# 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 -2018

Subject: <u>**Engineering Economics And Accountancy**</u>

Branch: **Common for EEE, ECE and CSE**

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

## PART – A

**Answer ALL questions of the following**                              **5x2Mark=10 Marks**

1.  Define the linkages of managerial economics with other disciplines
2.  Give a brief note on 'Marginal Rate of technical Substitution'
3.  What is Oligopoly Competition?
4.  What is Internal Rate of Return (IRR)?
5.  Write about profitability ratios

## PART-B

**Answer any FIVE Questions of the following**                         **5x 10 Marks= 50Marks**

1.  a. Managerial Economics is multi – dimensional discipline, explain.                [5M]

    b. Explain the quantitative methods of Demand Forecasting.                          [5M]

2.  a) Discuss the salient feature and significance of managerial economics.           [5M]

    b) Define Demand? Why the Demand curve slopes downwards from left to right?        [5M]

3.  a) Differentiate Increasing, Decreasing and Constant returns to scale of production?  [3M]

    b) Explain least cost combination of inputs                                        [4M]

    c) Explain graphical representation of breakeven point                             [3M]

4.  a. Explain Cobb- Douglas production function                                       [5M]

    b. A company makes a product with a selling price of Rs.35 per unit and Variable cost of Rs.20 per unit. The fixed costs for the period are Rs.45, 000, what is the required output level to make a target profit of Rs.15, 000.                                             [5M]

5.  a) What is monopoly? Explain the features and causes of monopoly competition.      [5M]

    b) Distinguish between Perfect competition and monopoly                            [5M]

6.  a) Explain how perfect competition under monopoly.                                 [5M]

    b) Define Perfect competition? Explain its features?                               [5M]

7.  Explain the Methods of Capital Budgeting.                                          [10M]

8.  a) Define accounting Cycle.                                                         [5M]
    b) What are the advantages of double entry book - keeping system?                  [5M]

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: <u>**Wireless Communications and Networks**</u>

Branch: ECE

Time: 3 hours                                                                               Max. Marks: 60

### PART – A

Answer ALL questions of the following                                         5x2Mark=10 Marks

1. Write the Bluetooth operating frequency range and data rate
2. What is reflection?
3. List out the factors influencing small scale fading.
4. Draw the format of IEEE 802.11.
5. What is a piconet?

### .PART-B

Answer any FIVE Questions of the following                                5x 10 Marks= 50Marks

1. a) Explain how a cellular telephone call is made.                                    [5M]

   b) Discuss the comparison of various wireless systems.                             [5M]

2. a) What is WLL? Explain in detail.                                                  [5M]

   b) What are the various standards of 2G and 3G networks?                           [5M]

3. a) Explain ground reflection (two ray) propagation model.                          [5M]

   b) Explain any one indoor propagation model                                        [5M]

4. a) Find the Fraunhofer distance for an antenna with maximum dimension of 1m and operating

   frequency of 1800MHz.If antenna has unity gain, calculate the path loss.           [5M]

   b) Explain the working principle of Hata model in large scale propagation.         [5M]

5. a) Describe the spread spectrum correlator.                                        [5M]

   b) Explain fading due to multipath delay spread?                                   [5M]

6. Write about statistical models of a multi path fading channel                      [10M]

7. a) List the Bluetooth applications.                                                [5M]

   b)  Write difference between IEEE 802.11 a, b, g and n (standards)                 [5M]

8. a) Describe the short messaging service in GPRS mobile application protocols.      [5M]

   b) Describe the Hiper LAN2 protocol stack                                          [5M]

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: **Embedded Real Time Operating Systems**

Branch: ECE

Time: 3 hours

Max. Marks: 60

### PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Briefly explain the history of Linux?

2. Explain brief history of OS.

3. Write short notes on component configuration?

4. Differentiate between synchronous and Asynchronous Exceptions.

5. Explain briefly about POSIX standard.

### .PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

1. a) List out all process related commands for linux OS. [5M]

   b) Draw layered diagram of Linux OS and explain. [5M]

2. a) Explain the file system of UNIX. [5M]

   b) Describe kernel objects of Linux kernel. [5M]

3. a) Discuss the characteristics of RTOS? [5M]

   b) Explain the types of Semaphores? [5M]

4. a) With an example write operation of Message Queue. [5M]

   b) Define semaphore. Application of binary, counting and Mutex semaphores. [5M]

