

MALLA REDDY ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD)

Gundlapochampally (H), Maisammaguda (V), Medchal (M), Medchal-Malkajgiri (Dist), Hyderabad

III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **ENGINEERING ECONOMICS AND ACCOUNTANCY**Branch: **Common for EEE, ECE & CSE****Time: 3 hours****Max. Marks: 60****PART – A****Answer ALL questions of the following****5x2M=10 M**

1. What is Demand Function?
2. What are the key terms used in break even analysis.
3. What is Oligopoly Competition?
4. What is Internal Rate of Return (IRR)?
5. What do you mean by Ledger?

PART-B**Answer ANY FIVE questions of the following****5x10 M= 50M**

1. a) Managerial Economics is multi – dimensional discipline, explain.
b) Compare income elasticity and cross elasticity with the help of Suitable example?
2. a) State and explain 'Law of Demand' with Assumptions and Exceptions.
b) Determine type of elasticity if $I_1 = \text{Rs}100$, $I_2 = \text{Rs} 80$, $Q_1 = 1000\text{units}$ and $Q_2 = 700\text{units}$?
3. a) Define Production function and explain input/output relationship with two variables.
b) Srikanth Enterprises deals in the supply of hardware parts of computer. The following cost data is available for 2 successive periods:

	Year 1(rs)	Year 2(rs)
Sales	50000	120000
Fixed cost	10000	20000
Variable cost	30000	60000

Determine: a) BEP b) Margin of safety.

4. a) What is monopolistic competition? Explain its features briefly.
b) What is demand oriented pricing. Explain each of them.
5. a) Write a note on pricing. List any 3 pricing methods
b) Define Oligopoly. Discuss its features.

6. a) Compute NPV for the following two projects

Cash Flows	Project X(Rs.)	Project Y(Rs.)	PV Factor @10%
Initial Cost of Investment	50000	60000	1.00
1 st Year	20000	30000	0.909
2 nd Year	30000	40000	0.826
3 rd Year	40000	50000	0.751

- b) Compute Profitability Index for the following two projects and rank best one.

7. a) Discuss briefly the changing business environment during post-Liberalization era.
b) Explain the methods and sources of raising finance?
8. Explain the procedure for preparing Final accounts?

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Branch: ECE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2M=10 M

1. Give the condition for stability.
2. What is bit reversal order for N=32.
3. Why impulse invariant method is not suitable for high pass filter?
4. Define phase delay and group delay.
5. Design a multirate system for converting 3.5 KHz sampling rate into 1 KHz sampling rate.

PART-B

Answer ANY FIVE questions of the following

5x10 M= 50M

1. a) Determine the impulse response of the system with difference equation

$$y(n) - \frac{1}{6}y(n-1) - \frac{1}{6}y(n-2) = x(n) \text{ using Z-Transform.}$$

- b) Obtain the direct form-I and form-II structure for the system function

$$H(z) = \frac{1+2z^{-1}+z^{-2}}{1-\frac{3}{4}z^{-1}+\frac{1}{8}z^{-2}}$$

2. a) Obtain the cascade and parallel realization structures for system with difference equation

$$y(n) = \frac{3}{4}y(n-1) - \frac{1}{8}y(n-2) + x(n) + \frac{1}{3}x(n-1).$$

- b) Find the natural response of the system with difference equation

$$y(n) + 2y(n-1) + y(n-2) = x(n) + x(n-1) \text{ with initial condition } y(-1)=y(-2)=1.$$

3. a) Given $x(n) = 1 \quad 0 \leq n \leq N-2$

$$= 0 \quad \text{elsewhere}$$

Find DFT of $x(n)$ for $N=4$. Sketch the magnitude & phase plot.

- b) Determine the 8-point DFT of the sequence $x(n) = \{1,1,1,1,0,0,0,0\}$ using the DIT-FFT algorithms and tabulate the values after each stage.

4. a) Find the circular convolution of sequences $x_1(n) = \{1,2,3,5\}$ & $x_2(n) = \{1,2,3\}$ for $N=6$

- b) State and prove circular convolution property of DFT.

5. a) For the analog transfer function $H(s) = \frac{1}{(s+1)(s+2)}$, determine $H(z)$ using impulse invariant method ($T=1$ sec).

