CBCS CURRICULAR FRAMEWORK (2022-23)

TABLE 1: BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - I

S.NO	Name of the Course	Course Code	Part No	Type of the Paper	Total Marks	IA TEST	Sem End Exam	Teaching Hours	Credits
1	BUSINESS ENGLISH-I	22ENGT15	I	First Language	100	30	70	4	3
2	TELUGU-I	22TELT11	I	Second Language	100	30	70	4	3
3	HINDI-I	22HINT11							
4	PROBLEM SOLVING USING STRUCTURED PROGRAMMING	22AIMLT11	II	Core	100	30	70	4	4
5	PROBLEM SOLVING TECHNIQUES	22AIMLT12	II	Core	100	30	70	5	5
6	DESCRIPTIVE MEASURES AND THEORY OF PROBABILITY	22STAT14	II	Core	100	30	70	4	4
7	VECTOR CALCULUS AND PARTIAL DIFFERENTIAL EQUATIONS	22MATT17	II	Core	100	30	70	6	5
8	PROBLEM SOLVING USING STRUCTURED PROGRAMMING LAB	22AIMLL11	II	Core Lab	50	15	35	2	1
9	DESCRIPTIVE MEASURES LAB	22STAL14	II	Core Lab	50	15	35	2	1
10	PERSONALITY ENHANCEMENT AND LEADERSHIP	22LSCT11	III	Life Skill	50	15	35	2	2
11	OFFICE TOOLS LAB	22CSCSDCL08	III	Skill Development	50	15	35	2	2
		TOTAL(Maximum)			800	240	560	35	30

TABLE 2: BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - II

S.NO	Name of the Course	Course Code	Part No	Type of the Paper	Total Marks	IA TEST	Sem End Exam	Teaching Hours	Credits
1	BUSINESS ENGLISH-II	22ENGT25	I	First Language	100	30	70	4	3
2	TELUGU-II	22TELT21	I	Second Language	100	30	70	4	3
3	HINDI-II	22HINT21							
4	DATA STRUCTURES	22AIMLT21	II	Core	100	30	70	4	4
5	PYTHON FOR DATA ANALYSIS	22AIMLT22	II	Core	100	30	70	4	4
6	STATISTICAL METHODS AND APPLICATIONS OF PROBABILITY	22STAT28	II	Core	100	30	70	4	4
7	DIFFERENTIAL EQUATIONS AND GRAPH THEORY	22MATT210	II	Core	100	30	70	6	5
8	DATA STRUCTURES LAB	22AIMLL21	II	Core Lab	50	15	35	2	1

CBCS CURRICULAR FRAMEWORK (2022-23)									
9	PYTHON FOR DATA ANALYSIS LAB	22AIMLL22	II	Core Lab	50	15	35	2	1
10	STATISTICAL METHODS AND APPLICATIONS OF PROBABILITY LAB	22STAL28	II	Core Lab	50	15	35	2	1
11	COMMUNITY SERVICE PROJECT	22CAIP2	II	Core Lab	100	100	0		4
12	ENVIRONMENTAL STUDIES	22LSCT01	III	Life Skill	50	15	35	2	2
13	WEB DESIGNING LAB	22CSCSDL06	III	Skill Development	50	15	35	2	2
		TOTAL(Maximum)			950	355	595	36	34

TABLE 3: BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - III

S.NO	Name of the Course	Course Code	Part No	Type of the Paper	Total Marks	IA TEST	Sem End Exam	Teaching Hours	Credits
1	BUSINESS ENGLISH-III	22ENGT02	I	First Language	100	30	70	4	3
2	INTRODUCTION TO ARTIFICIAL INTELLIGENCE	22AIMLT31	II	Core	100	30	70	4	4
3	DOCUMENT ORIENTED DATABASES	22AIMLT32	II	Core	100	30	70	4	4
4	LINEAR ALGEBRA AND NUMERICAL METHODS	22MATT36	II	Core	100	30	70	4	4
5	INFERENTIAL STATISTICS	22STAT37	II	Core	100	30	70	4	4
6	INTRODUCTION TO ARTIFICIAL INTELLIGENCE LAB	22AIMLL31	II	Core Lab	50	15	35	2	1
7	DOCUMENTED ORIENTED DATABASE LAB	22AIMLL32	II	Core Lab	50	15	35	2	1
8	STATISTICAL DATA ANALYSIS USING SPSS-II	22STAL37	II	Core Lab	50	15	35	2	1
9	QUANTITATIVE APTITUDE	22LSCT14	III	Life Skill	50	15	35	2	2
10	REASONING	22LSCT15	III	Life Skill	50	15	35	2	2
11	YOGA	22CEXP01	IV	Extension Activity	50	15	35	2	2
		TOTAL(Maximum)			800	240	560	32	28

CBCS CURRICULAR FRAMEWORK (2022-23)

TABLE 4: BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - IV

S.NO	Name of the Course	Course Code	Part No	Type of the Paper	Total Marks	IA TEST	Sem End Exam	Teaching Hours	Credits
1	TELUGU-III	22TELT01	I	Second Language	100	30	70	4	3
2	HINDI-III	22HINT01	I						
3	INTRODUCTION TO MACHINE LEARNING	22AIMLT41	II	Core	100	30	70	4	4
4	DATA MINING	22AIMLT42	II	Core	100	30	70	4	4
5	OPERATING SYSTEMS	22AIMLT43	II	Core	100	30	70	4	4
6	MACHINE LEARNING LAB	22AIMLL41	II	Core Lab	50	15	35	2	1
7	DATA MINING LAB	22AIMLL42	II	Core Lab	50	15	35	2	1
8	OPERATING SYSTEMS LAB	22AIMLL43	II	Core Lab	50	15	35	2	1
10	IN HOUSE PROJECT	22CAIP4	II	Core	100	100			4
9	QUANTITATIVE APTITUTE	22LSCT14	III	Life Skill	50	15	35	2	2
11	COMMUNICATION SKILLS FOR EMPLOYABILITY-I	22ENGSDCT04	III	Skill Development	50	15	35	2	2
12	COMMUNICATION SKILLS FOR EMPLOYABILITY-II	22ENGSDCT05	III	Skill Development	50	15	35	2	2
13	NCC/NSS/SPORTS/CULTURAL/CLUBS	22CEXP02	IV	Extension Activity	50	15	35	2	2
		TOTAL(Maximum)			850	325	525	30	30

TABLE 5: BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - V

S.NO	Name of the Course	Course Code	Part No	Type of the Paper	Total Marks	IA TEST	Sem End Exam	Teaching Hours	Credits
1	INTRODUCTION TO PREDICTIVE ANALYTICS USING PYTHON	22AIMLSET01	II	CORE	100	30	70	3	3
2	INTRODUCTION TO PREDICTIVE ANALYTICS USING PYTHON LAB	22AIMLSEL01	II	CORE LAB	50	15	35	3	2
3	COMPUTER NETWORKS	22AIMLSET02	II	CORE	100	30	70	3	3
4	COMPUTER NETWORKS LAB	22AIMLSEL02	II	CORE LAB	50	15	35	3	2
5	E-COMMERCE	22AIMLSET03	II	CORE	100	30	70	3	3
6	E-COMMERCE LAB	22AIMLSEL03	II	CORE LAB	50	15	35	3	2
7	SOFTWARE TESTING METHODOLOGIES	22AIMLSET04	II	CORE	100	30	70	3	3

CBCS CURRICULAR FRAMEWORK (2022-23)									
8	SOFTWARE TESTING METHODOLOGIES LAB	22AIMLSEL04	II	CORE LAB	50	15	35	3	2
9	SOFTWARE PROJECT MANAGEMENT	22AIMLSET05	II	CORE	100	30	70	3	3
10	SOFTWARE PROJECT MANAGEMENT LAB	22AIMLSEL05	II	CORE LAB	50	15	35	3	2
11	MULTIMEDIA TOOLS AND APPLICATIONS	22AIMLSET06	II	CORE	100	30	70	3	3
12	MULTIMEDIA TOOLS AND APPLICATIONS LAB	22AIMLSEL06	II	CORE LAB	50	15	35	3	2
13	SECURITY ANALYSIS	22AIMLSET07	II	CORE	100	30	70	3	3
14	SECURITY ANALYSIS LAB	22AIMLSEL07	II	CORE LAB	50	15	35	3	2
15	INTERNET OF THINGS	22AIMLSET08	II	CORE	100	30	70	3	3
16	INTERNET OF THINGS LAB	22AIMLSEL08	II	CORE LAB	50	15	35	3	2
17	CYBER SECURITY ESSENTIALS	22AIMLSET09	II	CORE	100	30	70	3	3
18	CYBER SECURITY ESSENTIALS LAB	22AIMLSEL09	II	CORE LAB	50	15	35	3	2
19	WEB APPLICATIONS DEVELOPMENT USING PHP& MYSQL	22AIMLSET10	II	CORE	100	30	70	3	3
20	WEB APPLICATIONS DEVELOPMENT USING PHP& MYSQL LAB	22AIMLSEL10	II	CORE LAB	50	15	35	3	2
21	DESIGN THINKING	22AIMLSET11	II	CORE	100	30	70	3	3
22	DESIGN THINKING LAB	22AIMLSEL11	II	CORE LAB	50	15	35	3	2
23	DIGITAL IMAGING	22AIMLSET12	II	CORE	100	30	70	3	3

CBCS CURRICULAR FRAMEWORK (2022-23)									
24	DIGITAL IMAGING LAB	22AIMLSEL12	II	CORE LAB	50	15	35	3	2
25	DEEP LEARNING	22AIMLSET13	II	CORE	100	30	70	3	3
26	DEEP LEARNING LAB	22AIMLSEL13	II	CORE LAB	50	15	35	3	2
27	REINFORCEMENT LEARNING	22AIMLSET14	II	CORE	100	30	70	3	3
28	REINFORCEMENT LEARNING LAB	22AIMLSEL14	II	CORE LAB	50	15	35	3	2
29	NATURAL LANGUAGE PROCESSING	22AIMLSET15	II	CORE	100	30	70	3	3
30	NATURAL LANGUAGE PROCESSING LAB	22AIMLSEL15	II	CORE LAB	50	15	35	3	2
31	NEURAL NETWORKS	22AIMLSET16	II	CORE	100	30	70	3	3
32	NEURAL NETWORKS LAB	22AIMLSEL16	II	CORE LAB	50	15	35	3	2
33	COMPUTER VISION	22AIMLSET17	II	CORE	100	30	70	3	3
34	COMPUTER VISION LAB	22AIMLSEL17	II	CORE LAB	50	15	35	3	2
35	BIG DATA ANALYTICS	22AIMLSET18	II	CORE	100	30	70	3	3
36	BIG DATA ANALYTICS LAB	22AIMLSEL18	II	CORE LAB	50	15	35	3	2
		TOTAL(Maximum)			**900**	**210**	**690**	**36**	**30**

TABLE 6 : BSC-AIML-ARTIFICIAL INTELLIGENCE & MACHINE LEARNING SEMESTER - VI									
S.NO	**Name of the Course**	**Course Code**	**Part No**	**Type of the Paper**	**Total Marks**	**Internal Assessment**	**External Assessment Component**	**Monitoring Hours**	**Credits**
1	INTERNSHIP IN AI & ML	22AIMLIAP6	II	Core Project	200	60	140	6	12

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PROBLEM SOLVING USING STRUCTURED PROGRAMMING

SEMESTER END MODEL QUESTION PAPER

TITLE: Problem solving usingstructuredprogramming **COURSE CODE: AIMLT11**

SECTIONS:B.Sc.(AI&ML) **SEMESTER:I**

TIME:3Hrs. **MAX: 75M**

Answer anyFIVEquestions. **5 X5=25M**

1. Explain about various symbols used in flow charts with example. (CO1,L1)
2. Explain about structure of C Program. (CO2,L1)
3. Develop a C program to check if given number is palindrome or not. (CO3,L6)
4. Develop a C program to print factorial of given number using recursion. (CO3,L6)
5. Illustrate goto and break statement with example.(CO3,L4)
6. Develop a C program to add two 2D arrays. (CO4,L6)
7. Develop a C program to demonstrate dynamic memory allocation. (CO4,L6)
8. Differentiate structures and unions with examples. (CO5,L2)

Section-B

Answer anyFIVEquestions. **10 X 5 =50M.**

9. (A) Explain about various steps involved in problem solving. (CO1,L1)

   OR

   (B) Explain different approached to design algorithms. (CO1, L1)
10. (A) Explain about various operators in C with example. (CO2,L1)

    OR

    (B) Describe about various IO statements in C. (CO2, L1)
11. (A) Illustrate passing parameters to functions with example. (CO3,L6)

    OR

    (B) Illustrate loops in C with example. (CO3, L6)
12. (A) Develop a C program to print product of two given matrices of size m x n. (CO4,L6)

    OR

    (B) Develop a C program to demonstrate linear search using 1D array. (CO4, L6)
13. (A) Explain about structures in C with example. (CO5,L1)

    OR

    (B) Explain about reading and writing data using files with example. (CO5, L1)

@@@@

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PROBLEM SOLVING USING STRUCTURED PROGRAMMING

SEMESTER END MODEL QUESTION PAPER

TITLE: Problem solving usingstructuredprogramming **COURSE CODE: AIMLT11**

SECTIONS:B.Sc.(AI&ML) **SEMESTER:I**

TIME:3Hrs. **MAX: 75M**

SECTION-A

ANSWER ANYFIVEQUESTIONS **5X5=25M**

1. Unit 1
2. Unit 2
3. Unit 3
4. Unit 3
5. Unit 3
6. Unit 4
7. Unit 4
8. Unit 5

SECTION – B

ANSWER ALLTHE QUESTIONS **5 X 10 =50M.**

1. A) Unit1.

(or)

B) Unit 1.

2. A) Unit2.

(or)

B) Unit2.

3. A) Unit3.

(or)

B) Unit3.

4. A) Unit4.

(or)

B) Unit4.

5. A) Unit5.

(or)

B) Unit5.

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PROBLEM SOLVING TECHNIQUES

MODEL Question Paper

TITLE: ProblemsolvingTechniques **COURSE CODE: AIMLT12**

SECTIONS:B.Sc.(AI&ML) **SEMESTER:I**

TIME:3Hrs. **MAX: 75M**

Section-A

Answer anyFIVEquestions. **5 X5=25M**

1. Explain about steps involved in computer programming. (CO1,L1)
2. Explain about various symbols used in flow charts with example. (CO1,L1)
3. Develop an algorithm to compute factorial. (CO2,L6)
4. Develop an algorithm to reverse digits of an integer. (CO2,L6)
5. Illustrate computing Nth Fibonacci number with example. (CO3,L4)
6. Illustrate calculating GCD of two integers with example. (CO3,L4)
7. Develop an algorithm to find maximum number in an array. (CO4,L6)
8. Develop an algorithm to demonstrate linear search. (CO5,L6)

Section-B

Answer anyFIVEquestions. **10 X 5 =50M.**

9. (A) Describe about developing and efficiency of algorithms. (CO1,L1)
   OR
   (B) Describe about analyzing algorithms. (CO1, L1)
10. (A) Develop an algorithm to convert base of given number. (CO2,L6)
    OR
    (B) Develop an algorithm to print Fibonacci sequence. (CO2, L6)
11. (A) Develop an algorithm to compute prime factors of an integer. (CO3,L6)
    OR
    (B) Develop an algorithm to find smallest divisor of an integer. (CO3, L6)
12. (A) Illustrate finding kth smallest element in given set with example. (CO4,L4)
    OR
    (B) Illustrate removing duplicate elements in given set with example. (CO4, L4)
13. (A) Illustrate binary search with example. (CO5,L4)
    OR
    (B) Illustrate selection sort with example. (CO5, L4).

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PROBLEM SOLVING TECHNIQUES

BLUE PRINT

TITLE : ProblemsolvingTechniques **COURSE CODE : AIMLT12 SECTIONS: B.Sc. (AI&ML)** **SEMESTER:I**

TIME:3Hrs. **MAX: 75M**

SECTION-A

ANSWER ANYFIVEQUESTIONS **5X5=25M**

1. Unit 1
2. Unit 1
3. Unit 2
4. Unit 2
5. Unit 3
6. Unit 3
7. Unit 4
8. Unit 5

SECTION – B

ANSWER ALLTHE QUESTIONS **5 X 10 =50M.**

9 A) Unit 1.

(or)

B) Unit 1.

10 A) Unit2.

(or)

B) Unit 2.

11 A) Unit3.

(or)

B) Unit 3.

12 A) Unit4.

(or)

B) Unit 4.

13 A) Unit5.

(or)

B) Unit 5.

