CODE: 2004OE07 | R20 | SET - 1

# MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
## (Autonomous Institution – UGC, Govt. of India)
(Affiliated to JNTU, Hyderabad, Approved by AICTE - - ISO 9001:2015 Certified)
**Accredited by NBA & NAAC – 'A' Grade**
**National Ranking by NIRF - Rank band (151-300), MHRD, Govt. of India**

**B.TECH IV YEAR I SEMESTER REGULAR EXAMINATIONS, NOVEMBER - 2023**
## 5G TECHNOLOGY
**( COMMON TO CSE,CSE-AIML,CSE-CS,CSE-DS,CSE-IOT, IT )**

**[Time: 3 Hours]** **[Max. Marks: 70]**

### PART – A

**(5 x 2 = 10M)**

**Note:** 1. This Part consists of 8 QUESTIONS.
2. Answer any 5 questions. Each question carries 2 Marks

| | | | | |
|---|---|---|---|---|
| 1 | A | Define base station and mobile station. | 2M | BTL1 |
| | B | List the advantages of Microcell Zone Concept. | 2M | BTL2 |
| | C | Define handoff. | 2M | BTL1 |
| | D | What is meant by GFDM. | 2M | BTL1 |
| | E | Compare the features of FDMA and TDMA. | 2M | BTL2 |
| | F | Explain orthogonal frequency division multiple accesses (OFDMA). | 2M | BTL2 |
| | G | What do you mean by M2M. | 2M | BTL1 |
| | H | Define MIMO systems. | 2M | BTL1 |

### PART – B

**(5 x 12 = 60M)**

Note: 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

| | | | |
|---|---|---|---|
| 2.A | Explain evaluation of Cellular Network. | 6M | BTL2 |
| 2.B | Discuss the advancements in CDMA technology and the challenges faced during the migration to higher generations of mobile communication. | 6M | BTL3 |

(OR)

| | | | |
|---|---|---|---|
| 3.A | Explain in detail about the various cellular components. | 6M | BTL2 |
| 3.B | Explain the concept of frequency reuse in detail. | 6M | BTL2 |

SECTION - II

| | | | |
|---|---|---|---|
| 4.A | Differentiate hard handoff and soft handoff. | 6M | BTL3 |
| 4.B | Consider a real time scenario and explain the handoff operation. | 6M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 5.A | Explain any three types of handoff. | 6M | BTL3 |

| | | | |
|---|---|---|---|
| 5.B | Write a short note on handoff initiation process. | 6M | BTL2 |

SECTION - III

| | | | |
|---|---|---|---|
| 6.A | Describe the requirements of the 5G wireless communication. | 6M | BTL4 |
| 6.B | Discuss the rationale behind selecting these specific frequency bands and the advantages they offer for 5G network deployments. | 6M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 7.A | Discuss detail on modulation techniques of 5G wireless communication. | 6M | BTL4 |
| 7.B | Write a short note on Non-orthogonal Multiple accesses. | 6M | BTL2 |

SECTION – IV

| | | | |
|---|---|---|---|
| 8.A | Compare TDMA with other multiple access techniques, such as FDMA and CDMA. Discuss the advantages of TDMA | 6M | BTL4 |
| 8.B | Discuss the advancements in CDMA technology and the challenges faced during the migration to higher generations of mobile communication. | 6M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 9.A | Describe the working principle of Frequency Division Multiple Access (FDMA) in wireless communication. | 6M | BTL4 |
| 9.B | Explain how FDMA divides the available frequency spectrum to accommodate multiple users and allocate dedicated channels to each user for data transmission. | 6M | BTL3 |

SECTION – V

| | | | |
|---|---|---|---|
| 10.A | Explain the standardization of 5G. | 6M | BTL3 |
| 10.B | Illustrate the device to device and machine to machine communication with the comparison. | 6M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 11.A | Explain the concept of mm Wave (millimetre-wave) spectrum allocation in 5G. What are the unique characteristics of mm Wave frequencies, and how do they impact 5G network performance and coverage? | 6M | BTL3 |
| 11.B | Discuss the challenges and strategies for overcoming propagation limitations in mm Wave bands. | 6M | BTL4 |

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CODE: 2012PE04 | R20 | SET - 2

