequency Evaluate $\int lo$ Evaluate $\int \frac{d}{x(t)}$ Find the equal straight line:	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tre and race	Section Ix tial fraction parabola dius of the	C (Attempt n method. whose focus circle $x^2 + x^2 + $	any four)	(4x15=60 l	Marks)		
3	Frequency Evaluate \int lo Evaluate $\int \frac{1}{x(t)}$ Find the equators of the	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tre and race	Section Ix tial fraction parabola dius of the erminants,	C (Attempt n method. whose focus circle $x^2 + y^2 + $	any four) is the point $y^2 - 4x + 6$	(4x15=60) (4x15=60) $(0,0)$ and $(6y = 12)$	Marks)		
2 3 4	Frequency Evaluate $\int lo$ Evaluate $\int \frac{d}{x(t)}$ Find the equal straight line:	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tre and race	Section Ix tial fraction parabola dius of the erminants,	C (Attempt n method. whose focus circle $x^2 + y^2 + $	any four) is the point $y^2 - 4x + 6$	(4x15=60) (4x15=60) $(0,0)$ and $(6y = 12)$	Marks)		
2 3 4	Frequency Evaluate $\int lo$ Evaluate $\int \frac{d}{x(t)}$ Find the equal straight line:	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tre and race	Section Ix tial fraction parabola dius of the erminants,	n method. whose focus circle $x^2 + y^2$ prove that $y + z = z$ $z = z + x$	any four)	(4x15=60) (4x15=60) $(0,0)$ and $(6y = 12)$	Marks)		
2 3 4	Frequency Evaluate \int loo Evaluate $\int \frac{1}{x(t)}$ Find the equation is straight line. Find the center of the	$\frac{dx}{(x+1)}$ by partiation of the $3x-4y+2=0$ tre and ractives of determined	section tial fraction e parabola dius of the erminants,	n method. whose focus circle $x^2 + y$ prove that $y + z$ z $z + x$ $z + x$	is the point $\begin{vmatrix} y^2 - 4x + 0 \\ x \end{vmatrix} =$	(4x15=60) (4x15=60) $(0,0)$ and $(6y = 12)$	Marks)		
2 3 4 5	Frequency Evaluate \int lo Evaluate $\int \frac{1}{x(t)}$ Find the equal straight line: Find the cent Using proper	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tree and race tries of determined and the arresponding to the following street and the arresponding to the arresponding	Section Ix Itial fraction e parabola with the erminants, 3	n method. whose focus circle $x^2 + y$ $z = z + x$ $z = x + x$	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $	(4x15=60) $(0,0)$ and w $6y = 12$. $4xyz$	Marks) whose direct		
2 3 4 5	Frequency Evaluate \int lo Evaluate $\int \frac{1}{x(t)}$ Find the equation is straight line. Find the center of the c	$\frac{dx}{x+1}$ by partation of the $3x-4y+2=0$ tree and race tries of determined and the arresponding to the following street and the arresponding to the arresponding	Section Ix Itial fraction e parabola with the erminants, 3	n method. whose focus circle $x^2 + y$ $z = z + x$ $z = x + x$	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $	(4x15=60) $(0,0)$ and w $6y = 12$. $4xyz$	Marks) whose direct		
2 3 4 5	Frequency Evaluate \int loo Evaluate $\int \frac{1}{x(t)}$ Find the equal straight line: Find the cent Using proper Find the invertible invertible in the cent out the invertible invertible.	$\frac{dx}{(x+1)}$ by partation of the $3x-4y+2=0$ tree and ractives of determined at $3x-4y+2=0$ tree and ractives of the restandard determined at $3x-4y+2=0$	section Ix tial fraction e parabola vectors dius of the erminants,) matrix A = deviation for	n method. whose focus circle $x^2 + y$ prove that $y + z = z$ $z = z + x$ $y = x$ or the follow	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $	(4x15=60) $(0,0)$ and w $6y = 12$. $4xyz$	Marks) whose direct		
2 3 4 5	Frequency Evaluate \int lo Evaluate $\int \frac{1}{x(t)}$ Find the equal straight line: Find the cent Using proper	$\frac{dx}{(x+1)}$ by partation of the $3x-4y+2=0$ tree and ractives of determined at $3x-4y+2=0$ tree and ractives of the restandard determined at $3x-4y+2=0$	section Ix tial fraction e parabola vectors dius of the erminants,) matrix A = deviation for	n method. whose focus circle $x^2 + y$ prove that $y + z = z$ $z = z + x$ $y = x$ or the follow	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $	(4x15=60) $(0,0)$ and w $6y = 12$. $4xyz$	Marks) whose direct		
2 3 4 5	Frequency Evaluate \int loo Evaluate $\int \frac{1}{x(t)}$ Find the equator straight line. Find the cent of the cent of the inverse of the cent of the	$\frac{dx}{(x+1)}$ by partiation of the $3x-4y+2=0$ tree and ractiles of determined at the standard defining and	section tial fraction e parabola dius of the erminants, matrix A = deviation for	n method. whose focus circle $x^2 + y$ prove that $y + z = z$ $z = z + x$ $y = x$ [2 -3] or the follow	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $ ring data 5, 8	(4x15=60 to (4x15=	vhose direct	Tix is the	
2 3 4 5	Frequency Evaluate \int lo Evaluate \int \frac{1}{x(t)} Find the equal straight line: Find the cent Using proper Find the invertible invertible find out the Class	$\frac{dx}{(x+1)}$ by partiation of the $3x-4y+2=0$ tree and ractives of determined and $\frac{dx}{(x+1)}$ standard defining and $\frac{dx}{(x+1)}$	section tial fraction e parabola dius of the erminants, matrix A = deviation for	n method. whose focus circle $x^2 + y$ prove that $y + z = z$ $z = z + x$ $y = x$ [2 -3] or the follow	is the point $\begin{vmatrix} y^2 - 4x + 6 \\ x \\ x + y \end{vmatrix} = $ ring data 5, 8	(4x15=60 to (4x15=	vhose direct	Tix is the	