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BUSINESS ENGLISH SYLLABUS FOR BBA/ BBA BA/ B.COM AF/B.COM TPP/BPM/MSDS/CSCS/BSFI/AI&ML COURSES UNDER CBCS

SEMESTER-I

COURSE CODE: ENG T15 **Max. Marks: 100**
No. of Hours per Week: 4 **External: 75M**
No. of Credits: 3 **Internal: 25M**

COURSE TITIE- BUSINESS ENGLISH-I

UNIT-I Nature of Communication **P- 3-19 - 12 hours**

- Communication core
- Process of communication
- Types of communication
- Aspects – Global, Ethical and Legal
- Communication in organizations
- Review Questions/Exercises

UNIT-II Non Verbal Communication **P-28-52 - 14 hours**

- Importance-Means
- Kinesics
- Paralinguistics - Proxemics
- Chronemics - Haptics
- Review Questions/Exercises

Barriers of Communication

- Causes- Linguistic, Psychological
- Interpersonal- Cultural - Physical
- Organizational Barriers
- Reviews Questions/Exercises

UNIT-III Principles of Letter Writing **P-93-104 - 10 hours**

- Nature and function of Letters
- Principles / Review Questions/Exercises

UNIT-IV Quotations, orders and tenders **P-125-141 - 12 hours**

- Inviting quotations
- Sending quotations
- Placing orders
- Inviting tenders
- Review Questions/Exercises

UNIT-V Claim and Adjustment Letters **P-155-161 - 12 hours**

- Making claims
- Offering adjustments

Review Questions/Exercises

Business Correspondence and Report Writing , RC Sharma and Krishna Mohan

Sl No.	Semester	Course Code	Name Of The Subject	Teaching Hours	Credits
1	**I Semester**	**ENGT15**	**Business English-I**	4	3

OBJECTIVE: The main objective of this course is not only to facilitate the learners to acquire the linguistic competence with a focus on business contexts and environments but also to help them practice and enrich their communication skills by using English in specific business settings and situations and develop their intellectual, personal and professional abilities.

COURSE OUTCOMES:

At the end of the course, the learners will be able to:

CO 1. Recognize the basics of Communication, i.e., its process, components and besides types, giving them a clear perception of the nature of business communication, its global, ethical and legal aspects. ***PO1***

CO 2. Establish and maintain interpersonal relationships with agility and transmit message through nonlinguistic signs focus is on both spoken and written form. ***PO3***

CO 3. Identify the basic principles and elements of writing business letters and apply the fundamentals to compose business letters required for business transactions. ***PO7***

CO 4. Produce clear and coherent writing in which the development, order and style are appropriate to task, purpose and addressees. ***PO1***

CO-PO MATRIX- ENG T15							
CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	H						
CO2			M				
CO3							H
CO4	M						
CO5							

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SEMESTER- I **PAPER - I**

TITLE OF THE PAPER: HINDI-I

NO OF HOURS: 60 **CREDITS: 03**

WEF: 2021-22

COURSE CODE: HINT11A

COURSE OUTCOMES:

1. मानव मूल्यों को पहचानकर छात्र समाज कल्याण हेतु अपने योगदान दे सकेंगे ।
2. आधुनिक युग की भावनाओं को पहचानकर सामाजिक समस्यओं के प्रति जागरुक हो सकेंगे।
3. हिन्दी और अंग्रेजी के माध्यम से विध्यार्थी अनुवाद कौशल विकसित कर सकेंगे।
4. छात्रों में व्याकरण के व्दारा भाषा में निपुणता बढ़ेगी।
5. छात्रों में पत्रलेखन व्दारा लेखन कौशल बढ़ेगा तथा संप्रेषण बढ़ेगा।

SYLLABUS

I.गद्य संदेश :

1.साहित्य की महत्ता

2.सच्ची वीरता

3.मित्रता

II.कथा – लोक :

1.मुक्तिधन

2.गूदड़ साई

3.उसने कहा था

III.व्याकरण : कार्यालयीन हिन्दी शब्दावली

(हिन्दी से अंग्रेजी में बदलना तथा अंग्रेजी से हिन्दी में बदलना)

IV. व्याकरण :

1.लिंग

2.वचन

3.विलोम शब्द

4.काल

5.वाच्य

6.वाक्य शुद्ध कीजिए

V.पत्र लेखन: पत्र लेखन (मित्र को पत्र, पिताजी को पत्र)

Recommended Books:

1.गद्य संदेश – Dr.V.L.Narasimham Siva Koti

2.कथा – लोक - Dr.Ghana Shyam

3.मिलिन्द प्रकाशन

Hyderabad-95.
Degree First Year Text Book,
Vikram Publishers Pvt. Ltd., Durga Agraharam, Vijayawada-2

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE :: VIJAYAWADA-520 010.
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I SEMESTER Model Question Paper

Course Code: HINT11A **Max. Marks: 70M**
Time: 3 Hrs. **Pass Min. : 30M**

SECTION-I

I निम्न लिखित प्रश्नों का उत्तर लिखिए। **4×5=20**

1.(a) जीवन में साहित्य की क्या आवश्यकता है? साहित्य व्दारा सभ्यता की परीक्षा किस प्रकार हो सकती है? L1

(अथवा)

(b) वीरता किसे कहते हैं? लेखक का 'सच्ची वीरता' से क्या अभिप्राय है? L1

2.(c) रहमान का चरित्र-चित्रण कीजिए। L2

(अथवा)

(d) गूदड़ साई का शीर्षक पर अपना उद्देश्य प्रकट कीजिए। L2

3.(e) काल किसे कहते हैं तथा उसके कितने प्रकार हैं? L3

(अथवा)

(f) वाच्य किसे कहते हैं तथा उसके कितने प्रकार हैं? L3

4.(g) **नीचे दिए गए शब्दों का लिंग बदलकर लिखिए। L1**

1.विद्वान 2.अध्यापक 3.मोर 4.ठाकुर 5.धोबी

(अथवा)

(h) **नीचे दिए गए शब्दों का वचन बदलकर लिखिए। L1**

1.लड़की 2.वीर 3.सेना 4. रुपया 5.कविता

SECTION-II **1×10=10**

5.(a) 'मित्रता' पाठ का सारांश लिखिए। L2

(अथवा)

(b) 'साहित्य की महत्ता' पाठ का सारांश लिखिए। L2

SECTION-III 1×10=10

6.(a) 'मुक्तिधन' कहानी का सारांश लिखिए। L2

(अथवा)

(b) 'उसने कहा था' कहानी का सारांश लिखिये। L2

SECTION-IV

7.(a) **किन्हीं पाँच शब्दों को अंग्रेजी से हिंदी में अनुवाद कीजिए। L2** **5×2=10**

1.Acceptance 2.Ballot Officer 3.Chairman 4.Duty 5.Supervisor
6.High Court 7.Fair copy 8.Eligibility 9. Passport 10.Accountant

(अथवा)

(b) **किन्हीं पाँच शब्दों को हिंदी से अंग्रेजी में अनुवाद कीजिए। L2**

1.प्रशासन 2.परिपत्र 3.गोपनीय 4.स्पष्टीकरण 5.राजदूत
6.निर्देशक 7.शिक्षा-अधिकारी 8.कुलपति 9.महा प्रबंधक 10.अनुवादक

8.(a) **किन्हीं पाँच शब्दों का विलोम शब्द लिखिए। L1** **5×2=10**

1.वीरता 2. अच्छा 3.नया 4.आना 5.भिन्न 6.सस्ता 7.मित्र 8. लेना

(अथवा)

(b) **वाक्य शुद्ध कीजिए। L1**

1.मोहन पुस्तक पढ़ा।

2.सीता ने चार आम खाया।

3.राम ने गया।

4.दशरथ की तीन रानियाँ थीं।

5.चोरी कौन किया?

SECTION-V 1×10=10

9.(a) पुस्तकें खरीदने के लिए पैसे माँगते हुए अपने पिताजी के नाम पर पत्र लिखिए। L3

(अथवा)

(b) हिंदी सीखने की आवश्यकता के बारे में बताते हुए अपने मित्र को पत्र लिखिए। L3

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Department of Mathematics

COURSE STRUCTURE

Sem	Course Code	Paper	Title of the Paper	Total Marks	Internal Exam	Sem.End Exam	Teaching Hours	Credits
I	**MATT17**		**Vector Calculus & Partial Differential Equations**	**100**	**30**	**70**	**6**	**5**

Programme Outcomes

S. No	P.O
	At the end of the Programme the student will be able to:
1	Demonstrate the ability to use mathematical skills such as formulating and tackling mathematics related problems and identifying and applying approximate physical principles and methodologies to solve a wide range of problems associated with mathematics.
2	Apply the underlying unifying structures of mathematics and the relationships among them.
3	Investigate and apply mathematical problems and solutions in variety of contexts related to science and technology, business and industry.

Course Outcomes of MATT

S. No	C.O Upon successful completion of this course, students should have the knowledge and skills to:	Mapping
1	Determine and apply, the important quantities associated with scalar fields, such as partial derivatives of all orders, the gradient vector and directional derivative	L1, PO –1
2	Evaluate line, surface and volume integrals.	L2, PO – 1
3	To verify the seminal integral theorems (Green's theorem in the plane, Gauss' divergence theorem and Stokes' theorem)	L3,PO – 1
4.	To evaluate partial derivatives and can implement to find total derivatives and chain rule.	L2, PO – 1
5.	To evaluate partial derivatives and can implement to estimate maxima and minima of multivariable function.	L3,PO – 1

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS &SCIENCE::VIJAYAWADA-10.

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MATHEMATICS	MAT T17	2021-2022 Onwards	B.Sc (A.I & M.L)

VECTOR CALCULUS & PARTIAL DIFFERENTIAL EQUATIONS

SEMESTER- I **No of Credits: 5**

OBJECTIVE: TO ENHANCE THE COMPUTATIONAL SKILLS AND APPLICATIONAL SKILLS AND MEMORY POWER OF STUDENTS.

UNIT –I: VECTOR DIFFERENTIATION (20 hrs)

1.1 Vector point function – definition – ordinary derivatives of vectors and properties.
1.2 Vector differential operator ∇, gradient of a scalar point function – properties – problems on grad f.
1.3 Divergence & Curl operators – Solenoidal & Irrotational vectors – related problems.
1.4 Vector identities – related problems.

UNIT – II: VECTOR INTEGRATION (20 hrs)

2.1 Definition of Line Integral – related problems.
2.2 Definition of Surface Integral – related problems.
2.3 Definition of Volume integral – related problems.

UNIT – III: APPLICATIONS OF VECTOR INTEGRATION (20 hrs)

3.1 Problems on Gauss Divergence theorem only..
3.2 Problems on Green's theorem only..
3.3 Problems on Stoke's theorem only.

UNIT – IV: PARTIAL DIFFERENTIAL EQUATIONS – I (15 hrs)

4.1 Introduction
4.2 Homogeneous function – Euler's Theorem
4.3 Total derivative – Chain rule
4.4 Generalized Mean Value theorem for single variable (without proof)

UNIT – V: PARTIAL DIFFERENTIAL EQUATIONS – II (15 hrs)

5.1 Taylor's and Mc Laurent's series expansion of functions of two variables.(without proof)
5.2 Functional dependence – Jacobian.
5.3 Applications: Maxima and Minima of functions of two variables without constraints and Lagrange's method (with Constraints).

Prescribed Text books:				
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER	YEAR OF PUBLICATION
1.	V. Venkateswara Rao, N. Krishna Murthy	A text book of mathematics for B.A / B.Sc Volume – III (Unit – III & IV). Pg: 227 - 385	S – Chand & Co	2012
2.	TKV Iyengar, B Krishna Gandhi, S. Ranganatham and MVSSN Prasad	Engineering Mathematics – Vol – I	S – Chand & Co	2016 – 2017

Reference books:				
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHER	YEAR OF PUBLICATION
1	Dr. A. Anjaneyulu	A text book of mathematics for B.A/B.ScVol – III	Deepthi Publications	3rd Edition 2006 – 2007
2.	M.D Raisinghania	B.A/B.ScVol – I & II Ordinary and Partial Differential Equations.	S – Chand Publications	2003

Student Activities:

1) **Class-room activities:** Power point presentations, Assignments
2) **Library activities:** Visit to library and preparation of notes for Assignment problems.
3) **Activities in the Seminars, workshops and conferences:** Participation/presentation in seminar/workshop/conference.

Co-Curricular Activities:

- Quiz Competitions, Seminars
- Group Discussions

Web – Links

https://drive.google.com/file/d/1MOYXyBclQ3ZYZzqQbv9-bg-cNusI5ks8/view?usp=sharing.
https://drive.google.com/file/d/13MVMJvb5AuSY00fgdPM7zG0-Qoo0LSqF/view?usp=sharing.

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE:: VIJAYAWADA-10.
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Model Question Paper

Semester – I End Examination -2022-23

(with effect from 2022-23)

COURSE CODE : MAT T17 Time: 3hrs.
TITLE OF THE PAPER :V ector Calculus& Partial Differential Equations Max. Marks: 70

Answer the following , one question from each unit

Blooms taxonomy level : 40% L1 , 40% L2 and 20% L3 or above

(a) And (b) of each question shall be of same level

1.(a). If $\vec{r} = a\cos t\,\vec{i} + a\sin t\,\vec{j} + at\tan\theta\,\vec{k}$ then find $\left|\vec{r}^{1} x \vec{r}^{11}\right|, \left[\vec{r}^{1}, \vec{r}^{11}, \vec{r}^{111}\right]$ (L1, CO1) 10M

OR)

(b). Find the directional derivative of $\varnothing = x^2 - 2y^2 + 4z^2$ at (1, 1, -1) in the direction of $2i + j - k$. (L1, CO1) 10M

2.a) Find grad f at the point (1, 1, -2) where $f = x^2 y + y^2 x + z^2$ (L1, CO1) 4M

OR

b)Prove that $div\,\bar{r} = 3$ and $curl\,\bar{r} = \bar{0}$. (L1, CO1) 4M

3. (a). Evaluate $\int_s \bar{F}.Nds$, where $\bar{F} = zi + xj - 3y^2 zk$ and S is the surface $x^2 + y^2 = 16$ included in the first octant between Z=0 and Z=5. (L1, CO1) 10M

OR

(b). Evaluate $\int_C \bar{F}.d\bar{r}$ where $\vec{F} = (x^2 - y^2)\vec{\imath} + xy\vec{j}$ and curve C is arc of the curve $y = x^3$ from (0,0) to (2,8). (L1, CO1) 10M

4.a) Find $\int_c \bar{F}.d\bar{r}$, where $\bar{F} = 3xy\bar{i} - y^2\bar{j}$, C is the curve $y = 2x^2$ in XY plane from (0, 0) to (1, 2). (L1, CO2) 4M

OR

b)If F = $x^2y^2\vec{\imath}$ +y$\vec{j}$ and the curve c is y^2 =4x in the xy-plane from (0,0) to (4,4) (L1, CO4) 4M

5. (a). By using Green's theorem, evaluate integral (L2, CO2) 10M

$\oint_c \bar{F}.d\bar{r}$, *where* $\bar{F} = \left(x^2 + y^2\right)\bar{i} - 2xy\,\bar{j}$ *and C is the rec* tan *gle in xy plane bounded by* $y = 0,\ y = b,\ x = 0,\ x = a.$

(OR)

(b). Verify Gauss Divergence theorem to evaluate $\iint_s \left[(x^3 - yz)\bar{i} - 2x^2 y\,\bar{j} + z\,\bar{k}\right].\bar{N}\,ds$ over the surface of the cube bounded by the planes $x = y = z = a.$ (L2, CO2) 10M

6. a) Apply Gauss theorem to prove $\int_s r\,.N\ ds\ = 3V$ (L2,CO2) 4M

7.