5. a) Define a signal and explain its operations? [5M]

   b) What are the standard I/O functions? [5M]

6. a) State the descriptions for the following signal operations [5M]

   　　a) CATCH　b) RELEASE　c) SEND　d) IGNORE

   b) How child process and parent process communicate with Pipe. [5M]

7. a) Classify General Exceptions [5M]

   b) List out timer related operations [5M]

8. a) Write about features of Micro c/OSII. [5M]

   b) Explain characteristics of VxWorks RTOS. [5M]

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: **Digital Signal Processing**

Branch: ECE

Time: 3 hours

Max. Marks: 60

## PART – A

**Answer ALL questions of the following**              5x2Mark=10 Marks

1. Establish relation between DTFT and Z-transform.

2. Give the mathematical equation for N-Point DFT and IDFT?

3. What are the Main Constraints in Impulse invariant technique

4. What are the advantages of FIR filter?

5. What is down-sampling and up-sampling?

## PART-B

**Answer any FIVE Questions of the following**              5x 10 Marks= 50Marks

1. a) Determine the frequency response for the system is given by $y(n) + 0.25y(n-1) = x(n) – x(n-1)$ and also plot the magnitude response.                              **(6M)**
   b) Realize the difference equation $y(n) + 0.5y(n-1) + y(n-2) = x(n) –2 x(n-1) +x(n-2)$ using Direct form-I and II.                              **(4M)**

2. a) Explain about frequency domain representation of discrete time signal              [5M]
   b) Determine whether the following systems are causal or Non Causal in nature
      i) $y(n) =0.5 x(n)-x(n-2)$  (ii) $y(n-1) = x(n)$              [5M]

3. a) An 8 point sequence is given by $x(n) = \sin n\pi/2$. Compute 8 point DFT of $x(n)$ by using the radix -2 DIF FFT and tabulate the values after each stage.              [5M]
   b) State and prove any four properties of DFT.

4. a) Calculate the DFT of the sequence $x(n) = \{1,1, -2,-2\}$.              [5M]
   b) Compute the IDFT of the sequence $X(K) = \{1,0,1,0\}$              [5M]

5. a) Mention the Properties of IIR filter,              [5M]
   b) Write about the frequency transformation in IIR filter              [5M]

6. Design a digital Chebyshev filter that satisfies the constraints:
   $$\frac{1}{\sqrt 2} \le H(e^{j\omega}) \le 1 \quad for \quad 0 \le \omega \le 0.2\pi$$
   $$0 \le H(e^{j\omega}) \le 0.1 \quad for \quad 0.5\pi \le \omega \le \pi$$
   Using Bilinear Transformation with T = 1sec.              [10M]

7. Design an ideal HPF with the frequency response:
   $$H_d(e^{j\omega}) = 1 \quad for \quad \frac{\pi}{4} \le |\omega| \le \pi$$
   $$= 0 \quad for \quad |\omega| \le \frac{\pi}{4}$$
   Using Hanning Window for N =7.              [10M]

8. a) Explain Interpolation by a factor I?              (6M)
   b) Discuss the need of multirate digital signal processing?              (4M)

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018
### Subject: DIGITAL COMMUNICATION
#### Branch: ECE

Time: 3 hours                                                                                   Max. Marks: 60
### PART – A
**Answer ALL questions of the following**                                        5x2Mark=10 Marks

1. Define processing gain of DPCM.

2. What is the difference between PSK and FSK?

3. Discuss about ISI effect in base band data transmission system?

4. What are cyclic codes?

5. What is OFDM?

### PART-B

**Answer any FIVE Questions of the following**                              5x 10 Marks= 50Marks

1. a) Discuss the transmitter and receiver of PCM system with neat sketch?          [7M]

   b) A PCM system uses a uniform quantizer followed by a 7 bit binary encoder.
   The bit rate of system is equal to $5 \times 10^6$ bits/sec .What is maximum message bandwidth for
   which system operates satisfactorily?                                           [3M]

2. a) What are the noises in PCM? Derive an expression for quantization noise in PCM

   b) Compare the performance of DM with ADM?

