Code No.: **70407** **MR17**

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 REGULAR END EXAMINATIONS, MAY-2019

Subject: **Electronic Circuits-II**

Branch: **ECE**

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

PART – A

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

1. What is the effect of voltage gain and Band width in cascaded amplifiers?
2. What are different types of feedback amplifier topologies?
3. State Barkhausen criterion for oscillation.
4. What are the advantages of class-B operation?
5. Define Quality factor of tuned circuit?

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. a) Compare different coupling schemes used in multistage amplifiers [6M]
   b) What is cascade connection and cascode connection [4M]

(OR)

2. For a darlington pair, calculate A_I,V_I,Ri and Ro . Given that hie=1.1kΩ, hfe=50, hre=2.5x10^{-4} and hoe=25x10^{-6}A/V, Rs=3kΩ & R_E=3kΩ.
3. a) Discuss about the types of negative feedback amplifiers giving the effect of each type of feedback on the parameters of the amplifiers [6M]
   b) Define feedback gain & feedback factor. [4M]

(OR)

4. An amplifier has a mid band gain of 125 and a bandwidth of 250kHz. If 4% negative feedback introduced, find new bandwidth and gain.
5. Derive the frequency of oscillation of RC phase shift oscillator and explain the circuit operation.

(OR)

6. Derive the expressions for frequency of oscillation and condition for starting of oscillation of Hartley oscillator.
7. a) Draw the schematic of class-A power amplifier.
   b) What is series fed, single ended transformer coupled?

(OR)

8. For Class B Push Pull Amplifier, calculate the input power, Output Power and Power handled by each Output transistor and the circuit efficiency for an input of 20V P-P Signal, Vcc = 30V and RL= 16 ohms.
9. What is tuned amplifier? What are the types of tuned amplifiers? Explain about stagger tuned amplifier.

(OR)

10. Explain about Class-B and Class-C large signal Tuned amplifiers.

Code No.: **70410** **MR17**

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II B.TECH II SEMESTER REGULAR END 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. State the need of Modulation
2. State the expressions for Wideband FM and Narrowband FM.
3. What are the drawbacks of TRF receiver?
4. What is SSB Modulation and what are its advantages?
5. What is White noise?

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. a) Derive the expression for total power relation in AM.
   b) Explain the principle of coherent detector of DSB-SC modulated more with a neat block diagram.

OR

2. Explain the operation of balanced ring modulator with the help of circuit diagram and suitable waveforms.
3. Explain with block diagram, the frequency discrimination method of Generating SSB.

OR

4. Explain the principle of operation for the generation and detection of a VSB signal using block diagram.
5. With a neat sketch explain the principle of operation of Phase locked loop.

OR

6. Compare the direct and indirect methods of generating FM signals. Explain Armstrong method of generating FM signals with a neat block schematic diagram.
7. Explain briefly different noise present in the analog communication system

OR

8. a) Write short notes on Modeling of Noise Sources.
   b) Explain about noise in AM systems.
9. Explain the principle of following with block diagrams
   a) TRF Receiver
   b) Super heterodyne Receiver

OR

10. a) Explain the generation of PPM , with a neat circuit diagram and waveform.
    b) What are the advantages and disadvantages of PPM over PWM

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II B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY-2019

Subject: **Electromagnetic Theory & Transmission Lines**

Branch: **ECE**

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

PART – A

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

1. State Divergence theorem and Stokes theorem.
2. State Bio Savart's Law.
3. Describe instantaneous, time averaged and reactive power of plane wave travelling in free space medium.
4. Define reflection coefficientandVSWR.
5. In air line adjacent maxima are found at 12.5 cm and 37.5 cm , calculate the operating frequency.

PART-B

Answer ALL Questions of the following **5x10 Marks= 50Marks**

1. a) Derive continuity equation.
   b) Define and explain the following
   i) Electric flux density D ii) Electric field intensity E.

OR

2. Define electric field intensity at a point. Derive the expression for E of a line charge.
3. a) Express Maxwell's equation in differential form and integral form.
   b) Derive the Lorentz condition for potentials.

OR

4. State and explain Bio-Savart's Law relating the magnetic field produced at a point due to current in a small elemental wire.
5. Explain the term surface impedance and depth of penetration.

OR

6. a) What is poynting theorem? Derive the expression for poynting vector
   b) Explain wave propagation in conducting medium.
7. a) Distinguish between the different types of distortions present in conventional transmission Lines, and establish the condition for distortion less transmission lines.
   b) What are the wave equations for a lossless medium and a conducting medium for sinusoidal variations.

OR

8. a) What is distortion? State the conditions that characterize a distortion less line.
   b) Discuss the parameters that characterize a lossless and low loss transmission line.
9. a) Explain the principle of impedance matching using a single stub.
   b) Define the terms: Reflection coefficient and VSWR. Derive expressions for the same, as applicable to RF lines.

OR

10. a) What are the applications of Smith Chart?
    b) Explain about Single stub matching and Double stub matching.

Code No.: **70508** MR17

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II B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY-2019

Subject: **Computer Organization**

Branch: **ECE**

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

PART – A

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

1. Describe mask and selective clear operation
2. What is addressing mode.
3. Define RAM chip.
4. What mechanism used in multiplication and division fixed point operations.
5. Discuss about multiple functional unit.

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. What is register transfer language? Explain the basic symbols used in register transfer.

OR

2. List the types of computers and explain applications of each type.
3. a) Explain about input-output configurations.
   b) What is an interrupt? Explain it with flow chart.

OR

4. What is instruction format and type of instruction formats in basic computer organization?
5. Describe associative mapping, direct mapping, set associative mapping.