OR

b) Evaluate by stoke's theorem, $\int_c \bar{F}.d\bar{r}$ where $\bar{F} = yz\bar{i} + zx\bar{j} + xy\bar{k}$ and C is the curve $x^2 + y^2 = 1, z = y^2$. (L2, CO2) 4M

7. (a). If $u = x^2 + y^2,\ x = s + 3t, y = 2s - t,$ then find the values of $\frac{\partial u}{\partial s}, \frac{\partial u}{\partial t}, \frac{\partial^2 u}{\partial s^2}, \frac{\partial^2 u}{\partial t^2}$ (L2, CO4) 10M

(OR)

(b). If $u = \tan^{-1}\left[\frac{2xy}{x^2 - y^2}\right]$, prove that $\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} = 0$ (L2, CO4) 10M

8.a) State and prove Euler's theorem on homogeneous functions (L2,CO2) 4M

OR

b) *If* $w = (y - z)(z - x)(x - y)$, find the value of $\frac{\partial w}{\partial x} + \frac{\partial w}{\partial y} + \frac{\partial w}{\partial z}$ (L2, CO4) 4M

9.(a). Show that the functions

$u = x + y + z,\ v = x^2 + y^2 + z^2 - 2xy - 2yz - 2zx,\ w = x^3 + y^3 + z^3 - 3xyz$ are functionally dependent. (L3, CO3) 10M

OR

(b). Find the maximum value of $u = x^2 y^3 z^4$ *if* $2x + 3y + 4z = a$. (L3, CO3) 10M

10.a) *If* $f(x, y) = x^3 + 2xy - 2x - 4y$, *then find* f_x, f_y, f_{xy} (L3, CO3) 4M

OR

b) If x = u(1+v) , y= v(1+u) then prove that $\frac{\partial(x,y)}{\partial(u,v)} = 1 + u + v$ (L3,CO3) 4M

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STATISTICS	**STAP14**	**2021-22 Onwards**	**B.Sc. Artificial Intelligence and machine Learning**

SEMESTER-I **Practical – I: Descriptive Measures**

No. of Credits: 1

CO.NO	Upon successful completion of this course, students should have the knowledge and skills to:	Mapping
CO1	draw the suitable diagram and graphs of the given sample data	PO2
CO2	Analyze the uni-variate data using statistical techniques.	PO2

CO-PO MATRIX								
COURSE CODE	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
22STAL14	CO1						M	
	CO2					H		
	CO3					H		
	CO4					H		
	CO5					M		

List of Practicals

1. Diagrams -Bar, Pie and Histogram
2. Graphs- Frequency polygon, frequency curves and Ogive curves
3. Computation of measures of central tendency- Arithmetic Mean, Geometric mean and Harmonic Mean – Grouped Data.
4. Computation of measures of central tendency- Median, Mode and Partition Values - Grouped Data.
5. Computation of measures of Dispersion – Quartile Deviation, Mean Deviation, Standard Deviation, Variance and Coefficient of Variation – Grouped Data.
6. Computation of non-central, central moments, $\beta_1$and β_2 and Sheppard's corrections for grouped data.
7. Computation of Skewness and kurtosis - based on central tendency, dispersion and moments.

Note: Training shall be on establishing formulae in Excel cells and derive the results. The excel output shall be exported to MS word for writing inference.

Reference Books

1. Practical Manual -Prepared by the Department Faculty Members

2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI

Websites of Interest: http://www.statsci.org/datasets.html

Scheme of Valuation for Practical Paper

(i) Continuous evaluation 10 Marks

(ii) External Evaluation: 40 marks

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STATISTICS Course Code : STAT14w.e.f : 2021– 22

B.Sc.(AI & ML)

SEMESTER- I PAPER – I No. of Credits:4

Descriptive Measures and Theory of Probability

Course Objectives:

The learning objectives include:

- To summarize the data and to obtain its salient features from the vast mass of original data..
- To understand the concepts of probability and its applications.
- To understand the concept of random variables, expectations and its applications.

Course Outcomes: After completing this course, the students should have developed a clear understanding of:

CO1: Tabular and graphical representation of data based on variables.

CO2: Descriptive Measuresand their use in studying various characteristics of data.

CO3: Different approaches to the theory of probabilityand their use in solving problems.

CO4: Concept of uni-variaterandom variables and bi-variate random variables.

CO5:Expectation and variance of a random variable and various types of generating functions.

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
22STAT14	**CO1**						**M**	
	CO2					**M**		
	CO3					**M**		
	CO4					**H**		
	CO5							**L**

Unit I **12L**

Concepts of a statistical population and sample from a population, quantitative and qualitative data, nominal, ordinal and time-series data, discrete and continuous data. Presentation of data by tables and by diagrams, frequency distributions for discrete and continuous data, graphical representation of a frequency distribution by histogram and frequency polygon, cumulative frequency distributions (inclusive and exclusive methods)..

Unit II **12L**

Measures of Central Tendency: Mathematical and positional, partition values, Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of

variation, Moments- non-central, central moments and inter relation between non-central and central moments, Sheppard's corrections for central moments skewness and kurtosis.

Unit III **12L**

Probability: Introduction, random experiments, sample space, events and algebra of events. Definitions of Probability-classical, statistical, and axiomatic.Conditional Probability, Addition and multiplication theorem of probability, independent events, Bayes' theorem, and its applications.

Unit IV **14L**

Random variables: Introduction, discrete and continuous, illustrations and properties of random variables, probability mass function, probability density function and cumulative distribution functions and its properties. Two dimensional random variables: Joint, marginal and conditional probability mass function and probability density function, independence of random variables.Transformation of one- dimensional random variable.

Unit V **10L**

Mathematical Expectation: Introduction, variance and covariance of random variables and their properties, conditional expectations. Moment generating function and its properties, cumulant generating function, characteristic function, and its properties.Chebyshev's inequality and its applications.

Note: Proofs and derivations of statements are excluded.

Text Book: Fundamentals of Mathematical Statistics, 12th Edition, 10th September 2020, S. C. Gupta and V. K. Kapoor, Sultan Chand &Sons, New Delhi.

Recommended References books:

1. Mathematical Statistics with Applications, 2009, K.M.Ramachandran and Chris P.Tsokos Academic Press(Elsevier), Haryana .
2. Probability and Statistics,Volume I, D.Biswas, New central book Agency (P) Ltd, New Delhi.
3. An outline of Statistical theory, Volume Two,3rd Edition,2010(with corrections) A.M.Goon,M.K. Gupta, B.Dasgupta ,The World Press Pvt.Ltd., Kolakota.
4. Sanjay Arora and BansiLal:. New Mathematical Statistics, SatyaPrakashan , New Delhi.

Websites of Interest: **http://onlinestatbook.com/rvls/index.html**

Co-Curricular Activities in the class:

1. Pictionary
2. Case Studies on topics in field of statistics
3. Snap test and Open Book test
4. Architectural – To be build the procedures
5. Extempore – Random concept to students
6. Interactive Sessions
7. Teaching through real world examples

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STATISTICS **Course Code : STAT14w.e.f : 2021– 22**

B.Sc. (AI & ML)

SEMESTER- I **PAPER – I** **No. of Credits:4**

Descriptive Measures and Theory of Probability

Model Paper

Answer the following **Max.Marks:70**

Unit – I

1. (a) Explain briefly the various methods of graphical representation of frequency distribution with rough diagrams (10M) (Co-1,L-2)

(OR)

(b) Explain briefly the various methods of collection of data with examples (10M) (Co-1,L-2)

2. (a) Explain qualitative data with examples (4M) (Co-1,L-2)

(OR)

Explain nominal and time series data with examples (4M) (Co-1,L-2)

Unit - II

3. (a) Calculate the mean and median from the following data (10M)

Class interval	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	15	20	34	40	50	30	10

(OR)

(b) Calculate standard deviation from the following data (10M) (Co–2,L–4)

Class interval	0-9	10-19	20-39	39-39	40-49	50-59	60-69
Frequency	5	7	10	12	18	10	6

4. (a) The mean of 20 students is 17.6 and another group of 23 students is 19.1 . Find the mean of 43 students. (4M) (Co–2,L–4)

(OR)

(b) Find the mean deviation of the data 8,10,12,9,11,23,7. (4M) (Co–2,L–4)

Unit - III

5. (a) A problem in statistics is given to three students A, B and C whose chances of solving it are ½, ¾ and ¼ respectively. What is the probability that the Problem will be solved? (10M) (Co–3,L–4)

(OR)

(b) The content of urns I, II and III are as follows (10M) (CO–3,L–4)
1 white, 2 black and 3 red balls
2 white, 1 black and 1 red balls and
4 white, 5 black and 3 red balls
One urn is chosen at random and two balls are drawn. They happen to be White and red. What is the probability that they come from the urns I, II and III

6. (a) A card is drawn from a pack of cards. What is the probability that it is a king ace (4M) (CO–3,L–4)

(OR)

(b) A bag contains 6white, 4green balls. Two balls are drawn from the bag. What is the probability that they are of same colour. (4M) (CO–3,L–4)

Unit - IV

7. (a) A random variable X has the following probability distribution (10M)

$X = x$	-2	-1	0	1	2	3
$P(X = x)$	0.1	k	0.2	2k	0.3	3k

(i) Find the value of k
(ii) Evaluate $P(X < 2), P(X \geq 2), P(-2 < X < 2)$ (CO-4,L-4)

(OR)

(b) X,Y have joint pdf $f(x, y) = xe^{-x(y+1)}; x \geq 0, y \geq 0$ Find marginal and conditional probability density function (10M) (CO-4,L-4)

8. (a) Explain the properties of distribution function(4M) (CO-4,L-2)

(OR)

(b) Define probability mass function and probability density function(4M) (CO-4,L-2)

Unit - V

9. (a) If two dice are thrown, find the expected value of sum of number of points on them.(10M) (CO-5,L-4)

(OR)

(b) Verify the Cauchy – Schwartz's inequality to the following bivariate distribution.(10M) (CO-5,L-4)

X \ Y	1	2	3
1	2/21	3/21	4/21
2	3/21	4/21	5/21

10. (a) Let X be a random variable with the following probability distribution

X	-3	6	9
P(X=x)	1/6	1/2	1/3

Find $E(X^2)$ (4M) (CO-5,L-4)

(OR)

(b) If $E(X) = 2$ and $E(X^2) = 9$ then find $V(2X+3)$ (4M) (CO-5,L-4)

****

పి.బి. సిద్ధార్థ ఆర్ట్స్ & సైన్స్ కళాశాల (స్వయంప్రతిపత్తి) :: విజయవాడ -10

బి.ఏ., బి.బి.ఏ., బి.కాం., బి.ఎస్సి., బి.సి.ఏ., తదితర ప్రోగ్రాములు

సి.బి.సి.ఎస్. పద్ధతిలో సవరించబడిన పాఠ్యప్రణాళిక

2020-2021 విద్యా సంవత్సరం నుండి

తెలుగు - పాఠ్య ప్రణాళిక

సెమి.	కోర్సు	శీర్షిక	పీరియడ్లు/వారానికి	క్రెడిట్లు	మొత్తం మార్కులు		
					IA	SE	Total
I	I	తెలుగు - I	04	03	25	75	100

(B.A,B.Com-GEN,C.A,A&F,TPP,BPM,BBA,BBA-B.A,BCA,B.Sc&CSCS) EXTRA

కోర్స్ కోడ్:TELT11A **అంశం: తెలుగు** **సెమిస్టర్- I**

కోర్సు-1 : తెలుగు-I

యూనిట్ల సంఖ్య: 5 పీరియడ్ల సంఖ్య: 60

కోర్స్ అవుట్ కంమ్స్ :

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ప్రాచీన తెలుగు సాహిత్యం యొక్క ప్రాచీనతను, విశిష్టతను గుర్తిస్తారు. తెలుగు సాహిత్యంలో ఆదికవి నన్నయ కాలంనాటి భాషాసంస్కృతులను, ఇతిహాసకాలం నాటి రాజనీతి విషయాలపట్ల పరిజ్ఞానాన్ని సంపాదించగలరు.
2. శివకవుల కాలంనాటి మతపరిస్థితులను, భాషా విశేషాలను గ్రహిస్తారు. తెలుగు నుడికారం, సామెతలు, లోకోక్తులు మొదలైన భాషాంశాల పట్ల పరిజ్ఞానాన్ని పొందగలరు.
3. తిక్కన భారతంనాటి మత, ధార్మిక పరిస్థితులను, తిక్కన కవితా శిల్పాన్ని, నాటకీయతను అవగాహన చేసుకోగలరు.
4. పోతన అద్భుత కథాకథన శిల్పం, సజీవపాత్ర చిత్రణ, శబ్దాలంకారాల ప్రయోగం మొదలగు విభిన్న రీతులపట్ల అభిరుచిని పొందగలరు. మొల్ల కవిత్వంలోని వీనుల విందైన పదాలు, పాత్రలు మనోభావాల చిత్రణ గుర్తించగలరు.
5. తెలుగు పద్యం స్వరూప-స్వభావాలను, సాహిత్యాభిరుచిని పెంపొందించుకుంటారు. ప్రాచీన కావ్యభాషలోని వ్యాకరణాంశాలను అధ్యయనం చేయడం ద్వారా భాషా సామర్థ్యాన్ని, రచనలో మెలకువలను గ్రహించగలరు.

లెర్నింగ్ అబ్జెక్టీవ్స్ :

1. తెలుగు భాషాసాహిత్యాల పట్ల ప్రీతి, మమకారం, ప్రాచీన కాలంలోని రాజనీతి పట్ల అవగాహన కల్గుతుంది.
2. ప్రాచీన కాలం నాటి చరిత్ర, సంస్కృతి ఆచార సాంప్రదాయాల పట్ల ఆసక్తి కల్గుతుంది.
3. అలనాటి ధర్మ, మత పరిస్థితులు, నైతిక విలువల పట్ల అవగాహన ఏర్పడుతుంది.
4. పూర్వ కవుల సజీవ పాత్రల సృష్టి, వివిధ శబ్ద ప్రయోగాల పట్ల అభిరుచి కల్గుతుంది.
5. కావ్య భాషలోని భాషా పరిజ్ఞానం, వ్యాకరణాంశాలు, వివిధ రచనలలోని మెలకువలు తెలుసుకుంటారు.

పాఠ్య ప్రణాళిక

యూనిట్-I

రాజనీతి – నన్నయ

మహాభారతము – సభాపర్వం – ప్రథమాశ్వాసంలో 26వ పద్యము "మీవంశమున..... నీవు వారిదైన నేర్పెఱింగి" నుండి 57వ పద్యము "నాయథాశక్తి .... వాని ననుష్ఠితు బ్రియముతోడ" వరకు.

యూనిట్-II

దక్షయజ్ఞం – నన్నెచోడుడ

కుమార సంభవం – ద్వితీయాశ్వాసంలో 49వ వచనం "అంతకమున్ను.... భయంకరా కారంబుదాల్చిన" నుండి 86వ పద్యం " ప్రమథగణము.... కనిరిశంభు" వరకు.

యూనిట్-III

ధౌమ్యధర్మోపదేశము – తిక్కన

మహాభారతము – విరాటపర్వము – ప్రథమాశ్వాసంలో 116వ పద్యం "ఎఱిగెడు వారికినైనను.... వలయు దగియెడు బుద్ధుల్" నుండి 146వ పద్యం "అతడు నియతితోడ .... సంచయములు దగ జపించుచుండె" వరకు.

యూనిట్-IV

మధుర స్నేహం – పోతన

ఆంధ్రమహాభాగవతము – దశమస్కంధము – కుచేలోపాఖ్యానంలో 962వ పద్యం "లలిత పతివ్రతాతిలకంబు... కుపాయమూ హింప వైతి" నుండి 983వ పద్యం "తన మృదుతల్పమందు... ధరణీసురు డెంతటి భాగ్యవంతుడో" వరుకు.

యూనిట్-V

సీతారావణ సంవాదం – మొల్ల

రామాయణము – సుందరకాండములో 40వ వచనం "ఆరామంజూచి.... వృక్షం బారోహించి యందు" నుండి 87వ పద్యం " కావున నిక్కోమలియెడ.... మనకు దిక్కగు మీదన్" వరకు.

వ్యాకరణము:

1. **సంధులు:-** సవర్ణ, గుణ, యణాదేశ, వృద్ధి, అకార, ఇకార, ఉకార, త్రిక సంధులు.
2. **సమాసములు:-** తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి సమాసములు.
3. **ఛందస్సు:-** వృత్త పద్యాల్లో ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము.
   జాతులు, ఉపజాతుల్లో కందము, తేటగీతి, ఆటవెలది మరియు ముత్యాలసరాలు.
4. **అలంకారములు:-** శబ్దాలంకారాల్లో అనుప్రాసాలైన వృత్త్యనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస, అంత్యాను ప్రాసములు.
   అర్థాలంకారాల్లో ఉపమ, ఉత్ప్రేక్ష, రూపక, శ్లేషలు.

