Code No.: **50584** **MR15**

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)
Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Computer Organization and Operating Systems**

Branch: **ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Explain briefly about Fixed point and Floating point representations with example
2. Give any four differences between microprogramming & nano programming.
3. What is Input-Output Processor? Explain its working functionalities.
4. What is Swapping?
5. What are different file access methods?

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. a) Explain about instruction codes.
   b) Write about Memory Stack Organization
2. a) Discuss the concept of compliments used to represent signed numbers.
   b) Compare RISC and CISC?
3. a) With a neat block diagram explain the virtual memory organization.
   b) Explain RAM and ROM Memories.
4. a) Explain the basic organization of micro programmed control unit.
   b) Explain about the micro programmed control organization.
5. a) Explain interface cycle in detail with the help of diagram.
   b) What are major functional differences between memory mapped I/O and Isolated I/O.
6. a) Discuss in brief about Standard Serial Communication Protocols.
   b) What is Interrupt? Explain about Priority interrupts.
7. a) Explain segmentation. Also discuss how it is different from paging?
   b) Explain about Logical address & Physical address.
8. a) What is File System? Explain about File System Structure.
   b) Explain File System Security and its Protection.

Code No.: **50408** **MR15**

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Digital Electronics**

Branch: **ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

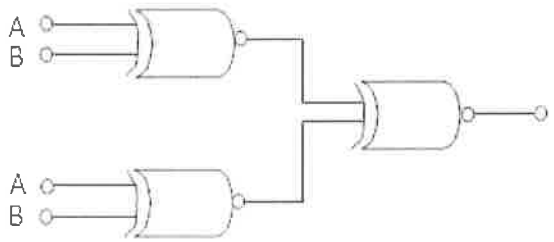
Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Convert the BCD number "0011 0011" into a binary number.
2. Develop a HDL code for a NOR gate
3. How many minimum number of NAND gates required to realize full adder circuit?
4. What is the function of Reset and clear inputs for a Flip-flop?
5. State FSM compatibilities.

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. Determine the decimal value of the binary number 100100111000
   a) Assuming it to be in b) straight binary code c) 8-4-2-1 code d) Excess -3 code
   e) 5421code
2. a) Using K-map, simplify the Boolean expression:
   $f(x_1x_2x_3x_4)= \Sigma(0,1,3,4,7,12,13,15)$
   b) A 12 bit Hamming code word containing 8 bits of data and 4 parity bits is read from memory. What was the original 8 bit word if the 12 bit read out is as follows:
   i) 0000 1110 1010 ii) 1011 1000 0110 iii) 1011 1111 0100
3. Design BCD to Gray code converter and realize using logic gates
4. a) Write an HDL code for 4-bit up-down counter
   b) Design a Johnson's ring counter
5. a) Implement the following function using 8×1 mux
   $F(A,B,C,D)=\sum(1,3,4,11,12,13,14,15)$
   b) Write about FSM capabilities and Limitations.
6. a) Convert $(300)_{10}$ to binary and then to hexadecimal. **(3M)**
   b) Write 2421, 5421, 84-2-1 codes **(7M)**
7. a) Using the Quine-McCluskey method of tabular reduction, minimize the given combinational single-output function $f(w,x,y,z) = \Sigma m(0,1,5,7,810,14,15)$. **(8M)**
   b) Find the output of the circuit shown in fig. **(2M)**



8. a) Describe 4-bit binary parallel adder
   b) Write a HDL code for 4x1 Mux using Data flow modeling.

Code No.: **50409** **MR15**

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Electromagnetic Theory and Transmission Lines**

Branch: **ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. State and briefly discuss the basic definition of the curl of a vector.
2. Define the Magnetic scalar and vector potential.
3. Derive relation between depth of penetration and attenuation constant.
4. Define Phase velocity and Group velocity and write its equations.
5. What are the limitations of single stub matching sections?

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. a) Explain line, surface & volume charge distributions.
   b) Obtain the expression for the electric field due to an infinite surface change at any radial distance.
2. a) State Gauss's law and write Maxwell's first equation.
   b) By using Gauss's law, find D, E due to point charge and infinity sheet charge.
3. a) State and explain Biot-Savart's Law relating the magnetic field produced at a point due to current in a small elemental wire.
   b) Write the Maxwell's equations for magneto static fields
4. a) What are convection and conduction current densities?
   b) What is the inconsistency in Ampere's Law How It can be avoided?
5. a) Prove that $\frac{|E|}{|H|} = 120\pi\Omega$ for free space
   b) Define Brewster angle and prove that $\theta_B = tan^{-1}\sqrt{\frac{\varepsilon_2}{\varepsilon_1}}$. The Symbols have their usual meanings.
6. a) Define reflection coefficient and transmission coefficient and find the expressions in terms of intrinsic impedances of medium.
   b) Define plane and uniform plane wave. Prove that uniform plane wave does not have filed component in the direction of propagation.
7. a) With a neat diagram, derive the general transmission line equations.
   b) Show that λ/4 line acts like impedance inverter.
8. a) Derive relation between reflection coefficient and characteristic impedance.
   b) Define reflection co-efficient. Also derive an expression for reflection co-efficient.

Code No.: **50411** **MR15**

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Analog Communications**

Branch: **ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Compare AM and DSB-SC system
2. Draw and explain the spectrum of VSB modulated wave.
3. Discuss Image Frequency
4. What is AGC control? What are its functions?
5. Write merits and demerits of PAM.

