Enrollment No……

Bachelor of Engineering
Third Semester Main Examination, Dec-2020
Digital Circuits & System [EC221]
Branch-EC

Time: 3:00 Hrs **Max Marks 70**

Note: Attempt any five questions. All questions carry equal marks.

Q.1 (a) Write down AND gate, NAND gate and exclusive-OR gate with suitable diagram and truth table?
(b) Explain De-Morgan's theorem with example?

Q.1 (a) Simplify the logic function using K-map
(b) F (A, B, C) = A'C+A'B+AB'C+BC

Q.3 (a) Express the Boolean function F = A + B'C as a standard sum of minterms?
(b) Explain full adder with truth table?

Q.4 (a) Write down half adder substractot with truth table?
(b) Explain multiplexer with suitable diagram?

Q.5 (a) What is a decoder and explain how 3*8 decoder is constructed?
(b) Explain SR flip-flop and JK flip-flop?

Q.6 (a) Write down the master-slave flip-flop?
(b) What is difference between level triggering and edge triggered?

Q.7 (a) Write down the edge triggered?
(b) Write down the Asynchronous counter?

Q.8 Write short note on:
(i) PROM (ii) EPROM (iii) Static RAM?

Enrollment No……

Bachelor of Engineering

Third Semester Main Examination, Dec-2020

Network Analysis (EC222T)

Branch-EC

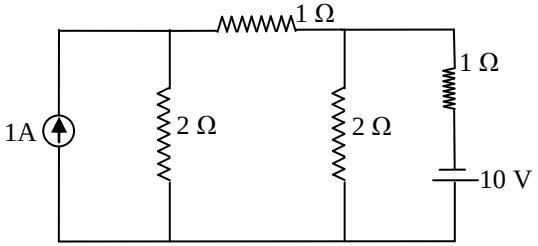
Time: 3:00 Hrs **Max Marks 70**

Note: 1. Attempt any Five questions from eight question.
2. Answer should be precise & to be point only.
3. Assume suitable data is required.

Q.1 (a) Explain the principal of Duality?
(b) Discuss the characteristics of ideal voltage and current source.

Q.2 (a) Define the following terms in context of h/w graph. Degree of vertex, path, connected path, circuit, tree, branch chords, Co-tree, cut set f-circuit and f cutest.
(b) Give brief introduction to the dependent source.

Q.3 (a) State Millman's theorem?
(b) Using mesh analysis obtain the current through the 10 volts



Q.4 (a) Obtain S-domain equivalent circuit for a capacitor with initial voltage?
(b) find Laplace transform of Sinωt ?

Q.5 (a) State and explain Thevenin's theorem?
(b) Given the function F(s) = $\frac{5(s+3)}{5(s+1)}$ find the initial value f(O+) and find value f(∞) without finding the inverse Laplace transform of F(s).

Q.6 (a) Discuss the restrictions on poles and zeros location in S-plane for driving point function..
(b) The Z-parameters of two port n/w are

$Z_{11} = 10\ \Omega$

$Z_{22} = 8\ \Omega$

$Z_{12} = Z_{21} = 5\ \Omega$

Find the Y and ABCD parameter

Q.7 (a) What is half wave symmetry ? Explain with the help of an example.
(b)Define ABCD Parameter.

Q.8 (a) Give the equivalents of all the three basic components at $t = o^+$ and $t = \infty$?
(b) State and explain superposition theorem?

Enrollment No……

Bachelor of Engineering
Third Semester Main Examination, Dec-2020
Electronic Devices & Circuits (EC223T)
Branch-EC

Time: 3:00 Hrs **Max Marks 70**

Note: (i) Attempt any five questions out of eight.
(ii) Assume suitable data if necessary & state them clearly

Q.1 **(a) Explain briefly about the semiconductor and its types. 7**
(b) What is biasing? Explain the need of it. List out different types of biasing methods. 7

Q.2 **(a) In a silicon transistor circuit with a fixed bias Vcc=9v, Rc=3kΩ, R_B=8kΩ, β=50 & V_{BE}=0.7 V. Find the operating point & stability factor. 7**
(b) Explain the operation of cc configuration of BJT and its input & output characteristic briefly. 7

Q.3 **(a) Explain the Avalanche and Zener Breakdowns in PN Junction diode. 7**
(b) For a Ge diode, the Io = 2 μA and the voltage of 0.26 V is applied. Calculate the forward and reverse dynamic resistance value at room temperature. 7

Q.4 **(a) Discuss analysis of transistor amplifier using h-parameter in CE configuration. 7**
(b) Briefly explain current mirror circuit. 7

Q.5 **(a) Explain the working of n-channel enhancement MOSFET. 7**
(b) Explain the construction and working of P-channel JEFT. 7

Q.6 **(a) Write the difference between BJT & FET. 7**

	(b) Explain the working of class C amplifier.	**7**
Q.7	**(a) What is UJT? Write its characteristics.**	**7**
	(b) Compare Diac and Triac.	**7**
Q.8	**Write short notes on (Any 2)**	**14**
	(a) Photo diodes	
	(b) Ebers-Moll model	
	(c) Silicon controlled rectifier (SCR)	
	(d) Thyristor's applications	

Enrollment No……..

Bachelor of Engineering
Third Semester Main Examination, Dec-2020
Measurements and Instrumentation (EC224T)

Time: 3:00 Hrs **Max Marks 70**

Note: 1. Attempt any five questions out of eight.
2. Answer should be precise & to be point only.
3. Assume suitable data if necessary & state them clearly.