ఆధార గ్రంథాలు:

1. శ్రీమదాంధ్ర మహాభారతము : సభాపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
2. శ్రీమదాంధ్ర మహాభారతము : విరాటపర్వము-తిరుమల తిరుపతి దేవస్థానం ప్రచురణ
3. కుమార సంభవం - నన్నెచోడుడు
4. శ్రీ మహాభాగవతము - పోతన
5. రామాయణము - మొల్ల

SEMESTER– PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE :: VIJAYAWADA-520 010.
(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)

TELUGU	**TELT11A**	**2020-2021**	**B.A., B.Com., B.B.A., B.B.A.-Ana, B.Com.-CA, B.C.A., & B.Sc.,**

I **Credits – 3**

ప్రశ్నపత్ర నిర్మాణ సూచిక : TELUGU-I

1. ప్రతిపదార్థ పద్యాలు :	**2–1**	**1×7=7మా,**	**2. సందర్భ సహిత వ్యాఖ్యలు:**	**5–3**	**3×4=12మా**
3. సంగ్రహరూప ప్రశ్నలు :	**5–3**	**3×4=12మా,**	**4. వ్యాసరూప ప్రశ్నలు :**	**5–3**	**3×8=24మా**
5. సంధులు :	**5–3**	**3×2=6మా,**	**6. సమాసములు :**	**5–3**	**3×2=6మా**
7. ఛందస్సు :	**2–1**	**1×4=4మా,**	**8. అలంకారములు :**	**2–1**	**1×4=4మా**
				మొత్తం =	**75మా**

గమనికలు / సూచనలు:

1. **ప్రతిపదార్థ పద్యాలు:–** "రాజనీతి, ధౌమ్యధర్మోపదేశం, మధురస్నేహం" అనే మూడు పాఠాల నుండి రెండు పద్యాలు ఇవ్వాలి. అవి కూడ ఈ క్రింది పద్యాల్లో నుండి రెండు ఇవ్వాలి–

రాజనీతి:

1. ఉత్తమ మధ్యమాధమ .... కాలము దప్పకుండగన్
2. బహుధనధాన్య సంగ్రహము ..... భవత్పరి రక్ష్యములైన దుర్గముల్

ధౌమ్యధర్మోపదేశము:

3. రాజ గృహంబు కంటె ..... దగదట్లు సేయగన్
4. ధరణిపు చక్క ..... నుండుటనీతి కొల్పునన్

మధురస్నేహం:

5. కలలో నందను ..... సంపద్విశేషోన్నతుల్.
6. కనిడాయం జనునంత ..... విలోలుండై దిగెన్ దల్పమున్.

2. **సందర్భసహిత వ్యాఖ్యలు:–** "రాజనీతి, దక్షయజ్ఞం, ధౌమ్యధర్మోపదేశము, మధురస్నేహం, సీతారావణ సంవాదం" అనే ఐదు పాఠాలనుండి ఒకొక్కటి చొప్పున సందర్భసహిత వ్యాఖ్య ఇవ్వాలి.

3. **సంగ్రహరూప ప్రశ్నలు:–** "రాజనీతి, దక్షయజ్ఞం, ధౌమ్యధర్మోపదేశము, మధురస్నేహం, సీతారావణసంవాదం" అనే ఐదు పాఠాల నుండి ఒకొక్కటి చొప్పునొ సంగ్రహరూప ప్రశ్న ఇవ్వాలి.

4. **వ్యాసరూప ప్రశ్నలు:–** "రాజనీతి, దక్షయజ్ఞం, ధౌమ్యధర్మోపదేశము, మధురస్నేహం, సీతారావణసంవాదం" అనే ఐదు పాఠాల నుండి ఒకొక్కటి చొప్పున వ్యాసరూప ప్రశ్న ఇవ్వాలి.

5. **సంధులు:–** "సవర్ణ, గుణ, యణాదేశ, వృద్ధి, అకార, ఇకార, ఉకార, త్రిక" సంధులు నుండి ఐదు సంధులు ఇవ్వాలి.

6. **సమాసములు:–** "తత్పురుష, కర్మధారయ, ద్వంద్వ, ద్విగు, బహువ్రీహి సమాసములు" నుండి ఐదు సమాసములు ఇవ్వాలి.

7. **ఛందస్సు:–** వృత్తపద్యాలైన "ఉత్పలమాల, చంపకమాల, శార్దూలము, మత్తేభము"ల నుండి ఒక పద్యపాదమును ఇవ్వాలి.
జాతులు, ఉపజాతుల పద్యాలైన "కందము, తేటగీతి, ఆటవెలది" మరియు 'ముత్యాలసరాలు' నుండి ఏవైన మూడిచ్చి ఒకదానిని లక్ష్యలక్షణ సమన్వయం చేయమనాలి.

8. **అలంకారములు:–** అర్థాలంకారలైన "ఉపమ, ఉత్ప్రేక్ష, రూపకము, శ్లేష"ల నుండి ఒక అలంకారము ఇవ్వాలి. అది కూడ ఐదు పాఠాల (రాజనీతి, దక్షయజ్ఞం, ధౌమ్యధర్మోపదేశము, మధురస్నేహం, సీతారావణసంవాదం) నుండి ఒక పద్యాన్ని ఇవ్వాలి–
శబ్దాలంకారాల నుండి "వృత్తనుప్రాస, ఛేకానుప్రాస, లాటానుప్రాస, అంత్యానుప్రాసా"ల నుండి రెండు అలంకారములు ఇచ్చి, ఒక అలంకారము వ్రాయమనాలి.

ఇక నమూనా ప్రశ్నపత్రాన్ని పరిశీలించి ప్రశ్నపత్రాన్ని తయారు చేసుకోవాలి.

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE::VIJAYAWADA-520010
(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)

I Semester Model Question Paper, 2020-21 Batch

No. of Pages: 2	**Roll No.:**	**Max. Marks: 75M**
Time: 3 Hrs.	**No. of Questions: 08**	**Pass Min. : 30M**

I. క్రింది వానిలో <u>ఒకదానికి</u> ప్రతి పదార్థ తాత్పర్యమును వ్రాయండి: 7మా **L1**

1. బహుధనధాన్య సంగ్రహము బాణశరాసన యోధవీర సం
గ్రహము నిరంతరాంతరుదకంబులు ఘాసరసేందనౌఘ సం
గ్రహము ననేక యంత్రములు గల్గియ సాధ్యములై ద్విషద్భయా
వహ లగుచుండ నొప్పునె భవత్పరి రక్ష్యములైన దుర్గముల్.

లేదా

2. కలలోనందను మున్నెఱుంగని మహా కష్టాత్ముడై నట్టి దు
ర్బలు డౌపత్సమయంబునన్ నిజ పదాబ్జాతంబులు ల్లంబులోన్
దలపన్నంతనె మెచ్చి యార్తి హరుడై తన్నైన నిచ్చున్ సు ని
శ్చల భక్తిన్ భజియించువారి కిడడే సంపద్విశేషోన్నతుల్.

II. క్రింది వానిలో <u>మూడింటికి</u> సందర్భసహిత వ్యాఖ్యలు వ్రాయండి: 3 × 4 = 12మా **L2**

1. వార్త నిర్వహింపవలయు బతికి.
2. నన్ను బనుపు దక్షు బట్టి తెచ్చెదన్.
3. పురుషార్థంబునకు హాని పుట్టక యున్నే?
4. గోవింద దర్శనోత్సాహి యగుచు.
5. ఉండు టిది న్యాయమె లతాంగీ !

III. క్రింది వానిలో <u>మూడింటికి</u> సంగ్రహరూప సమాధానాలు వ్రాయండి: 3 × 4 = 12మా **L1**

1. రాజు చేయకూడని పనుల్ని తెల్పండి?
2. ప్రమథులు దక్షుని బంధించిన తీరును తెల్పండి?
3. ధౌమ్యుని ఉపదేశానంతరం ఏమి జరిగింది?
4. అంతఃపురకాంతలు కుచేలుని గూర్చి భావించిన విషయాల్ని తెల్పండి?
5. త్రిజట తన స్వప్నాన్ని ఏమని వివరించెను?

IV. క్రింది వానిలో <u>మూడింటికి</u> వ్యాసరూప సమాధానాలు వ్రాయండి: 3 × 8 = 24మా **L1**

1. ప్రజాపాలనలో రాజులు పాటించాల్సిన ధర్మాలేవి?
2. 'దక్షయజ్ఞం' సారాంశాన్ని వ్రాయండి.
3. ధౌమ్యుడు పాండవులకు చేసిన ధర్మోపదేశాన్ని వివరించండి
4. 'మధురస్నేహం' పాఠ్య సారాంశాన్ని తెల్పండి?
5. సీతారావణ సంవాదాన్ని వివరించండి.

V. క్రింది వానిలో <u>మూడింటిని</u> విడదీసి, సంధి కార్యము వ్రాయండి: 3 × 2 = 6మా **L3**

1. శతైకవృద్ధి 2. జగమెల్ల 3. మనుజేంద్రుడు
4. కష్టాత్ముడు 5. ఇక్కోమలి

VI. క్రింది వానిలో <u>మూడింటికి</u> విగ్రహ వాక్యాలు వ్రాసి, సమాస నామములు తెల్పండి: 3×2=6మా **L3**

1. అష్టాంగాలు 2. అశ్రమము 3. భీమార్జునులు2
4. మధురస్నేహం 5. తోయజాక్షి

VII. క్రింది పద్య పాదాన్ని గణ విభజన చేసి, యతిని గుర్తించి, ఏ పద్యపాదమో తెల్పండి: 1×4=4మా **L3**

తన మృదుతల్పమందు వనితామణియైన రమాలలామ పొం

లేదా

క్రింది వానిలో <u>ఒకదానికి</u> లక్ష్య, లక్షణ సమన్వయం చేయండి. **L1**

1. తేటగీతి 2. ముత్యాలసరాలు 3. ఆటవెలది

VIII. క్రింది పద్యంలోని అలంకారమును గుర్తించి, లక్ష్య లక్షణ సమన్వయం చేయండి: 1×4=4మా **L3**

బాల సఖుడైన యప్పద్మ పత్రనేత్రు
గాన నేగి దరిద్రాంధకార మగ్ను
లయిన మము నుద్ధరింపుము హరి కృపాక
టాక్ష రవిదీప్తి వడసి మహాత్మ! నీవు.

లేదా

క్రింది వానిలో <u>ఒకదానికి</u> లక్ష్య, లక్షణ సమన్వయం చేయండి. **L1**

1. వృత్త్యాను ప్రాసము 2. లాటానుప్రాసము

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DATA STRUCTURES

SEMESTER END MODEL QUESTIONPAPER

TITLE :DataStructures **COURSE CODE : AIMLT21**

SECTIONS: B.Sc. (AI&ML) **SEMESTER: II**

TIME:3Hrs. **MAX: 75M**

SECTION-A

ANSWER ANYFIVEQUESTIONS **5X5=25M**

1. Differentiate primitive and non-primitive data structures. (CO1,L2)
2. Compare and contrast Data Structures and File Structures. (CO1,L2)
3. Differentiate stacks and queues. (CO2,L2)
4. Illustrate circular queue with example, (CO2,L4)
5. Build a binary tree depending on following traversals:
   In order: D B E A FC
   Pre order: A B D EC G (CO3,L6)
6. Develop an algorithm to insert a node into BST. (CO3, L6)
7. Define Graph and explain its representations. (CO4,L1)
8. Illustrate bubble sort with example, (CO5,L4)

SECTION-B

ANSWERALLQUESTIONS **5X10=50M**

9. A. What is data structure? Explain various types of data structures.(CO1,L1)

   Or

   B. Explain about inserting and deleting nodes from doubly linked list. (CO1, L1)
10. A. Develop an algorithm to demonstrate insertion and deletion operations on queues. (CO2, L6)

    Or

    B. Develop an algorithm to demonstrate push and pop operations on stacks. (CO2, L6)

11. A. Illustrate various tree traversal techniques with example. (CO3,L4)

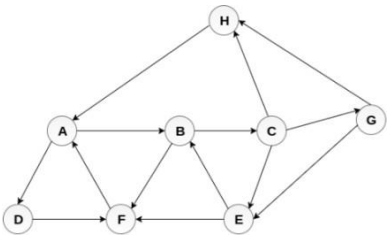
Or

B. Illustrate deleting a node from BST considering:

Case 1: Node with single child - 5m

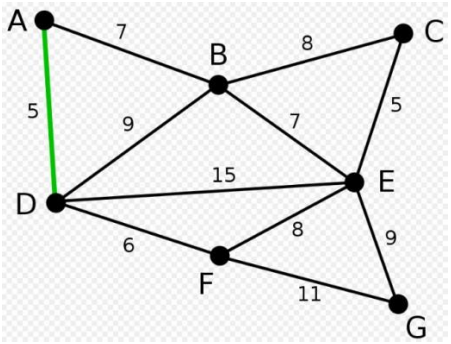
Case 2: Node withtwo Childs -5m (CO3,L4)

12. A. Write algorithm and Illustrate BFS using following graph: (CO4,L4)



Or

B. Write algorithm and Illustrate MST using following graph: (CO4, L4)



13. A. Illustrate quick sort using following data set: 33, 100, 2, 14, 27, 101, 104, 8. (CO5,L4)

Or

B. Illustrate binary search with example, (CO5, L4).

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DATA STRUCTURES
BLUE PRINT

TITLE :DataStructures **COURSE CODE : AIMLT21**
SECTIONS: B.Sc. (AI&ML) **SEMESTER:II**
TIME:3Hrs. **MAX: 75M**

SECTION-A

ANSWER ANYFIVEQUESTIONS **5X5=25M**

1. UNIT1
2. UNIT1
3. UNIT2
4. UNIT2
5. UNIT3
6. UNIT3
7. UNIT4
8. UNIT5

SECTION-B

ANSWERALLQUESTIONS **5X10=50M**

9. A) Unit1.

(or)

B) Unit 1.

10. A) Unit2.

(or)

B) Unit2.

11. A) Unit3.

(or)

B) Unit 3.

12. A) Unit4.

(or)

B) Unit4.

13. A) Unit5.

(or)

B) Unit 5.

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PYTHON FOR DATA ANALYSIS

MODEL Question Paper

TITLE: Python forDataAnalysis **COURSE CODE: AIMLT22**

SECTIONS:B.Sc.(AI&ML) **SEMESTER:II**

TIME:3Hrs. **MAX: 75M**

Section-A

Answer ANYFIVEQuestions **5 x 5 = 25 M.**

1. Explain about various features of python. (CO1,L1)
2. Explain precedence of operators in python. (CO1,L1)
3. Develop a python script to swap values. (CO2, L6)
4. Develop a python script to find factors of given number. (CO2,L6)
5. Develop a python script to print factorial of given number using recursion. (CO3,L6)
6. Differentiate between list and tuple. (CO4,L3)
7. Develop a python script to demonstrate sets. (CO4,L6)
8. Explain data frame and apply slicing shape and reshape functions. (CO5,L1).

Section-B

AnswerALL Questions **5 x 10 = 50M.**

9. A. Explain various data types in python. (CO1,L1)

   Or

   B. Explain various technical strengths of python and interactive interpreter. (CO1, L1)

10. A. Explain about branching control structures in python with examples. (CO2,L1)

    Or

    B. Explain about iterative control structures in python with examples. (CO2, L1)

11. A. Explain various predefined functions in python with examples. (CO3, L1)

    Or

    B. Explain about creating user defined modules in python with example. (CO3, L1)

12. A. Develop a python script for preparing the list and tuple of students data, assign them to various departments and assign operators and comparison operators. (CO4,L6)

Or

B. Develop a python script to demonstrate various operations on dictionaries. (CO4, L6)

13. A. Illustrate creating data set in pandas. Also write about exporting and importing data . (CO5, L4)

Or

B. Define and Illustrate scatter and box plots for following data set:

math_marks = [88, 92, 80, 89, 100, 80, 60, 100, 80, 34]
science_marks = [35, 79, 79, 48, 100, 88, 32, 45, 20, 30]
marks_range = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

@@@@

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PYTHON

TITLE: Python forDataAnalysis

COU

RSE CODE: AIMLT22 SECTIONS:B.Sc.(AI&ML)

SEM

ESTER:II

TIME:3Hrs. **MAX: 75M**

Section-A

Answer ANY FIVE Questions **5**

x 5 = 25 M.

1. UNIT1
2. UNIT1
3. UNIT2
4. UNIT2
5. UNIT3
6. UNIT4
7. UNIT4
8. UNIT5

Section-B

Answer ALL Questions **5**

x 10 = 50M.

9. A) Unit1.

   OR

   B) Unit 1.
10. A) Unit2.

    OR

    B) Unit2.
11. A) Unit3.

    OR

B) Unit 3.

12. A) Unit4.

OR

B) Unit4.

13. A) Unit5.

OR

B) Unit 5.