OR

6. Explain main memory and model the RAM chip and ROM chip.
7. Distinguish between Isolated versus Memory Mapped I/O.

OR

8. a) Explain about binary division algorithm with digital hardware?
   b) Write short notes on DMA controller and DMA transfer with their block diagrams?
9. Formulate a six segment instruction pipeline for a computer, specify the operations to be performed in each segment.

OR

10. a) Explain the process of instruction pipeline?
    b) Write short notes on Attached array processor with their diagrams?

Code No.: **70B05** | **MR17**

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II B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY-2019

Subject: **Special Functions and Complex Variable**

Branch: **Common to EEE & ECE**

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

PART – A

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

1. Evaluate $\int_0^2 \frac{x^2}{\sqrt{2-x}} dx$ using β and Γ functions.
2. Prove that $J_n(-x) = (-1)^n J_n(x)$.
3. Verify C-R equations for the function $f(z) = e^{-x}(\cos y - i \sin y)$.
4. Evaluate $\int_0^{1+2i} z^2 \, dz$
5. State Laurent's Theorem.

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. (a) Evaluate $\int_0^1 x^{5/2}(1-x^2)^{3/2} dx$.

   (b) Show that $\int_0^\infty x^4 e^{-x^2} dx = \frac{3\sqrt{\pi}}{8}$

.OR

2. Prove that $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$
3. (a) state and prove the orthogonal properties of the Legendre polynomial.
   (b) Show that $P_n(-x) = (-1)^n P_n(x)$.

OR

4. Derive the Rodrigues Formula
5. (a) Find the bilinear transformation that maps points $\infty, i, 0$ into $0, i, \infty$.
   (b)Show that the function $u(x,y) = e^x \cos y$ is harmonic. Determine its harmonic conjugate $v(x,y)$ and the analytic function $f(z) = u + iv$.

OR

6. Show that the function $w = \frac{4}{z}$ transforms the straight line x=c in the z-plane into a circle in the W – plane.
7. a) Evaluate $\int_c \frac{e^{2z}}{(z-1)(z-2)} dz$ where C is $|z| = 4$.

   b) Evaluate $\int_c \frac{dz}{z^8(z+4)}$ when C is $|z| = 2$.

OR

8. Verify Cauchy's integral theorem for $f(z) = z^2$ taken over the boundary of the square with vertices at $-1 \pm i$ and $1 \pm i$
9. State and prove Cauchy's Residue theorem

OR

10. Evaluate $\int_0^{2\pi} \frac{\cos 2\theta \, d\theta}{5+4\cos\theta}$

Code No.: 70408

MR17

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II B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY-2019

Subject: **Pulse & 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. How high pass RC circuit used as a differentiator?
2. Explain the basic series clipper circuit below reference voltage?
3. Write the applications of Schmitt trigger?
4. What is meant by sampling gate and give its applications?
5. List the methods of generating a time base waveform.

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. Why does a resistive attenuator need to be compensated? Explain different methods of Compensation. What is the effect of the output resistance of the generator on an attenuator output?

(OR)

2. Draw and explain the outputs of the low pass RC circuit for different time constant to
   a) Pulse input. b) Step voltage input.
3. Explain the response of the clamping circuit when a square wave input is applied under steady state conditions.?

(OR)

4. a) With the help of a neat circuit diagram, explain the working of a two-level diode clipper.
   b) Draw a circuit, to transmit that part of a sine wave which lies between -3V and +6V.
5. Explain how a compensation circuit improves the linearity of a Bootstrap voltage time base generator?

(OR)

6. a) Derive expression for the UTP and LTP of a Schmitt trigger.
   b) What are the advantages and drawbacks of direct connected binary?
7. a) Design the universal gates using DTL logic and verify the truth tables.
   b) Verify the truth table of RTL AND gate with the circuit diagram of two inputs.

(OR)

8. a) Compare unidirectional and bidirectional sampling gates.
   b) Write the advantages and disadvantages of unidirectional diode gate.
9. a) With the help of a circuit diagram and wave forms, explain frequency division by an astable multivibrator.
   b) How does the sync signal affect the frequency of operation of the sweep generator?

(OR)

10. a) With neat sketch, explain about transistor miller time base generator. **6M**
    b) Write notes on Monostable relaxation circuits. **4M**

Code No.: **70M03** **MR17**

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II B.TECH II SEMESTER REGULAR END EXAMINATIONS, MAY-2019

Subject: **Environmental Science**

Branch: **Common to EEE, ECE, CSE & IT**

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

PART – A

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

1. Define eco system and give its classification.
2. Define pollutant? Give two examples?
3. What is sustainable development? Mention any two threats to sustainability?
4. What is ocean thermal energy?
5. Write the reaction involving in the depletion of ozone layer.

PART-B

Answer **ALL** questions of the following **5x10 Marks= 50Marks**

1. Explain different types of ecological pyramids with neat labeled diagrams.

OR

2. a) Analysis the role of food chain & food web contributes the energy flow in the universe.
   b) Explain why pyramid of energy is always upright.
3. Discuss the major environmental impacts of mineral extraction.

OR

4. a) What is meant by biodiversity? Explain various types of biodiversities in an ecosystem.
   b) How can we conserve biodiversity?
5. a) What is water pollution? Discuss various sources of water pollution.
   b) Write about drinking water quality standards.

OR

6. To any industry what are devices to be established to control air pollution at source.
7. What are major implications of enhanced global warming?

OR

8. Discuss the natural formation and occurrence of ozone in the stratosphere.
9. Discuss the following a) crazy consumerism b) role of IT in environment.

OR

10. a) Write a short note on human health.
    b) "Only if we take care of nature , nature will take care of us"