- b) Design an analog Chebyshev filter that satisfies the constraints:

$$0.707 \leq H(j\Omega) \leq 1 \quad \text{for} \quad 0 \leq \Omega \leq 2$$

$$H(j\Omega) \leq 0.1 \quad \text{for} \quad \Omega \geq 4.$$

6. Design an Ideal band reject filter with a desired frequency response

$$H_d(e^{jw}) = \begin{cases} 1 & \text{for } |w| \leq \frac{\pi}{3} \text{ and } |w| \geq \frac{2\pi}{3} \\ 0 & \text{otherwise} \end{cases}$$

Find the values of $h(n)$ for $N=7$. b) Find $H(z)$ c) Plot the magnitude response using hamming window.

7. a) Give the comparison of IIR and FIR digital filters.

- b) Determine the Frequency Response of Linear phase FIR filters for Symmetrical impulse response for N odd.

8. a) Explain decimation by a factor D ? (6M)

- b) Find the expression for the output $y(n)$ in terms of input $x(n)$ for the system given by (4M)



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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **MICRO CONTROLLERS & EMBEDDED SYSTEMS**Branch: **ECE**Time: **3 hours**Max. Marks: **60****PART – A**Answer **ALL** questions of the following**5x2M=10 M**

1. Explain the interrupts in 8051.
2. Explain PSW Special Function register.
3. Draw the interfacing diagram of DAC0808 with 8051.
4. Mention the quality attributes of an embedded system.
5. Mention the two ways to interface an LED to a microcontroller.

PART-BAnswer **ANY FIVE** questions of the following**5x10 M= 50M**

1. a) Describe function PSEN, EA, XTAL1 & XTAL2 pins of 8051 microcontroller.
b) Explain in detail timer modes of operation with necessary registers in 8051.
2. a) What is meant by development system? Write the features of development system.
b) Discuss the hardware and software features of 32-bit Microcontrollers.
3. a) Explain the following instructions of 8051 MC with example
i) ACALL ii) MOVC iii) JNC iv) CJNE
b) Write a subroutine which checks the contents of 20H, if is positive value, the subroutine finds its two's complement and replace in the same location and returns.
4. a) Assume the ROM space starting at 250H contains "World", write a program to transfer the bytes into RAM locations starting at 40H.
b) Sketch & explain the interface of 4x4 matrix keypad with 8051.
5. a) List & explain characteristics of an Embedded System.
b) Define Embedded Systems & write the applications.
6. a) Explain the role of a processor and its selection for an ES with a suitable example.
b) Write a short notes on automotive communication buses.
7. a) What do you mean by core of the embedded system? What is its significance? What are the possible options that can be used as a core?
b) Explain the functioning of Peripheral communication interface with example.
8. Explain in detail about external communication interfaces of an embedded system and draw diagram where it is necessary.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **DIGITAL COMMUNICATION**

Branch: ECE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2M=10 M

1. In a single integration DM scheme the voice signal is sampled at a rate of 64 kHz. The maximum signal amplitude is 2 Volts. Voice signal bandwidth is 3.5 kHz. Determine the minimum value of step size to avoid slope overload and granular noise power.
2. What is QPSK? Write the signal space diagram of QPSK.
3. Encode 1000011 using Manchester coding.
4. What are the different methods of describing the structure of convolution codes?
5. Mention any two applications of spread spectrum modulation.

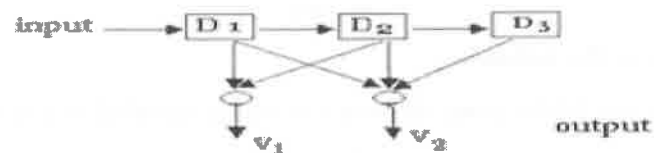
PART-B

Answer any FIVE questions of the following

5x10 M= 50M

1. a) Explain DPCM modulation and demodulation.
b) A PCM system uses uniform quantizer followed by n bit encoder. Show that R.M.S Signal to Quantization Noise is $(1.8+6n)$ dB.
2. a) What do you mean by Quantization and on what criteria does the signal to quantization noise ratio depends in a PCM system?
b) What are the advantages and disadvantages of digital communication system?
3. a) Determine the bandwidth required for FSK. Draw the signal space diagram of FSK signal.[4M]
b) Describe the transmitter and Receiver of QPSK. [6M]
4. a) A bit stream 1011111011 is to be transmitted using ASK, FSK, and PSK techniques. Draw the waveforms for the above mentioned digital modulation techniques.
b) Describe the coherent and non coherent detection of ASK.
5. a) Encode the sequence 11011111 in all line codes.
b) Consider a telegraph source having two symbols, dot and dash. The dot duration is 0.2. The dash duration is 3 times the dot duration. The probability of the dot's occurring is twice that of the dash and the time between symbols is 0.2 sec. Calculate the information rate of the telegraph source.