PARVATHANENIBRAHMAIAH SIDDHARTHA COLLEGE OF ARTS AND SCIENCE; VIJAYAWADA-10

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SEMESTER- II **PAPER - II**

TITLE OF THE PAPER: HINDI-II

NO OF HOURS: 60 **CREDITS: 03**

WEF: 2021-22 **COURSE CODE: HINT21A**

COURSE OUTCOMES:

1.मानव मूल्यों से विद्यार्थी अवगत होंगे तथा इस दिशा में आगे बढ़ेंगे।

2.आधुनिक युग की भावनाओं को पहचानकर,निरंतर सामाजिक समस्याओं का सामना करते हुए,आगे बढ़ेंगे।

3.विषय के विश्लेषण से सामाजिक दायित्व को निभाने में अग्रसर होंगे।

4.ग्रहण किये गये पाठ्यांशों के द्वारा विद्यार्थियों का ज्ञान मापन बढ़ेगा तथा अपने क्षेत्र में भी आगे होंगे

5.भाषा की प्रवीणता और प्रयोग से विद्यार्थी उज्वल भविष्य की ओर बढ़ेंगे।

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SEMESTER- II **PAPER - II**

TITLE OF THE PAPER: HINDI-II

NO OF HOURS: 60 **CREDITS: 03**

WEF: 2021-22 **COURSE CODE: HINT21A**

SYLLABUS:

I.गध्य संदेश:

1. संस्कृति औरसाहित्य का परस्पर संबंध
2. भारत एक है
3. एच.आई.वी. / एड्स

II. कथा लोक

1. ज़रिया
2. भूख हड़ताल
3. परमात्मा का कुत्ता

III.कार्यालयीन हिन्दी शब्दावली

(हिन्दी से अंग्रेजी में बदलना तथा अंग्रेजी से हिन्दी में बदलना)

IV. **व्याकरण:** संधि विच्छेद ,वाक्य प्रयोग

V.**पत्र लेखन:** आवेदन पत्र,पुस्तक विक्रेता के नाम पत्र

Recommended Books:

1. गध्य संदेश- Dr. V. L.Narasimham Siva Koti

2. कथा लोक- Dr. Ghana Shyam

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II SEMESTER Model Question Paper

Course Code: HINT21A **Max. Marks: 70M**

Time: 3 Hrs. **Pass Min. : 30M**

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SECTION-I

निम्नलिखित प्रश्नों का उत्तर लिखिए।

4×5=20

1. (a) भारत की मध्यकालीन संस्कृति कैसी रही है? L1

(अथवा)

(b) विविधता के भीतर भारत की एकता कैसे समायी हुई है? स्पष्ट कीजिए। L1

2. (c) एच.आई.वी./ एड्स के लक्षणों पर प्रकाश डालिए। L2

(अथवा)

(d) "अधेड आदमी" चरित्र चित्रण कीजिए। L2

3. (e) "ज़रिया" कहानी का उद्धेश्य क्या है? L2

(अथवा)

(f) "भूख हड़ताल" की विशेषताएँ क्या-क्या हैं? L2

4. (g) अनुवाद किसे कहते हैं ?L1

(अथवा)

(h) संधि किसे कहते हैं तथा उसके कितने प्रकार के हैं ?L1

SECTION-II

1×10=10

1. (a) एच.आई.वी./ एड्स के इतिहास पर प्रकाश डालिए।L2

(अथवा)

(b) 'भारत एक है' पाठ का सारांश लिखिए। L2

SECTION-III **1×10=10**

6. (a) "ज़रिया" कहानी का सारांश लिखिए। L2

(अथवा)

(b) "भूख हड़ताल" कहानी का सारांश लिखिए। L2

SECTION-IV

7.(a) **किन्हीं दस शब्दों को अंग्रेजी से हिंदी मेंअनुवाद कीजिए। L1**

10×1=10

1.Camp Office 2.Embassy 3.Muncipal Corporation 4.Governor 5.Applicant
6.Charge 7.Absence 8.Supervisor 9.Court 10. Building division 11.District board 12.Cash section 13. Branch office 14.Complaint office
15.Enquiry office

(अथवा)

(b) **किन्हीं दस शब्दों को हिंदी से अंग्रेजी में अनुवाद कीजिए।L1**

1.प्रशासनअधिकारी 2.विज्ञापन 3.लेखा परीक्षक 4.प्राचार्य 5.स्वीकार करना
6.अतिथि गृह 7.प्रयोगशाला 8.हृदय-रोग विभाग 9.जिला बोर्ड 10.कलक्टरी
11.सिविल न्यायालय 12.वन विभाग 13.प्रसारण केन्द्र 14.बजट अनुभाग
15.अस्पताल

8.(a) **किन्हीं पाँच शब्दों का संधि विच्छेद कीजिए।L3**

5×2=10

1.रामावतार 2.परमौषध 3.यद्यपि 4.गायक
5.उन्नति 6.प्रत्येक 7.यशोधरा 8.निराशा

(अथवा)

(b) **किन्हीं पाँच शब्दों को वाक्यों में प्रयोग कीजिए। L3**

1.विरासत 2.अज्ञानांधकार 3.इकट्ठा करना 4.बसर करना
5.दुर्भिक्ष 6.पथ प्रदर्शक 7.हवन 8.चिरस्थाई

SECTION-V

1×10=10

9. (a) अनुवादक की नौकरी के लिए प्रबन्धक के नाम पत्र लिखिए। L3

(अथवा)

(b) किसी पुस्तक विक्रेता के नाम पत्र लिखिए। L3

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PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE
VIJAYAWADA-10.
(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)

Title of the Course : Statistical Methods and Applications of Probability

Offered to: B.SC (AI &ML) **Course Code : STAT28**

Course Type: Core (Theory) **Year of Introduction: 2021-22**

Semester: II **Credits: 4**

Hours Taught: 60 periods **Max. Time:** 3 Hours

Course Objective: The purpose is to familiarize the students about the basic concepts required for artificial intelligence and Machine learning.

Course Outcomes: After successfully completing this course, the students will acquire**:**

CO1: know about correlation and regression techniques, the two very powerful tools in statistics,

CO2: study concept of coefficient of determination and inference on partial and multiple correlation and regression coefficients.

CO3: knowledge of important discrete distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper geometric and their interrelations if any,

CO4: knowledge of important continuous distributions such as Uniform, Normal, Exponential and Gamma and relations with some other distributions,

CO5: basic knowledge of complete enumeration and sample, sampling frame, sampling distribution, sampling and non-sampling errors, principal steps in sample surveys, limitations of sampling etc.,

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
22STAT28	**CO1**					**H**		
	CO2					**H**		
	CO3					**H**		
	CO4						**M**	
	CO5					**H**		

Unit I **12 L**
Correlation Analysis

Meaning Measures of Correlation- Scatter diagram, Karl Pearson's and Spearman's rank correlation. Calculation of the correlation coefficient for bi-variate frequency distribution Multiple and Partial correlation(3 variables only)

Unit II **12L**

Curve fitting and Regression Analysis:

Principle of least squares, fitting of straight line, second degree polynomial or parabola, power and exponential curves**. Regression:** Introduction, Linear Regression- Regression coefficients and its properties, Angle between two lines of regression. Standard error of estimate (residual variance), Explained and Unexplained variation, coefficient of determination. Multiple Linear Regression(3 variables only) and Logistic Regression.

Unit III Discrete Probability Distributions: **12L**

Uniform, Bernoulli, Binomial, Poisson, Geometric, Negative Binomial and Hyper-geometric distributions along with their characteristic properties, applications and limiting/approximation cases.

Unit IV **14L**

Continuous Probability distributions: Normal, Exponential, Uniform, Beta, Gamma, distributions along with their characteristic properties, applications and limiting/approximation cases.

Unit V **10L**

Basic concepts: population and sample, census and sample survey, sampling frame, sampling distribution, standard error, sampling design, sampling and non-sampling errors, sample surveys, principles of sample survey, principal steps in sample survey, limitations of sampling, Sample survey versus complete enumeration survey. Types of sampling - Simple random sampling, stratified sampling, systematic sampling, and cluster sampling (only concept)

Note: without proofs of named theorems and more importance to applications

Text Book(Unit I to IV): Fundamentals of Mathematical Statistics, 12th Edition, 10th September 2020, S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons, New Delhi.

Text Book(Unit V) : Fundamentals of Applied Statistics, 4th Edition, 1stJanuary 2014,(ISBN-10 : 8180547051)S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons, New Delhi.

Recommended References books:

1. Mathematical Statistics with Applications, 2009, K.M.Ramachandran and Chris P.Tsokos Academic Press(Elsevier), Haryana .
2. Probability and Statistics,Volume I, D.Biswas, New central book Agency (P) Ltd, New Delhi.
3. An outline of Statistical theory, Volume Two,3rd Edition,2010(with corrections) A.M.Goon,M.K. Gupta, B.Dasgupta ,The World Press Pvt.Ltd., Kolakota.
4. Sanjay Arora and BansiLal:. New Mathematical Statistics, SatyaPrakashan , New Delhi.

Websites of Interest: **http://onlinestatbook.com/rvls/index.html**

Co-Curricular Activities in the class:

1. Pictionary
2. Case Studies on topics in field of statistics
3. Snap test and Open Book test
4. Architectural – To be build the procedures
5. Extempore – Random concept to students
6. Interactive Sessions
7. Teaching through real world examples

Model Question Paper Structure for SEE

STAT28 **Max.: 70 Marks**

Min.: 28 Marks

Model Paper

Section – A **5 x 4M = 20M**

Answer the following

1. a) Define correlation coefficient and state its properties. (CO-1, L-2)

(OR)

b) Define multiple correlation and write its properties (CO-1, L-2)

2. a) Explain the principle of least squares method. (CO-2, L-2)

(OR)

b) Define Regression Analysis and state its properties. (CO-2, L-2)

3. a) Define Geometric distribution. State its properties. (CO-3, L-2)

(OR)

b) Define Poisson distribution, State its properties. (CO-3, L-2)

4 a) Explain the exponential distribution with their limitations. (CO-4, L-2)

(OR)

b) Define Normal distribution. State its properties. (CO-4, L-2)

5. a) Explain the advantages of stratified random sampling technique. (CO-5, L-2)

(OR)

b) Explain the limitations of sampling. (CO-5, L-2)

Section – B **5 x 10M = 50M**

Answer the following

6 a) Sales and advertisement expenditure of a commodity is given below. Obtain the correlation coefficient between them (CO-1, L-3)

Advertisement expenses(In thousands of Rupees)	39	65	62	90	82	75	25	98	36	78	54	48
Sales (In lakhs of Rupees)	47	53	58	84	65	68	60	89	51	84	66	55

(OR)

b) The following table gives number of blind people per one lakh population in different age groups. Find correlation coefficient between age and blindness. (CO-1, L-3)

Age in years	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Number of blind people (Per lakh)	55	67	100	111	150	200	300	500

7. a) Fit an exponential curve $y = ax^b$ to the following data : (CO-2 , L-3)

Year (x)	1901	1911	1921	1931	1941	1951	1961	1971
Production (y) (in tonnes)	3.9	5.3	7.3	9.6	12.9	17.1	23.2	30.5

(OR)

b) In a partially destroyed laboratory record of in analysis of correlation data the following results only are legible : variance of X = 9, the regression equations are $8X - 10Y + 66 = 0$ and $40X - 18Y - 214 = 0$. Find on the basis of above information (CO-2, L-3)

(i) The means of X and Y

(ii) Correlation coefficient between X and Y

(iii) Standard deviation of Y

8. a) A coffee connoisseur claims that he can distinguish between a cup of instant coffee and a cup of percolator coffee 75% of the time. It is agreed that his claim will be accepted if he correctly identifies at least 5 of the 6 cups. Find his chances of having the claim (i) accepted, (ii) rejected, when he does have the ability he claims. (CO-3, L-3)

(OR)

b) A manufacturer, who produces medicine bottle, finds that 0.1% of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer buys 100 boxes from the producer of bottles. Using Poisson distribution, find how many boxes will contain: (i) no defective, and (ii) at least two defective (CO-3, L-3)

9. a) If X is uniformly distributed with mean 1 and variance 4/3. (CO-4, L-3)
Find (i) $P(X<0)$, (ii) $P(-1 \leq X \leq 2)$

(OR)

b) The mean yield for one-acre plot is 662 kilos with standard deviation 32 kilos. Assuming normal distribution, how many one-acre plots in a batch of 1,000 plots would you expect to have yield (i) over 700 kilos, (ii) below 650 kilos, and (iii) what is the lowest yield of the best 100 plots? (CO-4, L-3)

10. a) Explain the principle steps in sample survey. (CO-5, L-2)

(OR)

b) Explain the principles of sampling. (CO-5, L-2)

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TELUGU	TELT21A	2020-'21	B.A., B.Com., B.B.A., B.B.A.-Ana, B.Com.-CA, B.C.A., & B.Sc.,

SEMESTER–II **Credits – 3**

TELUGU-II

ఆధునిక తెలుగు సాహిత్యం

యూనిట్ల సంఖ్య: 5

కోర్స్ అవుట్ కమ్స్:

ఈ కోర్సు విజయవంతంగా ముగించాక, విద్యార్థులు క్రింది అభ్యసన ఫలితాలను పొందగలరు.

1. ఆంగ్ల భాష ప్రభావం కారణంగా తెలుగులో వచ్చిన ఆధునిక సాహిత్యాన్ని, దాని విశిష్టతలను గుర్తిస్తారు.
2. సమకాలీన ఆధునిక సాహిత్య ప్రక్రియలైన "వచన కవిత్వం, కథ, నవల, నాటకం" విమర్శలపై అవగాహన పొందుతారు.
3. భావకవిత, అభ్యుదయ కవిత్వాల లక్ష్యాలను గూర్చిన జ్ఞానాన్ని పొందుతారు. ఇంకా అస్తిత్వవాదం, ఉద్యమాల పుట్టుకను, ఆవశ్యకతను గుర్తిస్తారు.
4. కథా సాహిత్యం ద్వారా సామాజిక చైతన్యాన్ని పొందుతారు. సిద్ధాంతాల ద్వారా కాకుండా, వాస్తవ పరిస్థితులను తెలుసుకోవడం ద్వారా సిద్ధాంతాన్ని సమీక్షించుకోగలరు.
5. ఆధునిక తెలుగు కల్పనా సాహిత్యం ద్వారా సామాజిక, సాంస్కృతిక, రాజకీయ చైతన్యాన్ని పొందుతారు.

లెర్నింగ్ ఆబ్జెక్టివ్స్:

1. ఆధునిక భాషా సాహిత్యము నందలి ప్రక్రియల పట్ల ప్రీతి, మమకారం, ఆసక్తి కల్గుతుంది.
2. ఆధునిక కవిత్వము పట్ల అవగాహన పద్ధతులు, ప్రసిద్ధులైన కవుల, రచయితల రచనా శైలి తెలుస్తాయి.
3. ఆధునిక సాహిత్య ప్రక్రియలైన కథ, నవల, నాటకం, విమర్శ మొదలగు సాహిత్య ప్రక్రియలలో రచనా మెలకువలు తెలుసుకోవటం జరుగుతుంది.
4. ఆధునిక సాహిత్యంలోని వివిధ కొత్త పదబంధాలు, శబ్ద ప్రయోగవైచిత్రి, భాషా పరిజ్ఞానాన్ని తెలుసుకుంటారు.
5. కాలానుగుణంగా సాహిత్యం తన స్వరూపాన్ని ఏవిధముగా మార్చుకుంటుందో విద్యార్థులు క్షుణ్ణంగా పరిశీలించే అవకాశం కల్గుతుంది.

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TELUGU-II

పాఠ్యప్రణాళిక

యూనిట్-I

1. ఆధునిక కవిత్వం - పరిచయం
2. కన్యక - గురజాడ వేంకట అప్పారావు
3. కొండవీడు - దువ్వూరి రామిరెడ్డి (కవి కోకిల గ్రంథావళి - ఖండ కావ్యాలు - నక్షత్రాల సంపుటి నుండి)
4. మాతృ సంగీతం - అనిసెట్టి సుబ్బారావు (అగ్ని వీణ కవితాసంపుటి నుండి)

యూనిట్-II

5. తెలుగు కథానిక - పరిచయం
6. భయం / కథ / - కాళీ పట్నం రామారావు
7. స్వేదం ఖరీదు ?/ కథ / - రెంటాల నాగేశ్వరరావు

యూనిట్-III

8. తెలుగు 'నవల' - పరిచయం
9. రథచక్రాలు / నవల / - మహీధర రామ్మోహనరావు (సంక్షిప్త ఇతివృత్తం మాత్రమే)
10. రథ చక్రాలు / సమీక్షా వ్యాసం / - డా. యల్లాప్రగడ మల్లికార్జునరావు

యూనిట్-IV

11. తెలుగు నాటకం - పరిచయం
12. యక్షగానము / నాటకము / నాటిక / - ఎం.వి.ఎస్. హరనాథరావు
13. అపురూప కళారూపల విధ్వంస దృశ్యం 'యక్షగానము'/ సమీక్షావ్యాసం - డా.కందిమళ్ళ సాంబశివరావు

యూనిట్-V

14. తెలుగు సాహిత్య విమర్శ - పరిచయం
15. విమర్శ - స్వరూప స్వభావాలు, ఉత్తమ విమర్శకుడు - లక్షణాలు.

ఆకార గ్రంథాలు / వ్యాసాలు:

1. ఆధునిక కవిత్వం - పరిచయం - ప్రొ.ఎస్వీ. సత్యనారాయణ
2. తెలుగు కథానిక - పరిచయం - ప్రొ. రాచపాళెం చంద్రశేఖర రెడ్డి
3. తెలుగు నవల - పరిచయం - వల్లంపాటి వెంకట సుబ్బయ్య
4. సాంఘిక నవల - కథన శిల్పం - ప్రొ. సి. మృణాళిని
5. తెలుగు నాటకం - పరిచయం - ప్రొ.ఎస్.గంగప్ప
6. తెలుగు సాహిత్య విమర్శ - పరిచయం - ప్రొ. జి.వి. సుబ్రహ్మణ్యం
7. నూరేళ్ల తెలుగు నాటక రంగం - ప్రొ. మొదలి నాగభూషణ శర్మ
8. నాటక శిల్పం - ప్రొ. మొదలి నాగభూషణ శర్మ

Contd...