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. a) Define modulation index and percentage of modulation of AM?
   b) Derive the power relations in the AM wave
2. Compare various Amplitude Modulation Techniques.
3. a) Explain coherent detection of SSB signals?
   b) Explain about Hilbert Transformation?
4. a) Describe the principle of VSB Modulation.
   b) VSB modulation
5. a) Derive time domain equation for WBFM & also plot the spectrum.
   b) Compute the bandwidth requirement for the transmission of FM signal having a frequency deviation 75KHz and an audio bandwidth of 10KHz.
6. a) Explain the concept of Direct method of FM?
   b) A FM signal having frequency deviation of 75 KHZ and f_m =15KHZ find out the modulation index of FM?
7. Compare figure of merit of DSB-SC and SSB-SC
8. a) Explain the working of tuned radio frequency receiver with the help of a block diagram.
   b) List out of advantages and disadvantages of TRF receiver.

Code No.: **50H11** | **MR15**

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Human Values and Professional Ethics**

Branch: **ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. What do you mean by 'Respect' and 'Differentiation'?
2. What are the goals of your life?
3. Explain the concept of Ethical theories?
4. Briefly explain the concept and importance of Human Values.
5. What is self-confidence and how it drives an individual towards his/her goal?

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. a) Discuss the positive consequences of Honesty

   b) Define moral character.
2. How are self interests important in work place? Explain in detail with examples?
3. What do you mean by work ethics? Explain in detail.
4. a) Distinguish between Consensus and Controversy

   b) Write uses of ethical theories.
5. Elaborate the benefits of Ethical theories in detail.
6. Values and Skills complement each other. Elaborate.
7. How can someone exercise self-control and focus on the goal while being lured by internal desires and external demands?
8. In our behavior, we generally observe our intention and others lack of competence. Does it lead to mutual happiness? What is the alternative? Explain with the help of an example.

Code No.: **50410** MR15

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Pulse and Digital Circuits**

Branch: **Common to EEE & ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Explain RL circuit of Low pass filter?
2. Compare the performance of series and shunt clippers?
3. Mention the applications of Astable multivibrator.
4. Explain how the logic families are the entity of the logic gates?
5. Define transmission error and write its significance?

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. a) Derive how Low Pass RC circuit acts as Integrator.
   b) Explain the response of RC Low Pass Circuit for Ramp and Pulse inputs.
2. Discuss the response of RC Low-pass circuit to different types of input voltages along with input and output waveforms.
3. a) Explain the physical process involved in the diode storage time and the diode transition time

   b) Design a two level clipper for bias voltages $V_1 = 7V$ and $V_2 = -4V$ with diodes $V\gamma = 0.6, R_f = 100\Omega, R_r = 100K\Omega$
4. What is meant by piece wise-linear approximation? Draw the V I characteristics of junction diode on the basis of above approximation.
5. a) Write a short notes on Schmitt Trigger
   b)Write a short notes on Collector Catching diodes
6. Explain the operation of Monostable Multivibrator circuit with a neat sketch.
7. a) Realize and explain the operation of 3 input OR gate using CMOS logic?
   b) Write the basic principles involved in the bidirectional sampling gates?
8. A)Write a short notes on Transmission error
   b) Methods of generating time base wave forms

Code No.: **50B10** | **MR15**

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II B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, MAY-2019

Subject: **Special Functions and Complex Analysis**

Branch: **Common to EEE & ECE**

Time: 3 hours **Max. Marks: 60**

PART – A

Answer **ALL** questions of the following **5x2Marks=10 Marks**

1. Evaluate $\int_0^\infty e^{-4x}\, x^{3/2}\, dx$.
2. Prove that $P_n(-1) = (-1)^n$.
3. Evaluate $\int_C \frac{z^2 - z + 1}{z - 1}\, dz$ where C is the circle $|z| = \frac{1}{2}$.
4. Find the Taylor's expansion of $f(z) = \frac{z-1}{z+1}$ about the point $z = 1$.
5. Find the image of $|z|=2$ under the transformation $w = 3z$.

PART-B

Answer any **FIVE** Questions of the following **5x10 Marks= 50Marks**

1. Solve in series the equation $x\frac{d^2y}{dx^2} + \frac{dy}{dx} + xy = 0$
2. Solve in series the equation $(1+x^2)\frac{d^2y}{dx^2} + x\frac{dy}{dx} - y = 0$.
3. State and prove the generating function for $P_n(x)$.
4. Prove the generating function for $J_n(x)$
5. Show that the function $f(z) = \sqrt{|xy|}$ is not analytic at the origin even though Cauchy-Riemann equations are satisfied at that point.
6. Evaluate $\int_C \frac{e^z}{(z^2 + \pi^2)^2}$ where C is (i) $|z|=2$. (ii) $|z|=4$.
7. a) Find the residue of $\tan(z)$ at each pole in $|z|=1$
   b) Evaluate by counter integration $\int_{-\infty}^{\infty} \frac{x^2}{(a^2+x^2)^3}\, dx$
8. Show that the transformation $\omega = \frac{2z+3}{z-4}$ changes the circle $x^2 + y^2 - 4x = 0$ into the straight line $4u + 3 = 0$.