J & K BOARD OF TECHNICAL E ROLL No: Branch: - ELTX & COMM/MED ELTX Class: - 2nd Semester (NEP) **Subject: - DIGITAL ELECTRONICS** Time Allotted: - 3-Hrs Max. Marks: - 100 Answer all the 10 parts of the question in Section -A. Each part carries Two mark and all the Answer any 4 questions out of 8 questions in Section –B. Each question carries 05 marks. Answer any 4 questions out of 8 questions in Section –C. Each question carries 15 marks. Solve all the question of a section consecutively together. Section A (10x2=20 marks) Q1. Multiple choice questions. 1. The radix or base for hexadecimal is: d. 16 c. 8 b. 2 2. Which gate is known as universal gate? d. EX-OR b. OR . NAND 3. The binary equivalent of decimal 10 is: d. 0100 c. 1011 a. 1110 1010 4. The binary number equivalent of FF is: d. 11101101 1111111 مر b. 01001011 a. 10110011 5. The binary number equivalent to gray code 10111 is: d. 11101 b. 10101 c. 01101 11010 6. The BCD for the number 90 is: d. 11010001 c. 10101011 b. 11000011 a. 10010000 7. The NOT gate has how many inputs? c. 3 .et. 1 b. 4 8. A 4-variable Karnaugh map for SOP form has how many cells? c. 12 d. 16 b. 10 9. A half adder is used to add how many bits? a. 4 b. 3 c. 5 at. 2

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a. 10

a. AND

a. 14

a. 4

11.

III. IV.

10. An 8x1 multiplexer has how many select lines?

d. 3

c. 1

b. 2

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Section B (Attempt any four) (4x5=20 Marks)

What are digital and analog signals? Explain with example.

Compare between analog and digital signals.

Convert (FFFF)16 to decimal equivalent. Q3.

How can a universal NOR gate be used as:

(Any Two) c. OR b. AND

Q5. Use Boolean law and prove:

$$\overline{XY + YZ + \overline{Y}Z = XY + Z}$$

Q6. What is the difference between combinational and sequential circuits?

Q7. Give a brief description of multiplexers and demultiplexers.

Q8. Differentiate between a latch and a Flip Flop.

Section C (Attempt any four) (4x15=60 Marks)

a. Add 11001101 and 01011100

b. Add 1111 and 1040

c. Subtract 11010 from 11101 using 2's compliment method.

Draw the symbols and truth table for 2 input AND, OR, NOT, EX-OR and NAND Q2. gates.

State and prove De-Morgan's theorem with suitable examples. Q3.

Minimize the logic function Q4.

Y (A, B, C, D) =
$$\sum m(0,1,2,3,5,7,8,9,11,14)$$

Use Karnaugh map. Draw logic circuit for the simplified function.

Q5. Design a full adder circuit and discuss its working. Draw the truth table.

Q6. What is multiplexer? Draw and explain the logic diagram for 4:1 multiplexer.

What do you understand by flip flop? Explain JK flip flop.

Q8. Draw and describe 4 bit Asynchronous ripple counter.