TELUGU	TELT21A	2020-'21	B.A., B.Com., B.B.A., B.B.A.-Ana, B.Com.-CA, B.C.A., & B.Sc.,

ప్రశ్నపత్ర నిర్మాణ సూచిక: **TELUGU-II**

1. సంక్షిప్తరూప ప్రశ్నలు : 5 × 5 = 25మా

ప్రతి యూనిట్ నుండి తప్పనిసరిగా ఒక ప్రశ్న ఇచ్చి, మొత్తం మీద ఎనిమిది ప్రశ్నలు ఇవ్వాలి. అందులో ఐదింటికి సమాధానాలు వ్రాయమనాలి.

2. వ్యాసరూప ప్రశ్నలు : 5 × 10 = 50మా

ప్రతి యూనిట్ నుండి తప్పనిసరిగా ఒక ప్రశ్న ఇచ్చి, మొత్తం మీద ఎనిమిది ప్రశ్నలు ఇవ్వాలి. అందులో ఐదింటికి సమాధానాలు వ్రాయమనాలి.

మొత్తం = 75మా

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SEMESTER-END EXAMINATIONS, APRIL-2021

నమూనా ప్రశ్నపత్రం

Course Code: TEL T21A (Telugu-II) **Max. Marks: 75M**

Time: 3 Hrs. **Pass Min. : 30M**

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SECTION - A

I. క్రింది వానిలో ఐదింటికి సంగ్రహ రూప సమాధానాలు వ్రాయండి: 5 × 5 = 25మా

1. 'కొండవీడు' - శ్రీ దువ్వూరి.
2. తెలుగు కథానికను పరిచయం చేయండి.
3. 'కన్యక' ఖండికను వివరించండి.
4. తెలుగు నాటక సాహిత్యాన్ని తెల్పండి.
5. ఉత్తమ విమర్శకుని లక్షణాలు.
6. ఆధునిక కవిత్వం - పరిచయం.
7. కాళీ పట్నం రామారావు.
8. అనిసెట్టి సుబ్బారావు.

SECTION - B

II. క్రింది వానిలో ఐదింటికి వ్యాసరూప సమాధానాలు వ్రాయండి: 5 × 10 = 50మా

9. శ్రీ దువ్వూరి 'కొండవీడు' ఖండికలో ఇచ్చిన సందేశాన్ని తెల్పండి.
10. 'భయం' కథలోని రచయిత అభిప్రాయాన్ని వివరించండి.
11. 'రథ చక్రాలు' నవల్లోని ఇతివృత్తాన్ని విశ్లేషించండి.
12. యక్షగానాన్ని సమీక్షించండి.
13. విమర్శ స్వరూప స్వభావాల్ని వివరించండి.
14. ఆధునిక కవిత్వ ఆవిర్భావ వికాసాన్ని తెల్పండి.
15. తెలుగు సాహిత్య విమర్శను వివరింపుము.
16. సాహిత్య ప్రక్రియగా 'నవల' స్థానాన్ని విమర్శించండి.

** * *

P.B. SIDDHARTHA COLLEGE OF ARTS & SCIENCE
DEPARTMENT OF ENGLISH
Course Structure and Syllabi under CBCS

Sl No.	Semester	Course Code	Name Of The Subject	Teaching Hours	Credits
1	**III Semester**	**ENGT02**	**Business English-III**	4	3

P.B. SIDDHARTHA COLLEGE OF ARTS & SCIENCE
DEPARTMENT OF ENGLISH
BUSINESS ENGLISH-III

Max. Marks: 100
No. of Hours per Week: 4 **External: 75M**
No. of Credits: 3 **Internal: 25M**

OBJECTIVE: The main objective of this course is to facilitate the learners to acquire the linguistic competence essentially required in a variety of life situations and develop their intellectual, personal and professional abilities.

COURSE OUTCOMES:

At the end of the course, the learners will be able to:

CO 1. Write an inter-office memorandum, press release and fax for performing day-to-day professional tasks and relate the situations in which these forms of communication are generally used. **PO 2**

CO 2. Understand the role of meetings in business transactions and figure out how to call a meeting, how to conduct and participate in a meeting, how to record the minutes and if necessary, how to write a note of dissent. **PO3**

CO 3. Inscribe a job-application letter, prepare a striking resume and also chart how letters of appointment and resignation are written. **PO4**

CO 4. Prepare for a face-to-face job interview, carry out oneself when being interviewed and also quiz the candidates, if required. **PO7**

CO 5. Participate in group discussions as an instrument for training in spoken English and imbibe the skills required for an effective participation. **PO3**

CO-PO MATRIX- ENG T02							
CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1		M					
CO2						H	
CO3	H						
CO4							H
CO5	H						

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Course Code: ENG T02 **Max Marks: 75**
Title: Business English-III **Time: 3 hours**
SEMESTER III **No. of Credits: 3**

FOR BBA, BBA BA, B.COM AF, B.COM TPP, BPM, B.SC MSDS, CSCS

SYLLABUS

UNIT – I MEMORANDUM page-340-347

- Communication Core
- Function and Structure
- Types
- Press Release 10 hrs
- Other Short Messages
- Review Questions
- Exercises

UNIT – II NOTICES.AGENDA AND MINUTES page- 349-356

- Communication Core
- Notices
- Agenda
- Minutes 10 hrs
- Note of Dissent
- Review Questions
- Exercises

UNIT – III APPLICATION FOR JOBS page- 361-379

- Communication Core
- Importance and Function

- Drafting the Application
- Elements of Structure
- Preparing the Resume 10 hrs
- Helpful Hints
- Job Offer
- Resignation Letter
- Review Questions
- Exercises

UNIT – IV EMPLOYMENT INTERVIEW page-381-391

- Communication Core
- Types of Interview
- Preparing for the Interview
- Attending the Interview
- Interview Process
- Employers' Expectations
- Telephone Interview
- Negotiating a Job Offer 15 hrs
- Thank –You Letter
- Conducting an Interview
- Negative Aspects
- Sample Interviews for a Job
- Review Questions
- Exercises

UNIT – V GROUP DISCUSSION page-392 - 495

- Communication Core
- Definition
- Process
- Guidelines
- Helpful Expressions
- Group Discussion and Campus Interview
- Evaluation 10 hrs
- Evaluation Sheet
- Review Questions
- Exercises
- Abbreviations and Numerals
- Communication Core
- Abbreviations
- Numerals

Business Correspondence and Report Writing
R. C. Sharma and Krishna Mohan, Fifth Edition, Tata McGraw-Hill Publishing Company, Chennai, 2016

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SEMESTER-III (2021-22)

COURSE CODE: ENG T02 **Max. Marks: 100**
No. of Hours per Week: 4 **External: 75M**
Title: BUSINESS ENGLISH-III **Internal Marks: 25M**

QUESTION PAPER PATTERN

SECTION A

I. 8 short questions would be given of which the candidate has to attempt 6. Each question carries 5 marks. (From Review Questions) **6X5=30 marks**

SECTION B

II. 5 essay questions would be given of which the candidate has to attempt 3. Each question carries 10 marks. (From Exercises) **3X10=30marks**

SECTION C

III. Expansion of abbreviations. (Pgs 493,494 and 495) **5X1= 5marks**
IV. Fill in the blanks (from the 5 prescribed Units) **5X1=5marks**
V. Rewrite the following as instructed (from Numerals Pgs 495, 496 and 497) **5X1=5marks**

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SEMESTER-III

COURSE CODE: ENG T02 **Max. Marks: 100**
No. of Hours per Week: 4 **External: 75M**
Title: Business English-III **Internal Marks: 25M**

SECTION A

I. Answer any SIX of the following questions. **6X5=30 marks.**

1. Distinguish clearly between a press release and a memo. (**L2) CO1**
2. What precautions should be taken while taking notes for writing the minutes of a meeting? (**L4) CO1**
3. What is a resume? What is its main function? (**L1) CO3**
4. What points would you bear in mind while writing the covering letter? (**L3) CO3**
5. What traits/ qualities does an employer look for in a candidate while interviewing him? **(L4) CO4**
6. What are the various purposes for which group discussion is held? (**L4) CO5**
7. Why is it necessary to circulate the agenda well in time to all those who have a right to attend a meeting? (**L2) CO1**
8. What is the difference between the tone and style of a letter and a memo? (**L2) CO1**

SECTION B

II. Answer any THREE of the following questions. **3X10=30 marks.**

1. As the Managing Director of a company, write a memo to the Sectional Heads, announcing the appointment of a person from outside to the post of Personnel Manager. Bear in mind the fact that some of the sectional heads having long experience in your company were aspirants for this post. (**L4) CO1**
2. At a meeting of the Staff Council of Acharaya Polytechnic, Bhopal, the following business was transacted: minutes of the last meeting, introduction of the tutorial system, special classes for weak students, better facilities for sports, organization of community lunch and

entertainment, any other matter. Assuming that you are the Secretary of the Council, write the minutes of the meeting. Invent the necessary details. (**L3)**

3. Write an application in response to the following advertisement:

A large company having foreign collaboration requires salesmen. Candidates should be graduates with about two years selling experience. Age should not exceed 28 years. Attractive salary commensurate with ability offered. Other benefits include provident fund, gratuity, bonus and allowances. Bright prospects of promotion for the right men. Apply within two weeks to P.O. Box No. 3214, New Delhi-110001. (**L3) CO3**

4. Assume that you are going to conduct a campus interview at a reputed management institute for recruiting MBA Final Year student as management trainees in your company. Prepare a list of questions that you would ask them to assess their communication skills and to ascertain their personality traits. (**L4) CO4**

5. Internet is more of a bane than a boon – discuss. (**L2) CO5**

SECTION – C

III. Expand the following abbreviations **5X1=5 marks**

(L2)

1. Messrs
2. oz.
3. ad.
4. Vol(s).
5. Ft.

IV. Fill in the blanks. **5X1=5 marks**

(L3)

1. A ---------- is a short piece of writing generally used by the officers of an organization for communicating among themselves.
2. A ---------- is written to make noteworthy information available to the public.
3. The practice of interviewing the employees before taking a final decision is called as a ---------- interview.
4. Unlike a meeting, the ---------- is not structured.
5. The purpose of ---------- is to elicit the views of all participants and through intense interaction evolve a consensus.

V. Rewrite the following as instructed **5X1=5 marks.**

(L4)

1. Write the Roman numerals for 40, 59, 90,200 and 900.
2. Include decimal points in a no integer figure 00257, 00003, and 00047.
3. Express fractions in words for the following 1/3, 2/3,1/1000.
4. Use commas to offset units 3312, 6700, 6932406, 47432311
5. Write any two compound numerals.

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Statistical Data Analysis using SPSS-II

Offered to: B.SC (AI&ML)/ STAP37

Course Type: Core (Practical)

Year of Introduction: 2022 **Percentage of Revision: Nil**

Semester: III **Paper No. III** **Credits: 1**

Hours Taught: 30 periods. per Semester **Max.Time: 2** Hours

Course Prerequisites (if any): Student required basic knowledge in computers

Course Description:

This course gives a working knowledge of SPSS software to students with the aim of getting to use data analysis. Students will be able to apply appropriate statistical tool for given data set using SPSS Software and get the output and report the finding.

Course Objectives

1) To train students in SPSS Software
2) To expose the students to the analysis of statistical data.

Learning Outcomes: At the end of the course, the student will

1) able to do data analysis using SPSS
2) known to choose the data to test various types.

S. No	Programme Outcomes
PO1.	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO2.	**Effective Citizenship**: Demonstrate empathetic social concern and equity centred national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO3.	**Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO4.	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development
PO5.	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO6:	**Specialized Skills / Transferable Skills:** Acquisition of communication and soft, analytical and technological skills that aid in enhancing
PO7.	**Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

Course Outcomes:		
Course Outcome	Upon successful completion of this course, students should have the knowledge and skills to:	**Programme Outcomes Mapping**
CO 1	To Apply statistical analysis that can test hypotheses under parametric approaches.	PO –6
CO 2	To Apply statistical analysis that can test hypotheses under non-parametric approaches.	PO –6

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
22STAL37	**CO1**					**H**		
	CO2					**H**		
	CO3					**H**		
	CO4					**H**		
	CO5					**H**		

List of practical's

1. Small sample test (t-test): One Sample, Independent Sample and Paired Sample.
2. Large sample tests: One Sample, Independent Sample, Paired Sample (Using SPSS)
3. Analysis of variance: One-way and Two- way classification (Using SPSS)
4. Chi square Test: Test for Independence of Attributes
5. Chi square Test: Goodness of fit
6. Chi square Test: Test of Independence, 2X2, 3X3,…, mXn Cross tabulation (Using SPSS)
7. Non Parametric Tests: Mann Whitney U test and Wilcoxon Signed ranks test
8. Non Parametric Tests: Kruskal Wallis Test and Friedman test (Using SPSS)

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Inferential Statistics

Offered to: B.SC (AI&ML)/ STAT37

Course Type: Core (Theory)

Year of Introduction: 2022 **Percentage of Revision: Nil**

Semester: III **Paper No. : III** **Credits: 4**

Hours Taught: 60 periods. per Semester **Max. Time: 3** Hours

Course Prerequisites (if any): Student required basic knowledge in Probability and Distribution Theory

Course Description:

This course helps the students to familiarize with the ways in which we talk about uncertainty and estimate their situations in which probability arises. Also this course aims at providing basic knowledge about theoretical and application to test according to situations.

Course Objectives:

1) To understand the problem of statistical inference with specific reference to point estimation and interval estimation.
2) To differentiate between large and small samples and apply apt testing procedures.

Learning Outcomes: At the end of the course, the student will

1) Students will understood the distinguish between the parametric and Non Parametric situations.
2) The parameters describe an underlying physical setting in such a way that their value affects the distribution of the measured data..

S. No	Program Outcomes
PO1.	**Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology
PO2.	**Effective Citizenship**: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.
PO3.	**Ethics:** Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.
PO4.	**Environment and Sustainability**: Understand the issues of environmental contexts and sustainable development
PO5.	**Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.
PO6:	**Specialized Skills / Transferable Skills:** Acquisition of communication and soft, analytical and technological skills that aid in enhancing
PO7.	**Self-directed and Life-long Learning:** Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes

Course Outcomes:		
Course Outcome	Upon successful completion of this course, students should have the knowledge and skills to:	**Program Outcomes Mapping**
CO 1	knowledge of point and interval estimation procedures and different methods of point estimation	PO - 5
CO 2	various basic concepts on sampling distributions and large sample tests based on normal distribution	PO - 6
CO3	Obtain the knowledge on various testing hypothetical statements and finding Uniformly Most Powerful Test	PO - 6
CO 4	a fundamental understanding of Parametric models for developing relevant inferences on associated parameters large and small samples.	PO - 6
CO 5	To obtain the knowledge and to know the applications of various Non-Randomized tests	PO - 6

CO-PO MATRIX								
COURSE CODE	**CO-PO**	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**
22STAT37	**CO1**					**M**		
	CO2						**H**	
	CO3						**H**	
	CO4						**H**	
	CO5						**M**	

Syllabus

Course Details

Unit	**Learning Units**	**Lecture Hours**
I	**Theory of Estimation:** Parameter, Statistic, Standard Error of the statistic, concept of bias and mean square error of an estimate, Criteria of good estimator - unbiasedness, consistency, efficiency, and sufficiency. Maximum Likelihood estimator (MLE) . ML estimates of μ & σ^2. Concepts of confidence interval	**12**

II	**Testing of Hypothesis** Statistical hypotheses, critical region, level of significance and power of a test, types of errors. Neyman Pearson lemma (Statement only) and its applications.	**12**
III	**Exact Sampling distributions** Student's t-distribution, Chi-square distribution, Snedecor's F-distribution – definitions, properties and applications. **Small Sample tests - I** Chi-square test for goodness of fit and independence of attributes. t-test for single mean, difference of means and paired t-test.	**12**
IV	**Large sample Tests** Procedure for testing of hypothesis - Test for single mean and difference of two means, test for single proportion and difference of proportions. **Small Sample tests - II** F-test for equality of two population variances, ANOVA I- way and II-way classifications	**12**
V	**Non - Parametric methods** Definition, advantages and disadvantages. Advantages and Disadvantages, Measurement scales - Nominal, Ordinal, Interval and Ratio. One sample test- Sign test, Run test Two independent sample tests: Median test, Wilcoxon- Mann Whitney U - test, Kruskal Wallis test - Simple Problems	**12**

Text Book:

Fundamentals of Mathematical Statistics, 11th Edition, 2010, S. C. Gupta and V. K. Kapoor, Sultan Chand & Sons, New Delhi

Reference Books:

1. B.A/B.Sc. Second Year Statistics(2010) , Telugu Akademi, Hyderabad.
2. Mathematical Statistics with Applications, 2009, K.M.Ramachandran and Chris P.Tsokos Academic Press(Elsevier), Haryana .
3. Probability and Statistics, Volume I & II, D. Biswas, New central book Agency (P) Ltd, NewDelhi.
4. An outline of Statistical theory, Volume II,3rd Edition,2010(with corrections) A.M.Goon,M.K. Gupta, B.Dasgupta ,The World Press Pvt.Ltd., Kolakota.