3. Explain the generation and detection of a coherent binary PSK signal and plot the power spectral
   density of PSK signal

4. a) Explain the spectrum of BPSK signal and calculate its transmission band width requirement.[6M]

   b) Draw the phasor diagram of QPSK system                                       [4M]

5. a) Explain the eye diagram with neat sketch?                                     [6M]

   b). discuss the block diagram of base band data transmission system?            [4M]

6. a) Write short notes on Optimum receiver

   b) Write short notes on Gray coding

7. The generator polynomial of a (7,4) binary cyclic code generated by $G(p)=P^3+P^2+1$.Find the code
   vectors in systematic and nonsystematic form for the following message vectors
   i) 1110                   ii)1010          iii)0110

8. a) Explain spread spectrum modulation and types of spread spectrum modulation?

   b) Describe the coarse synchronization of frequency hopping?

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: **Cellular and Mobile Communications**

Branch: ECE

Time: 3 hours

Max. Marks: 60

### PART – A

Answer ALL questions of the following

5x2Mark=10 Marks

1. Discuss the concept of frequency reuse.

2. What is the commonly used formula for interference limited system?

3. Why there is a constant standard deviation along a path loss curve?

4. What is meant by frequency management?

5. What are the two decision making parameters of handoff explain.

### PART-B

Answer any FIVE Questions of the following

5x 10 Marks= 50Marks

1. Discuss the "Handoff " strategies employed in the design of a mobile communication systems. [10M]

2. a) Obtain desired C/I from a normal case in a omni-directional antenna case. [5M]

   b) Explain about micro cell zone concept. [5M]

3. a) Explain about High gain antennas. [5M]

   b) Compare and contrast near end and Far end interferences. [5M]

4. a) Design a directional antenna system in a worst case. [5M]

   b) Explain the effect of propagation of mobile signals over water. [5M]

5. a) Compare the symmetrical and asymmetrical patterns.

   b) Explain about Umbrella pattern antennas.

6. a) Explain the effect of propagation of mobile signals over water.

   b) Explain the role of directional antennas for interference reduction.

7. a) Explain about simulation process in non-fixed channel assignment.

   b) Explain the channel assignmentto the cell sites in detail.

8. a) What are the different types of handoffs? Explain how to implement them?

   b) Explain how the handoffs are implemented based on C/I ratio.

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## III B.TECH II SEMESTER SUPPLEMENTARY EXAMINATIONS, DECEMBER -2018

Subject: **Micro Controllers And Embedded Systems**

Branch: ECE

Time: 3 hours                                                                                  Max. Marks: 60

### PART – A

Answer ALL questions of the following                                      5x2Mark=10 Marks

1. What do you mean by 4, 8, 16 and 32 bit microcontrollers? Give examples of these.
2. What are the types of addressing modes?
3. What are the steps involved in interfacing ADC to 8051?
4. Explain Time-to-Market? What is its significance in product development?
5. What is the role of Watchdog timer in embedded systems?

### PART-B

Answer any FIVE Questions of the following                              5x 10 Marks= 50Marks

1. Draw the block diagram of 8051 Microcontroller.
2. a) Explain the programmable features of SCON and PCON registers for serial communication in 8051.
   b) Write the steps to program mode1 of timer1 of 8051.
3. a) Differentiate between the instructions
       i) SWAP and XCHG  ii) MOVX and MOVC  iii) LCALL and ACALL
   b) Explain the operation of the following code with reference to the stack:
   MOV SP,#10H
   PUSH SP
   POP 0E0h,
   ADD A ,#10H
4. a) Write a program to convert a packed BCD numbers into two ASCII numbers and place them in R5 and R6 of register bank 0.
   b) Explain various Bit handling instructions of 8051 MC in detail.
5. a) Draw interfacing diagram to interface push-button switch at port pin P3.3 and buzzer at port pin P2.0. Write program such that when push-button key is pressed, buzzer should become ON. When push-button key is releasedbuzzer should become OFF
   b) Draw the circuit for interfacing ADC808 interfacing with 8051.Write the steps to program ADC 0808.
6. a) What is DC motor and BLDC motor. List the various applications of DC motor.
   b) Draw the diagram to interface DC motor with 8051 and write a program to rotate DC motor in clock wise and anti clock wise directions.
7. (a) Differentiate between General purpose computing system & Embedded system?
   (b) Explain the characteristics of an Embedded system?
8. (a) Write a short notes on sensors and actuators.
   (b) Distinguish between RISC & CISC processors? Give an example for each.