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**B.TECH IV YEAR I SEMESTER REGULAR EXAMINATIONS, NOVEMBER-2023**

**BUSINESS ANALYTICS**

**(COMMON TO CSE & IT)**

**[Time: 3 Hours]** **[Max. Marks: 70]**

**PART – A**

**(5 x 2= 10M)**

**Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 1Mark

| | | | | |
|---|---|---|---|---|
| 1 | A | Is Data Preprocessing is Necessary? Justify your answer | 2M | BTL2 |
| | B | Compare and Contrast ARMA and ARIMA. | 2M | BTL3 |
| | C | What are the steps involved in Analysis of Data? | 2M | BTL1 |
| | D | List any two applications and describe why the Time Series Analysis is needed in those applications. | 2M | BTL1 |
| | E | Describe Variable Rationalization | 2M | BTL1 |
| | F | What is Chernoff Faces technique? | 2M | BTL1 |
| | G | Distinguish between Supervised and Unsupervised learning. | 2M | BTL1 |
| | H | What are the advantages of Data Visualization? | 2M | BTL1 |

**PART – B**

**(5 x 12 = 60M)**

Note: 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

| | | | |
|---|---|---|---|
| 2.A | Illustrate techniques of missing values treatment with example. | 6M | BTL1 |
| 2.B | Data set D {10K, 15K, 22K, 25K, 36K, 40K, 13K, 19K, 88K, 94K} represents packages of the students placed in an interview where "K represents thousand". Identify the outliers in the data set and analyze its impact in studying the spread of data. | 6M | BTL1 |

(OR)

| | | | |
|---|---|---|---|
| 3.A | Briefly describe various sources of data like sensors, signals, GPS in data management | 4M | BTL1 |
| 3.B | Explain about data quality and data preprocessing. | 8M | BTL1 |

SECTION - II

| | | | |
|---|---|---|---|
| 4.A | Demonstrate the various steps involved in data analytics and discuss the tools and environment needed for analytics. | 6M | BTL1 |
| 4.B | Illustrate data imputations techniques. | 6M | BTL1 |

(OR)

| | | | |
|---|---|---|---|
| 5.A | Contrast nominal, ordinal and ratio-scaled data. | 6M | BTL1 |

| | | | |
|---|---|---|---|
| 5.B | Explain the applications of data modeling in business. | 6M | BTL1 |

SECTION - III

| | | | |
|---|---|---|---|
| 6.A | What is meant by BLUE property? What are the blue properties of OLS method? | 6M | K2 |
| 6.B | Discuss in detail about Multinomial Logistic Regression. | 6M | K2 |

(OR)

| | | | |
|---|---|---|---|
| 7.A | Apply linear regression using the method of least squares to the following data and predict the crop yield for rain fall of 5 cm. | 8M | BTL1 |
| 7.B | Elucidate analytical applications to various business domains. | 4M | BTL1 |

| Rain Fall(cm) | 10.5 | 8.8 | 13.4 | 12.5 | 18.8 | 7 | 15.6 | 10.3 | 16 |
|---|---|---|---|---|---|---|---|---|---|
| Yield (Quintal per Acre) | 30.3 | 46.2 | 58.8 | 59.0 | 82.4 | 31.9 | 76.0 | 49.2 | 78.8 |

SECTION – IV

| | | | |
|---|---|---|---|
| 8.A | Outline major steps of decision tree classification with a suitable example. | 6M | BTL1 |
| 8.B | Discuss the STL approach for Time Series Decomposition. | 6M | BTL1 |

(OR)

| | | | |
|---|---|---|---|
| 9.A | What is Overfitting? How to Prevent Overfitting? | 4M | BTL1 |
| 9.B | Illustrate different measures of forecast accuracy. Evaluate the measures on the following example. | 8M | BTL1 |

| Week | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| Actual Sales | 18 | 14 | 21 | 15 | 20 | 23 | 24 | 18 | 25 |
| Forecast | 25 | 18 | 17 | 14 | 22 | 17 | 21 | 23 | 24 |

SECTION – V

| | | | |
|---|---|---|---|
| 10.A | Describe parallel coordinates and landscapes for geometric data visualization | 6M | BTL1 |
| 10.B | Explain the challenges in visualizing complex data and relations and suggest suitable mechanisms to address them. | 6M | BTL1 |

(OR)

| | | | |
|---|---|---|---|
| 11.A | How to perform visualization of the data using a hierarchical partitioning into subspaces? Explain with examples. | 6M | BTL1 |
| 11.B | Interpret on 'pixel-oriented visualization' with example | 6M | BTL1 |

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CODE: 2005PC13 | R20 | SET - 1

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**National Ranking by NIRF - Rank band (151-300), MHRD, Govt. of India**

**B.TECH IV YEAR I SEMESTER REGULAR EXAMINATIONS, NOVEMBER - 2023**
**INFORMATION SECURITY**
**(CSE)**

**[Time: 3 Hours]** **[Max. Marks: 70]**

**PART – A** **(5 x 2 = 10M)**

**Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

| | | | | |
|---|---|---|---|---|
| 1 | A | Give various security services. | 2M | BTL2 |
| | B | Define Non Repudiation. | 2M | BTL1 |
| | C | Write about Blowfish. | 2M | BTL2 |
| | D | Enumerate the mechanisms implemented for confidentiality? | 2M | BTL2 |
| | E | What is IP Security? | 2M | BTL1 |
| | F | Write any two advantages of hashing functions? | 2M | BTL2 |
| | G | List the features of Authentication Header. | 2M | BTL2 |
| | H | What is a digital signature? | 2M | BTL1 |