Sanjay Arora and Bansi Lal:. New Mathematical Statistics, Satya Prakashan , New Delhi.

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Model Question Paper Structure for SEE

Max.: 75 Marks **Min.Pass : 30 Marks**

Statistical Inference

Answer ALL the following questions **5 X 15M = 75Marks**

1. a. Explain the criteria of good estimator. (10M) (Co-1, L-2)
   b. Define the terms population and parameter with examples. (5M) (Co-1, L- 1)

   (OR)

   c. Derive the MLE of the parameter λ in Poisson distribution. (10M) (Co-1, L-2)
   d. Define the terms sample and statistics with examples. (5M) (Co-1, L-1)

2. a. Define Chi-square distribution and write its applications. (5M) (Co-2, L-1)
   b. Out of 8,000 graduates in a town 800 are females, out of 1,600 graduate employees 120 are females. Use χ^2 to determine if any distinction is made in appointment the basis of sex. (10M) (Co-2, L-3)

   (OR)

   c. Define F-distribution and write its applications. (5M) (Co-2, L-1)
   d. In one sample of 8 observations the sum of squares of deviations of the sample values from the sample mean was 84.4 and in the other sample of 10 observations it was 102.6. Test whether this difference is significant at 1% level. (10M) (Co-2, L-3)

3. a. In order to test a coin is perfect or unbiased it is tossed 5 times the null hypothesis of

perfectness is rejected if and only if more than 4 heads are obtained then calculate (i) Critical region (ii) Probability of Type I error (iii) Probability Type II error (when the corresponding probability of getting head is 0.2) (15M) (Co-3, L-4)

(OR)

b. Explain Critical region, Types of errors. (5M) (Co-3, L-2)

c. Let p be the probability that a coin will follow head in a single toss. In order to test $H_0 : p = \frac{1}{2}$ *against* $H_1 : p = \frac{3}{4}$, the coin is tossed five times. H_0 is rejected if more than three heads appeared. Find the probability of Type I error and Type II error. (10M) (Co-3, L-4)

4. a. The marketing manager of a consumer product company wanted to know whether it is worth investing money and efforts in designing different sizes of package design with different color. He was wondering if the factors color and size of package could enhance the sale significantly. He performed the following experiment. The data matrix containing the response variable in 1000 is given below.

	Size of Package		
Color	Large	Medium	Small
Blue	90	96	116
Red	90	110	126
Pink	98	125	149

Perform the two-way ANOVA and test whether the mean sales are influenced by package size and color. What are your findings? (15M) (Co-4, L-4)

(OR)

b. A sales manager of a large company conducted a sample survey in states A and B taking 400 and 500 samples respectively. The results were

	State A	State B
Average Sales	Rs. 2500	Rs. 2200
Standard Deviation	Rs. 400	Rs. 550

Test Whether the average sales is the same in the 2 states at 1% level.(8M) (Co-4, L-4)

c. A filling machine is expected to fill 5kg of powder into bags. A sample of 10 bags gave the weights 4.7, 4.9, 5.0, 5.1, 5.4, 5.2, 4.6, 5.1, 4.6 and 4.7. test whether the machine is working properly. (7M) (Co-4, L-4)

5. a. Explain the Non-Parametric methods also write its merits and demerits.(7M) (Co-5, L-4)

b. The number of defective items produced from two machines are observed as follows.

Machine 1	26, 27, 31, 26, 19, 21, 20, 25, 30
Machine 2	23, 28, 26, 24, 22, 19

Test whether these two samples are drawn from the same population by using median test. (8M) (Co-5, L-4)

(OR)

c. Define nominal, ordinal, interval and ratio data. (5M) (Co-5, L-1)

d. From a company trainers are selected randomly and divided into 3 groups and each group containing 10 members and there are given a course in the management skills by three

different methods. At the end of the training period scores are as follows.

Method A	99	64	101	85	79	88	97	95	90	100
Method B	83	102	125	61	91	96	94	89	93	75
Method C	89	98	56	105	87	90	87	101	76	89

By using Kruskalwallis test to determine if the three methods are equally effective (or) not at 5% level. (10M) (Co-5, L-4)

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Computer Science	**CourseCode: AIMLP41**	**Introduced from : 2022 - 2023 A. Y**	**Programme: B.Sc., (AI & ML)**
SEMESTER – IV	**CREDITS: 1**	**Machine Learning LAB**	**Total: 30 Periods**

Course objectives:

This course will enable students to make use of Data sets in implementing the machine learning algorithms, Implement the machine learning concepts and algorithms in any suitable language of choice.

Course outcomes:

COURSE OUTCOME NO	**Upon successful completion of this course, students should have the knowledge and skills to:**	**PROGRAM OUTCOME NO**
CO_1	Understand the implementation procedures for the machine learning algorithms.	PO2,PO6
CO_2	Design Python programs for various Learning algorithms.	PO3, PO5
CO_3	Apply appropriate data sets to the Machine Learning algorithms.	PO4, PSO7
CO_4	Identify and apply Machine Learning algorithms to solve real world problems.	PO5, PO7

Lab Experiments:

Lab Experiments:

1. Write a python program to import and export the data using pandas library.
2. Create random data for Student and Employees and save the file as .csvUsing the student and Employees data set calculate the Descriptive Statistics methods.
3. Data pre-processing - Handling missing values isnull() notnull() dropna() fillna() replace() interpolate()
4. Dimensionality Reduction . Implementing PCA
5. Write a python program to demonstrate various data visualisation
6. Supervised Learning - Implementation of Linear Regression (Salary Dataset)
7. Implementation of Logistic regression
8. Implementation of Decision tree classification
9. Implementation of K-nearest Neighbour (Iris_data)
10. Implementation of Naïve Bayes classifier algorithm
11. Implementing Random Forest
12. Unsupervised Learning Implementing K-means Clustering
13. Build Artificial Neural Network model with back propagation

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COMPUTER SCIENCE	**Course Code: AIMLP42**	**2022 - 2023**	**B.Sc. (AI &ML)**
SEMESTER – IV	**Credits – 1**	**Data Mining Lab**	**Total: 30 Periods.**

Course Objective:

The objective of this course is to impart knowledge on implementing various data mining models and algorithms and to characterize patterns obtained by association , classification and cluster rule process.

Course Outcomes:

COURSE OUTCOME NO	Upon successful completion of this course, students should have the knowledge and skills to:	**PROGRAM OUTCOME NO**
CO1	Apply logical skills to analyze a given problem	PO1,PO7
CO_2	Data Collection and Preprocessing techniques	PO3,PO4
CO_3	Analyse the datasets by applying different algorithms	PO2,PO6
CO_4	Compare the results of different data on different techniques	PO4,PO7
CO_5	Interpret the Accurate results on the datasets	PO5,PO7

Experiments List

Week 1.Demonstration of pre-processing on dataset student.arff

Week 2. Demonstration of pre-processing on dataset labor.arff

Week 3. Demonstration of Association rule process on dataset contactlenses.arff using apriori algorithm

Week 4. Demonstration of Association rule process on dataset test.arff using apriori algorithm

Week 5. Demonstration of classification rule process on dataset student.arff using j48 algorithm

Week 6. Demonstration of classification rule process on dataset employee.arff using j48 algorithm

Week 7. Demonstration of classification rule process on dataset employee.arff using id3 algorithm

Week 8. Demonstration of classification rule process on dataset employee.arff using naïve bayes algorithm

Week 9. Demonstration of clustering rule process on dataset iris.arff using simple k-means

Week 10. Demonstration of clustering rule process on dataset student.arff using simple k-means.

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Computer Science	**AIMLP43**	**2021 - 2022**	**BSc (AI & ML)**
SEMESTER – IV	**CREDITS: 1**	**OPERATING SYSTEMS LAB**	**Total: 30 Periods**

Course Objectives:

1. Learn different types of CPU scheduling algorithms.
2. Demonstrate the usage of semaphores for solving synchronization problems.
3. Understand Banker's algorithm used for deadlock avoidance.
4. Understand memory management techniques and various page replacement policies.
5. Learn various disk scheduling algorithms and different file allocation methods.

Course outcomes:

COURSE OUTCOME NO	**Upon successful completion of this course, students should have the knowledge and skills to:**	**PROGRAM OUTCOME NO**
CO_1	**Evaluate the performance of different types of CPU scheduling algorithms**	PO5, PO7
CO_2	**Implement producer-consumer problem, reader-writers problem, and Dining philosophers' problem using semaphores.**	PO5, PO7
CO_3	**Simulate Banker's algorithm for deadlock avoidance**	PO5, PO7
CO_4	**Implement paging techniques and page replacement policies, memory allocation techniques in memory management. .**	PO5, PO7
CO5	**Implement disk scheduling techniques and file allocation strategies**	PO5, PO7

Lab Experiments:

TASK 1

Practice the following commands in UNIX environment a) cp b) rm c) mv d) chmod e) ps f) kill

TASK 2

Write a program that makes a copy of a file using standard I/O and system calls.

TASK 3

Simulate the following Scheduling algorithms. a) FCFS b)SJF c)Round Robin

TASK 4

Simulate the Producer Consumer problem using semaphores.

TASK 5

Simulate the Dining Philosophers problem using semaphores

TASK 6

Simulate Bankers Algorithm for Deadlock Avoidance.

TASK 7

Simulate First Fit and Best Fit algorithms for Memory Management

TASK 8

Simulate page replacement Algorithms. a)FIFO b)LRU

TASK 9

Develop a Mobile Application for basic working

TASK 10

Develop a mobile application using Android.

Text Books/ References:

1. Operating System Concepts- Abraham Silberchatz , Peter B. Galvin, Greg Gagne 7th Edition, JohnWiley.

2. Operating Systems– Internal and Design Principles Stallings, Fifth Edition–2005, Pearson education/PHI.

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Computer Science	**Course Code: AIMLT41**	**Introduced from : 2022 - 2023 A. Y**	**Programme: B.Sc., (AI & ML)**
Semester-IV	**Credits:4**	**Introduction to Machine Learning**	**Total: 60Hrs**

Course Objective:

The objective of the course provides the basic concepts and techniques of Machine Learning and helps to use recent machine learning software for solving practical problems. It enables students to gain experience by doing independent study and research.

Course Outcomes:

COURSE OUTCOME NO	**Upon successful completion of this course, students should have the knowledge and skills to:**	**PROGRAM OUTCOME NO**
CO_1	Identify the characteristics of machine learning	PO2,PO7
CO_2	Summarize the Model building and evaluation approaches	PO3, PO6
CO_3	Apply Bayesian learningand regression algorithms for real-world Problems	PO4, PSO2
CO_4	Apply supervised learning algorithms to solve the real-world Problems	PO1, PO5
CO5	Apply unsupervised learning algorithms for the real world data	PO5, PO7

UNIT-I: Introduction to Machine Learning and Preparing to Model 13 Periods

Introduction to Machine Learning- Introduction, What is Human Learning?Types of Human Learning, What is Machine Learning?Types of Machine Learning, Reinforcement Learning, Problems Not To Be Solved Using Machine Learning, Applications of Machine Learning.

Preparing to Model- Introduction, Machine Learning Activities, Basic Types of Data in Machine Learning, Exploring Structure of Data, Data Quality and Remediation, Data Pre-Processing

UNIT-2: Modelling & Evaluation, Basics of Feature Engineering 10 Periods

Modelling & Evaluation- Introduction, Selecting a Model, Training a Model (for Supervised Learning), Model Representation and Interpretability, Evaluating Performance of a Model.

Basics of Feature Engineering- Introduction, Feature Transformation,PCA.

UNIT-3: Bayesian Concept Learning and Regression 12 Periods

Bayesian Concept Learning - Introduction, Why Bayesian Methods are Important?, Bayes' Theorem, Bayes' Theorem and Concept Learning, Bayesian Belief Network.

Regression: Introduction, Regression Algorithms - Simple linear regression, Logistic Regression, Maximum Likelihood Estimation.

UNIT-4: Supervised Learning: Classification, Ensemble Learning 10 Periods

Classification-Introduction, Example of Supervised Learning, Classification Model, Classification Learning Steps, Common Classification Algorithms - k-Nearest Neighbour (kNN), Decision tree, Random forest model, Support vector machines.

Ensemble Learning- Boosting, Bagging, Semi-supervised Learning.

UNIT-5: Unsupervised learning 15 Periods

Unsupervised Learning- Introduction, Unsupervised vs Supervised Learning, Application of Unsupervised Learning, Clustering –Clustering as a Machine Learning task, Different types of clustering techniques, Partitioning methods, Hierarchical clustering.

Text Books:

1. Subramanian Chandramouli, Saikat Dutt, Amit Kumar Das, "Machine Learning", Pearson Education India ,1st edition.
2. Tom M. Mitchell, "Machine Learning', MGH, 1997.

Reference Books:

1. The Hundred-Page Machine Learning Book by Andriy Burkov
2. Machine Learning For Absolute Beginners by Oliver Theobald
3. Machine Learning for Hackers by Drew Conway and John Myles White
4. An Introduction to Statistical Learning by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani
5. [Ben_Stephenson]_The_Python_Workbook__A_Brief_Intr(z-lib.org)
6. Peter Harington, "Machine Learning in Action" , Cengage, 1st edition, 2012.
7. Peter Flach, "Machine Learning: The art and science of algorithms that make sense of data", Cambridge university press,2012.
8. Foundations of Machine Learning by Mehryar Mohri Afshin Rostamizadeh Ameet Talwalkar.

Student Activity:

1. Load any new operating system into your computer.
2. Partition the memory in your system
3. Create a semaphore for process synchronization.

Recommended Co – Curricular Activities:

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

B. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

1. Programming exercises,
2. Practical assignments and laboratory reports,
3. Observation of practical skills,
4. Individual and group project reports.
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work.

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MODEL PAPER

TITLE: Introduction to Machine Learning

COURSE CODE: AIMLT41

CLASS: B.Sc. (AI & ML) **Semester IV**

Max. Marks: 75 **Time: 3 Hrs.**

SECTION - A

Answer any *five* of the following: **5 X 5= 25 MARKS**

1. Discuss various types of human learning. (CO1, L2)
2. Write about applications of machine learning. (CO1, L3)
3. Write about the role of modelling in machine learning. (CO2, L3)
4. Describe model training. (CO2, L1)
5. Write a short note on maximum likelihood estimation. (CO3, L4)
6. Describe the need of Bayesian models. (CO3, L1)
7. Briefly write about boosting. (CO4, L4)
8. Discuss about unsupervised and supervised learning.(CO5, L2)

SECTION – B

Answer *all* the following questions **5 X 10 = 50 MARKS**

9. (a) Explain about types of machine learning.(CO1, L1)

OR

(b) Explain about data pre-processing. (CO1, L1)

10. (a) Summarize performance evaluation of a model. (CO2, L2)

OR

(b) Briefly feature transformation. (CO2, L2)

11. (a) Explain about polynomial regression model. (CO3, L1)

OR

(b) Describe about Bayes theorem. (CO3, L1)

12. (a) Explain about random forest model with example. (CO4, L1)

OR

(b) Implement the k – nearest neighbour for given data. (CO4, L1)

13. (a) What are the applications of unsupervised learning. (CO5, L2)

OR

(b) Summarize various clustering techniques? (CO5, L2)

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COMPUTER SCIENCE	**Course Code: AIMLT42**	**Introduced from : 2022 - 2023 A. Y**	**B.Sc. (AI &ML)**
SEMESTER – IV	**Credits – 4**	**Data Mining**	**Total: 60Prds.**

Course Objective:

To understand data mining principles and techniques: Introduce DM and acquaint the students with the DM techniques for building competitive advantage through proactive analysis, predictive modeling. Develop and apply critical thinking, problem-solving, and decision-making skills.