6. a) Define conditional and joint entropies. Prove that $H(X,Y)=H(X/Y)+H(Y)$ [6M]
 b) A gaussian channel has 1.5 MHz band width. If the signal power to noise power is 10^4 Hz. determine the channel capacity. [4M]
7. a) Find the output codeword for the following convolutional encoder for the message sequence 10011. (as shown in the figure). [7M]



- b) What is constraint length and code rate of convolutional codes? [3M]
8. a) Explain the Frequency hopping spread spectrum technique with neat sketch? [6M]
 b) Compare DSSS and FHSS system [4M]

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **OBJECT ORIENTED PROGRAMMING**

Branch: ECE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2M=10 M

1. List the characteristics of object oriented programming.
2. What is dynamic method dispatch?
3. Write any two differences between class and interface.
4. Write the difference between Applet and a frame.
5. Summarize the Keyboard Handling Events.

PART-B

Answer ANY FIVE questions of the following

5x10 M= 50M

1. a) Explain object class methods.
b) Write a Java program to find factorial of a number.
2. Explain member functions and constructors in multiple inheritance of C++ with suitable examples.
3. a) Write member access rules in C++.
b) How to achieve runtime polymorphism in Java.
4. What is the use of inheritance and explain multilevel inheritance with suitable example in Java & C++.
5. What is the difference between an abstract class and an interface? Write a program in java to illustrate the use of an interface and also to extend interfaces.
6. a) Give an example to create user defined exception.
b) How to set thread priorities explain with example?
7. Narrate the Class hierarchy in Java related to Exception Handling. Briefly explain each Class.
8. a) List and explain any three AWT components.
b) Write an AWT program to create a login window.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **CELLULAR & MOBILE COMMUNICATIONS**

Branch: ECE

Time: 3 hours

Max. Marks: 60

PART – A

Answer ALL questions of the following

5x2M=10 M

1. What is the need of frequency reuse in cellular communications?
2. What is the importance of diversity in cellular systems?
3. Explain an area-to-area prediction model.
4. Explain about paging channels.
5. Why handoff?

PART-B

Answer ANY FIVE questions of the following

5x10 M= 50M

1. a) Mention the two frequency reuse schemes and explain N-Cell reuse pattern in detail for four and seven cell reuse with illustrative diagrams.
b) Discuss the performance criteria of the basic cellular system.
2. a) Briefly explain the co channel interference reduction factor.
b) Discuss the limitations of conventional mobile telephone systems.
3. a) Explain about the co-channel interference reduction factor and derive the general formula for C/I.
b) Briefly explain the multiple knife edge diffraction.
4. Explain the measurement of real time co-channel interference at mobile radio transceiver.
5. a) Draw the symmetrical difference pattern and compare it with symmetrical sum pattern.
b) Explain about signal reflections in flat and hilly terrains.
6. Explain ground incident angle, elevation angle, ground reflection and reflection point.
7. a) Describe the concept of frequency management concern to the numbering the Channels and grouping into the subset.
b) Explain in detail access channels and operational techniques.
8. Write about queuing of handoffs in detail.

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III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER-2019Subject: **WIRELESS COMMUNICATIONS & NETWORKS**Branch: **ECE****Time: 3 hours****Max. Marks: 60****PART – A****Answer ALL questions of the following****5x2M=10 M**

1. Define the scattering.
2. What are the advantages of 3G mobile networks?
3. Compare delay spread and Doppler spread.
4. Write two functions of IEEE 802.11 medium access control layer.
5. What is SMS in GSM network?

PART-B**Answer ANY FIVE questions of the following****5x10 M= 50M**

1. a) Explain the operation of cellular system.
b) What are the requirements of WLANs?
2. a) Give three important functional blocks of GSM system.
b) Explain in details the different techniques used to improve coverage and capacity in cellular system.
3. a) With neat diagram explain the free space propagation model.
b) Discuss the effects of ray tracing and site specific modelling in large scale propagation.
4. a) Discuss the relationship between bandwidth and received power.
b) Explain small scale fading and, what are the factors affecting the small scale fading.
5. Discuss the IEEE 802.11 physical layer.
6. a) What are the error correction schemes are used in Bluetooth base band.
b) In general terms, what application areas are supported by Bluetooth?
7. a) Discuss the working principle of CDPD.
b) Explain the architecture of ATM network.
8. a) Explain architecture of HIPERLAN-1.
b) Explain HIPERLAN-1 medium access control (MAC) layer.