**PART – B**

**(5 x 12 = 60M)**

**Note:** 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

| | | | |
|---|---|---|---|
| 2.A | Describe the types of security attacks? | 6M | BTL2 |
| 2.B | Explain Block Cipher design principles. | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 3.A | Explain the model of Internet-work security. | 6M | BTL2 |
| 3.B | Differentiate linear and differential crypt-analysis. | 6M | BTL3 |

SECTION - II

| | | | |
|---|---|---|---|
| 4.A | Consider a Diffie-Hellman scheme with a common prime q=11, and a primitive root α=2. a) If user „A" has public key YA=9, what is A"s private keyXA.<br>b) If user „B" has public key YB=3, what is shared secret key K. | 6M | BTL3 |
| 4.B | What is are Secure Hash functions? Explain the working of SHA-512 | 6M | BTL3 |

(OR)

| | | | |
|---|---|---|---|
| 5.A | Explain RSA algorithm with suitable example. | 6M | BTL4 |
| 5.B | What is Elliptic Curve Cryptography (ECC)? Discuss ECC algorithm wit neat diagram | 6M | BTL4 |

SECTION - III

| | | | |
|---|---|---|---|
| 6.A | What are the requirements of Authentication? | 6M | BTL2 |
| 6.B | Write short notes on Kerberos. | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 7.A | Explain MIME context types. | 6M | BTL2 |
| 7.B | Describe the five principal services provided by PGP? | 6M | BTL2 |

SECTION – IV

| | | | |
|---|---|---|---|
| 8.A | Give IP Security architecture with neat diagram. | 6M | BTL4 |
| 8.B | Discuss the need of Secure Socket Layer. | 6M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 9.A | Discuss in detail encapsulating security payload. | 6M | BTL3 |
| 9.B | Explain secure electronic transaction. | 6M | BTL2 |

SECTION – V

| | | | |
|---|---|---|---|
| 10.A | Explain the types of firewalls? | 6M | BTL2 |
| 10.B | Discuss about viruses and worms | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 11.A | Discuss Intrusion detection system with neat diagram. | 6M | BTL2 |
| 11.B | Explain the design principles of firewall. | 6M | BTL2 |

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CODE: 2005PC12 | R20 | SET - 1

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**B.TECH IV YEAR I SEMESTER REGULAR EXAMINATIONS, NOVEMBER-2023**
**MACHINE LEARNING**
**(COMMON TO CSE,CSE – DS,CSE-CS, CSE-IOT, IT )**

**[Time: 3 Hours]** **[Max. Marks: 70]**

## PART – A

**(5 x 2 = 10M)**

**Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

| | | | | |
|---|---|---|---|---|
| 1 | A | What is reinforcement? | 2M | BTL1 |
| | B | Define Grouping. | 2M | BTL1 |
| | C | What you meant by regression? | 2M | BTL1 |
| | D | Define validation. | 2M | BTL1 |
| | E | Define boosting. | 2M | BTL1 |
| | F | Mention the use of Decision Tress. | 2M | BTL1 |
| | G | Why Clustering is need? Justify. | 2M | BTL4 |
| | H | Mention the use of direct utility estimation. | 2M | BTL2 |

## PART – B

**(5 x 12 = 60M)**

Note: 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

| | | | |
|---|---|---|---|
| 2.A | Justify the need for feasibility of learning. | 6M | BTL3 |
| 2.B | Differentiate training versus testing. | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 3. | Write Short notes on<br>1)geometric models ii) probabilistic models | 12M | BTL2 |

SECTION - II

| | | | |
|---|---|---|---|
| 4.A | Define Multiclass Classification with a neat diagram? | 6M | BTL3 |
| 4.B | Write a detail note on naïve bayes linear models. | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 5.A | Explain the following<br>Linear regression | 6M | BTL3 |
| 5.B | Logistic Regression | 6M | BTL2 |

SECTION - III

| | | | |
|---|---|---|---|
| 6.A | Define clustering. What are the different types of clustering explain in detail? | 12M | BTL3 |

(OR)

| | | | |
|---|---|---|---|
| 7.A | Explain in detail the concept of Kernel and K- Means? | 6M | BTL3 |
| 7.B | Write Short notes on ensemble learning. | 6M | BTL2 |