Q.1 (a) Describe the working principal of chopper type D. C. Voltmeter. What are the advantages and disadvantages of chopper type. D. C. Voltmeter over basic D. C. Voltmeter.
(b) Explain the working principal of Bolometer.

Q.2 (a) What is electrostatic deflection ? What do you understand by post deflection acceleration?
(b) With the help of circuit diagram explain the working of Maxwell's inductance and capacitance bridge.

Q.3 (a) Discuss the working principal of calorimeter.
(b) Discuss the following terms.
(i) Sensitivity (ii) Linearity (iii) Resolution

Q.4 (a) Describe the circuit and working of a Q-meter. Also describe the impedance measurement using Q-meter.
(b) List of various parts of CRO. Draw its block diagram and explain the working of all parts of CRO.

Q.5 (a) Explain the principal working of LVDT with the help of diagram.
(b)What is a thermistor? Describe with the help of neat sketches.

Q.6 (a) Draw the block diagram of function generator and explain the working of it.
(b)Explain square wave generator.

Q.7 (a) Describe the construction and working of photovoltaic cells. Draw their characteristics. Name the different materials used for these cells. (b) Write short notes on.
(i) RVDT (ii) Optical Transducer.

Q.8 (a) Explain the working of beat frequency os collator.
(b) Explain the principal of working and application of sweep frequency generator.

Enrollment No……

Bachelor of Engineering
Third Semester Main Examination, Dec-2020
Communication Skills (HU220T)
Branch-CE/EE/EC/CS/IT/ME

Time: 3:00 Hrs **Max Marks 70**

Note : (i) Attempt any five questions. All questions carry equal marks.
(ii) Answer should be precise & to be point only.
(iii) Assume suitable data if necessary & state them clearly

Q.1 **(a) What is communication? Explain importance of communication in detail?**
(b) What are different barriers to communication and how will you eliminate them?

Q.2 **(a) How are non-verbal communication in an online environment?**
(b) What do you mean by communication styles? Explain.

Q.3 **(a) Define cycle of communication. Discuss the role of feedback in the cycle of communication.**
(b) What do you mean by encoding & decoding of the message? What is the role of source and receiver in communication?

Q.4 **(a) What are some examples of non-verbal signals that we convey in communication with other peoples?**
(b) What is the importance of studying non-verbal communication?

Q.5 **(a) Discuss the level of communication.**
(b) What are the different challenges in communication?

Q.6 **(a) What is paralinguistic features of communication.**
(b) What is volume in paralinguistics?

Q.7 **(a) What is proxemics in non-verbal communication?**
(b) Discuss the features importance to make an oral presentation effective.

Q.8 **Write short notes on-** **(Marks=14)**
(a) Feedback
(b) Semantic barriers
(c) Voice modulation
(d) Gesture.

Enrollment No……

Bachelor of Engineering
Third Semester Main Examination, Dec-2020
Mathematics-III [MA-220]
Branch-EE/EC/CS/IT

Time: 3:00 Hrs **Max Marks 70**

Note : Attempt any five questions.
All question carry equal marks.

Q.1 (a) State and prove Cauchy's theorem.
(b) Show that the function $e^x(cosy + isiny)$ is analytic and find its derivative.

Q.2 (a) Using Cauchy's integral formula prove that : $\int_C^3 \frac{e^{2z}}{(z+1)^4} dz = \frac{8\pi e^{-2}}{3} i$, where C is the circle $|z| = 3$.
(b) Find the imaginary part of the analytic function whose real part is $x^3 - 3xy^2 + 3x^2 - 3y^2$.

Q.3 (a) Find the real root of the equations $x^3 - 9x + 1 = 0$ by the method of false position.
(b) Apply Newton Raphson method to solve $3x = cosx + 1$.

Q.4 (a) Using Newton's forward Interpolation formula, find the value of $f(1.6)$,if

x:	1	1.4	1.8	2.2
y:	3.49	4.82	5.96	6.5

(b) Solve the following system by Gauss elimination method

$$6x_1 + 3x_2 + 2x_3 = 6$$
$$6x_1 + 4x_2 + 3x_3 = 0$$
$$20x_1 + 15x_2 + 12x_3 = 0$$

Q.5 (a) Apply Lagrange's formula to find the value of x when f(x) = 0 given that

x:	30	34	38	42
$f(x)$:	−30	−13	3	18

(b) Solve initial value problem $\frac{dy}{dx} = 1 + xy^2$, $y(0)$=1 for $x = 0.4$, 0.5 by using Milne's method when it is given that

x:	0.1	0.2	0.3
y:	1.105	1.223	1.355

Q.6 (a) Solve the equation $\frac{dy}{dx} = x + y$ with initial condition $y(0) = 1$ by Runge kutta rule from $x = 0$ to $x = 0.4$ with $h = 0.1$

(b) Evaluate $\int_{0.5}^{0.7} x^{1/2} e^{-x} dx$ approximately by using a suitable formula.

Q.7 (a) Solve the following by Euler's modified method, the equation $\frac{dy}{dx} + \log(x + y), y(0) = 2$ at $x = 1.2$ and 1.4 with $h = 0.2$
(b) Use picard's method to approximate y when $x = 0.2$ given that $y = 1$ when $x = 0$ and $\frac{dy}{dx} = x - y$

Q.8 (a) Find the z Transform of Sinak, k7,0

(b) Solve the following by Gauss Seidel iteration Method

$$10x + y + z = 12$$

$$2x + 10y + z = 13$$

$$2x + 2y + 10z = 14$$