SECTION – IV

| | | | |
|---|---|---|---|
| 8. | Define Rule Based Classification. Explain any two Rule Classifications? | 12M | BTL3 |

(OR)

| | | | |
|---|---|---|---|
| 9.A | Does Decision Tree require Feature Scaling? | 6M | BTL3 |
| 9.B | Explain the Structure of Decision trees? | 6M | BTL2 |

SECTION – V

| | | | |
|---|---|---|---|
| 10.A | Explain key terms in reinforcement learning? | 6M | BTL2 |
| 10.B | State key features of reinforcement learning. | 6M | BTL3 |

(OR)

| | | | |
|---|---|---|---|
| 11.A | Why direct utility estimation plays vital role in Reinforcement Learning Justify it. | 6M | BTL3 |
| 11.B | Discuss about policy search. | 6M | BTL3 |

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CODE: 1804OE05 | R18 | SET - 1

# MALLA REDDY ENGINEERING COLLEGE FOR WOMEN
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**B.TECH IV YEAR I SEMESTER SUPPLY EXAMINATIONS, NOVEMBER-2023**

## MICROPROCESSOR AND INTERFACING
**(COMMON TO CSE, IT)**

**[Time: 3 Hours]** **[Max. Marks: 70]**

### PART – A

**(5 x 2 = 10M)**

**Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

| | | | | |
|---|---|---|---|---|
| 1 | A | Discuss the advantages of segmentation in 8086. | 2M | BTL1 |
| | B | Explain the difference between the machine language and the assembly language of the 8085 microprocessor. | 2M | BTL1 |
| | C | List the features of the parallel ports of the 8251 microcontroller. | 2M | BTL2 |
| | D | List the four operations commonly performed by the MPU. | 2M | BTL2 |
| | E | Solve, Why is the data bus bidirectional? | 2M | BTL3 |
| | F | Formulate the vectored interrupts? | 2M | BTL6 |
| | G | Evaluate the functions of Handshake signals. | 2M | BTL5 |
| | H | Discuss the bit pattern of the accumulator for SIM instruction. | 2M | BTL2 |

### PART – B

**(5 x 12 = 60M)**

Note: 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

| | | | |
|---|---|---|---|
| 2.A | Formulate the sequence of events that occurs when the 8085 MPU reads from memory. | 5M | BTL5 |
| 2.B | Select the memory word size required in an 8085 system. | 7M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 3.A | Relate the differences between the minimum mode and maximum mode operation of 8086. | 5M | BTL4 |
| 3.B | Describe the interrupt and interrupt response of an 8086 family process with a neat sketch. | 7M | BTL2 |

SECTION - II

| | | | |
|---|---|---|---|
| 4.A | Discuss the organization and architecture of the 8255 programmable peripheral interface with its functions | 8M | BTL2 |
| 4.B | Explain how high power devices are interfaced to 8086 using 8255 PPI | 4M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 5.A | Describe the lower order address bus is multiplexed with the data bus. How they will be de-multiplexed? | 7M | BTL4 |
| 5.B | (b) Differentiate between maskable and non-maskable interrupts. | 5M | BTL3 |

SECTION - III

| | | | |
|---|---|---|---|
| 6.A | Discuss the various addressing modes of 8086. What are displacement, base, and index? What is an effective address or offset? | 7M | BTL3 |
| 6.B | Discuss how 8253 is used for handling interrupts | 5M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 7.A | Recognize and Write an 8086 program to add two 16-bit numbers in CX and DX and store the result in location 0500H addressed by DI. | 8M | BTL1 |
| 7.B | Discuss the Memory classification in detail | 4M | BTL2 |

SECTION – IV

| | | | |
|---|---|---|---|
| 8.A | Execute in which mode of I/O operation Bi-directional data transfer takes place to explain. | 6M | BTL5 |
| 8.B | Identify what is 8254. Discuss its various operating modes. What are its areas of application? | 6M | BTL2 |

(OR)

| | | | |
|---|---|---|---|
| 9.A | Explain (i) ALU (ii) Program counter (iii) Instruction decoder. | 8M | BTL2 |
| 9.B | Support USART in detail. | 4M | BTL4 |

SECTION – V

| | | | |
|---|---|---|---|
| 10.A | Identify the purpose of the IF flag in handling the interrupts. | 4M | BTL2 |
| 10.B | Examine what type of interrupt is associated with the TF flag. What is the vector address? Explain the use of this interrupt. | 8M | BTL4 |

(OR)

| | | | |
|---|---|---|---|
| 11.A | Explain the functional diagram of the keyboard and display controller. | 5M | BTL2 |
| 11.B | What is 8255? Discuss its various operating modes. What are its areas of application? | 7M | BTL4 |

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