Course Outcomes:

COURSE OUTCOME NO	Upon successful completion of this course, students should have the knowledge and skills to:	**PROGRAM OUTCOME NO**
CO1	Understand the knowledge discovery in databases	PO2,PO4
CO_2	Understands OLAP operations and types of OLAP	PO5,PO7
CO_3	Apply Apriori and FP-Growth algorithms to generate frequent item sets in a dataset.	PO3,PO4
CO_4	Apply Decision tree induction and Bayesian algorithm to classify the unknown sample.	PO1,PO7
CO_5	Preparing data for clustering, clustering methods.	PO5,PO7

UNIT –I: Data Mining Systems and Knowledge Discovery Process: 12 Periods

Data Warehouse and OLAP Technology: An Overview- What Is a Data Warehouse. A Multidimensional Data Model - Need for Online Analytical Processing - OLTP V/s OLAP -OLAP Operations in Multidimensional Data Model. Data Warehouse Architecture, From Data Warehousing to Data Mining.

Need and Usage of Data Mining Technologies - Overview of Knowledge Discovery Process from Databases–What Motivated Data Mining - Why Is It Important - Data Mining Functionalities—What Kinds of Patterns Can Be Mined? Are All of the Patterns Interesting Classification of Data Mining Systems, Data Mining Task Primitives, Major Issues in Data Mining.

UNIT–II: Data Preprocessing: 12 Periods

Data Exploration: Data Objects and attribute types -Statistical description of data- Descriptive Data Summarization-Data Visualization - Data similarity and dissimilarity measures.
Data Pre-processing: Why Pre-process the Data -Data Cleaning-Data Integration-Data Reduction-Data Transformation and Data Discretization.

UNIT–III: Classification: **12 Periods**

Basic issues regarding classification and predication - General Approach to solving a classification problem- Decision Tree Classification, Attribute Selection Measures, Tree Pruning.
Classification Model Evaluation and Selection - Accuracy and Error measures, Cross Validation, Comparing Classifier performance using ROC Curves.

UNIT–IV: Mining Frequent Patterns and Association Rules: **12 Periods**

Basic Concepts-Problem Definition- Market Basket Analysis- Frequent Itemsets- Closed Itemsets and Association Rules - Frequent Pattern Mining - Efficient and Scalable Frequent Itemset Mining Methods- the Apriori Algorithm for finding Frequent Itemsets Using Candidate Generation - Generating Association Rules from Frequent Itemsets - A pattern growth approach for mining Frequent Itemsets- FP-Growth Algorithm

UNIT V: Cluster Analysis: **12 Periods**

Basics and Importance of Cluster Analysis-Strengths and Weaknesses. Hierarchical Methods (Agglomerative, Divisive) - Density-Based Methods (DBSCAN, OPTICS), Text Mining, Sentiment Analysis.

Text Books:

i. Introduction to Data Mining: Pang-Ning Tan & Michael Steinbach, Vipin Kumar, Pearson.
ii. Data Mining concepts and Techniques, 3/e, Jiawei Han, Michel Kamber, Elsevier.

References:

i Data Mining Techniques and Applications: An Introduction, Hongbo Du, Cengage Learning.
ii Data Mining :VikramPudi and P. Radha Krishna, Oxford.
iii Data Mining and Analysis - Fundamental Concepts and Algorithms; Mohammed J. Zaki, Wagner Meira, Jr, Oxford
iv Data Warehousing Data Mining & OLAP, Alex Berson, Stephen Smith, TMH.

E-resources:

i. http://onlinecourses.nptel.ac.in/noc18_cs14/preview (NPTEL course by Prof.Pabitra Mitra)
ii. http://onlinecourses.nptel.ac.in/noc17_mg24/preview
(NPTEL course by Dr. Nandan Sudarshanam & Dr. Balaraman Ravindran)
i iii. http://www.saedsayad.com/data_mining_map.htm
1. https://doc.lagout.org/Others/Data%20Mining/Data%20Mining_%20The%20Textbook%20%5BAggarwal%202015-04-14%5D.pdf
2. https://textbooks.elsevier.com/manualsprotectedtextbooks/9780123814791/Instructor's_manual.pdf

Recommended Co – Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

a. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual andchallenging)
2. Student seminars (on topics of the syllabus and related aspects (individualactivity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

b. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted;

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peers and self-assessment, outputs form individual and collaborative work.

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MODEL PAPER

TITLE: Data Mining

COURSE CODE: AIMLT42 **Max.Marks:75M**

CLASS: B.Sc. (AI & ML) **Semester IV**

SECTION - A

Answer any *five* of the following: **5 X 5= 25 MARKS**

1 How to classify data mining systems? Discuss. (CO1, L2)

2. Compare OLTP and OLAP. (CO1, L6)

3. Write the Aprori Algorithm. (CO2, L6)

4. Write a note attribute selection measures? (CO2, L1)

5. Classify various Clustering methods. (CO3, L6)

6. What is Bayes theorem? Explain (CO3, L1)

7.. Write the FP Growth Algorithm. (CO4, L6)

8.. Roll up operation (CO5, L2)

SECTION – B

Answer *all* the following questions **5 X 10 = 50 MARKS**

9. (a) Explain about the Three-tier data warehouse architecture with a neat diagram. (CO1, L1)

OR

(b). Evaluate the Major issues in Data mining? (CO1, L1)

10. (a) Describe in brief about Data warehouse implementation (CO2, L2)

OR

(b). Write a brief note on Data warehouse implementation (CO2, L2)

11. (a). Describe the data classification process with a neat diagram. How does the Naive Bayesian classification works? Explain. (CO3, L1)

OR

(b). How does the Naïve Bayesian classification works? Explain in detail. (CO3, L1)

12. (a). Explain about the Apriori algorithm for finding frequent item sets Consider the following dataset and we will find frequent itemsets and generate association rules for them.

TID	items
T1	I1, I2 , I5
T2	I2,I4
T3	I2,I3
T4	I1,I2,I4
T5	I1,I3
T6	I2,I3
T7	I1,I3
T8	I1,I2,I3,I5
T9	I1,I2,I3

minimum support count is 2, minimum confidence is 60% (CO4, L1)

OR

(b. What are the various Constraints in Constraint based Association rule mining? Explain. (CO4, L1)

13. (a)?. Define Clustering? Explain about Types of Data in Cluster Analysis? (CO5, L2)

OR

(b)? What are outliers? Discuss the methods adopted for outlier detection (CO5, L2)

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Computer Science	**AIMLT43**	**2022 - 2023**	**BSc(AI & ML)**
SEMESTER – IV	**CREDITS: 4**	**Operating Systems**	**Total : 60 Periods**

Course Objective:

The main objective of this course is to understand main concepts of OS and to analyze the different CPU scheduling policies, process synchronization and deadlock management, memory management and virtual memory techniques , Appreciate the concepts of storage and file management, Study OS protection and security concepts.

Course Outcomes:

COURSE OUTCOME NO	**Upon successful completion of this course, students should have the knowledge and skills to:**	**PROGRAM OUTCOME NO**
CO_1	Know basic components of an operating system.	PO2, PO7
CO_2	Will be able to control access to a computer and the files that may be shared	PO1, PO4
CO_3	Demonstrate the knowledge of the components of computers and their respective roles in computing	PO3, PO6
CO_4	Ability to recognize and resolve user problems with standard operating environments.	PO1, PO4
CO5	Gain practical knowledge of how programming languages, operating systems, and architectures interact and how to use each effectively.	PO2, PO5

UNIT I 10 Prds

Operating System Overview: Objectives and functions, Computer System Architecture, Evolution of Operating Systems, System Services, System Calls, System Programs, OS Structure, Virtual machines. Process Management: Process concepts, CPU scheduling-criteria, algorithms with evaluation, Preemptive / Non-Preemptive Scheduling, Threads, Multithreading Models.

UNIT II 15 Prds

Concurrency: Process synchronization, the critical- section problem, Peterson's Solution, synchronization Hardware, semaphores, classic problems of synchronization, monitors. Deadlocks: Principles of deadlock–system model, deadlock characterization, deadlock prevention, detection and avoidance, recovery from deadlock.

UNIT III 10 Prds

Memory Management: Swapping, contiguous memory allocation, paging, structure of the page table, segmentation. Virtual Memory: Demand paging, page replacement algorithms, Allocation of Frames, Thrashing.

UNIT IV 15 Prds

Mass-storage structure: Overview of Mass-storage structure, Disk structure, disk attachment, disk scheduling, swap-space management. File System implementation: Access Methods, File system structure, file system implementation, directory implementation, allocation methods, free-space management. Protection: Goals and Principles of Protection, Implementation of Access Matrix,

UNIT V 10 Prds

Overview of different Types of Operating Systems. Single User, Multiuser, linux, Android, Ubuntu, Ios, raspberrypi, Development of a mobile application using android.

TEXT Books

1. Operating System Concepts Essentials, 9th Edition by Avi Silberschatz, Peter Galvin, Greg Gagne, Wiley Asia Student Edition.
2. Operating Systems: Internals and Design Principles, 5th Edition, William Stallings, Prentice Hall of India.
3. Ashwin Pajankar, Raspberry_Pi_Image_Processing

REFERENCE BOOKS:

1. Operating System: A Design-oriented Approach, 1st Edition by Charles Crowley, Irwin Publishing
2. Operating Systems: A Modern Perspective, 2nd Edition by Gary J. Nutt, AddisonWesley
3. Android App Development in Android Studio: Java+Android Edition for Beginners
4. Operating Systems, R. Elmasri, A. G. Carrick and D. Levine, Mc Graw Hill.
5. Operating Systems in depth, T. W. Doeppner, Wiley

Student Activity:

1. Load any new operating system into your computer.
2. Partition the memory in your system
3. Create a semaphore for process synchronization.

Recommended Co – Curricular Activities:

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
2. Student seminars (on topics of the syllabus and related aspects (individual activity))
3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))
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B. General

1. Group Discussion
2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

1. Programming exercises,
2. Practical assignments and laboratory reports,
3. Observation of practical skills,
4. Individual and group project reports.
5. Efficient delivery using seminar presentations,
6. Viva voce interviews.
7. Computerized adaptive testing, literature surveys and evaluations,
8. Peers and self-assessment, outputs form individual and collaborative work.

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MODEL PAPER

TITLE: Operating Systems

COURSE CODE: AIMLT43
Max.Marks:75M
CLASS: B.Sc. (AI & ML) **Semester IV**

Answer <u>any FIVE</u> questions 5*5=25M

1. Write about Components of Computers. (CO1, L1)
2. Write about Central Processing Unit (CO1, L2)
3. Explain the operations in Processes. (CO2, L2)
4. Write about multiprocessor scheduling. (CO2, L1)
5. What is meant by paging? (CO3, L2)
6. Explain how to protect a File. (CO4, L2)
7. What are server roles on Windows Server 2016? (CO5, L2)

Answer all the questions 5*10=50M

9.(a)What are the various Applications of Computers? (CO1, L2)

OR

(b)Explain about various types of operating System. (CO1, L2)

10.(a)Briefly explain about Scheduling Algorithms. (CO2, L2)

OR

(b)Write about CPU Scheduling. (CO2, L2)

11.(a)What are the various Memory management strategies? (CO3, L2)

OR

(b)Explain about Page Replacement Techniques and Algorithms (CO3, L2)

12.(a)Explain various File Access Methods. (CO4, L2)

OR

(b) Write about File Allocation Methods and Free Space Management(CO4, L2)

13. (a)Demonstrate the steps to be followed for Windows Client OS installation (CO5, L2)

OR

(b)Explain the steps to be followed to configure DHCP. (CO5, L2)

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PARVATHANENIBRAHMAIAH SIDDHARTHA COLLEGE OF ARTS AND SCIENCE; VIJAYAWADA-10

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SEMESTER- III/IV **PAPER – III/IV**

TITLE OF THE PAPER: HINDI-III/IV

NO OF HOURS: 60 **CREDITS: 03**

WEF: 2021-22 **COURSE CODE: HINT01A**

Cos:

1.दोहों के व्दारा विद्यार्थियोंमें समाज सुधार की भावना, मानव मूल्यों का विकास हो सकेगा।

2. हिंदी साहित्य के इतिहास के व्दारा हिन्दी भाषा और साहित्य की प्रमुखता से परिचित हो सकेंगे।

3. समाज कल्याण के विषयों को समझकर विद्यार्थिअपने ज्ञान का विकास कर सकेंगे।

4. समाज में हिन्दी भाषा के परिचित हो सकेंगे और हिन्दी भाषा का ज्ञानप्राप्तकर दूसरों से आसानी से संप्रेषित करने में सक्षम हो सकेंगे।

5.प्रयोजनमूलक हिन्दी प्राप्तकर सकेंगे और हिन्दी में पत्राचार का कौशल विकसित कर सकेंगे।

PARVATHANENIBRAHMAIAH SIDDHARTHA COLLEGE OF ARTS AND SCIENCE; VIJAYAWADA-10

(An autonomous college in the jurisdiction of Krishna University)

SEMESTER- III/IV **PAPER – III/IV**

TITLE OF THE PAPER: HINDI-III/IV

NO OF HOURS: 60 **CREDITS: 03**

WEF: 2021-22 **COURSE CODE: HINT01A**

SYLLABUS

I.**काव्य दीप**:

साखी- 1-10 - कबीरदास

बालवर्णन - सूरदास

मातृभूमि - मैथिलीशरण गुप्त

तोडती पत्थर - सूर्यकांत त्रिपाठी निराला

गीत फरोश - भवानी प्रसाद मिश्र

II.**हिन्दी साहित्य का इतिहास**:

काल विभाजन - आचार्य रामचन्द्र शुक्ल के अनुसार

भक्ति काल : ज्ञानाश्रयी शाखा - कबीर

प्रेमाश्रयी शाखा - जायसी

III.**साधारण निबन्ध**:समाचार पत्र, पर्यावरण और प्रदूषण,

बेकारी की समस्या, कंप्यूटर

IV. **अनुवाद** :(हिन्दी से अंग्रेजी में बदलना तथा अंग्रेजी से हिन्दी में बदलना)

V.**प्रयोजनमूलकहिन्दी**: परिपत्र,कार्यालय ज्ञापन,राष्ट्र-भाषा हिन्दी

Recommended Books:

1.काव्य दीप- **SRI B.RADHA KRISHNA MURTHY**

PARVATHANENI BRAHMAYYA SIDDHARTHA COLLEGE OF ARTS & SCIENCE :: VIJAYAWADA-520 010.
(An Autonomous College in the jurisdiction of Krishna University, Machilipatnam)
III SEMESTER Model Question Paper, November-2022 (Hindi-III)

Course Code: HINT01A **Max. Marks: 75M**
Time: 3 Hrs. **Pass Min. : 30M**

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PART-A

I. निम्नलिखित प्रश्नों में से किन्हीं पाँच प्रश्नों का उत्तर दीजिए: **5×5=25M**

1. व्याख्या कीजिए। L2

पाहन पूजे हरि मिलै, तो मैं पूजूँ पहाड़।

ताते ये चाकी भली , पीस खाय संसार ।।

2.किसी एक कवि का साहित्यक परिचय दीजिए। L1

(i)कबीर (ii) सूर्यकांतत्रिपाठी‘निराला’

3.मातृभूमिकविता की विशेषताएँ लिखिए। L1

4.व्याख्या कीजिए । L2

जी गीत जनम का लिखूँ, मरन का लिखूँ,

जी गीत जीत का लिखूँ, शरण कर लिखूँ।

5.ज्ञानमार्ग शाखा की विशेषताएँ बताइए। L2

6.प्रदूषण के निवारणोपाय लिखिए। L1

7.परिपत्र की परिभाषा दीजिए। L1

8.अनुवाद किसे कहते हैं? L2

PART-B

II. निम्नलिखित प्रश्नोंका उत्तर दीजिए: **5×10=50M**

9. किसी एक कविता का सारांश विशेषताओं के सहित लिखिए। L2

(i)गीत फरोश (ii) तोड़ती पत्थर

10. (अ) हिन्दी साहित्य का इतिहास - काल विभाजन के बारे में लिखिए। L2

अथवा

(आ) प्रेमाश्रय शाखा की विशेषताओं का परिचय दीजिए।

11.किसी एक निबंध पर प्रकाश डालिए। L2

(i) बेकारी की समस्या (ii) पर्यावरण और प्रदूषण (iii) कंप्यूटर

12. (अ) हिन्दी में अनुवाद कीजिए। L2

(i) India is our country

(ii) We should respect our parents

(iii)How many students are there in the class room?

(iv)Where are you going now?

(v)This is our college.

अथवा

(आ)अंग्रेजी में अनुवाद कीजिए।

(i)हम कॉलेज जाते हैं।

(ii)हिन्दी हमारी राष्ट्रभाषा है।

(iii)रमा नाचती है।

(iv)मानव सेवा ही माधव सेवा है।

(v)कल रविवार था।

13.किसी एक पर टिप्पणी लिखिए। L1

(i)परिपत्र (ii)कार्यालय ज्ञापन (iii)राष्ट्र-भाषा हिन्दी

CO PO MAPING

Course Code : TEL T01A SEMESTER III/IV

COURSE NAME	COURSE OUT COMES NO	COURSE OUT COMES	PO NO.
B.A., B.B.A. B.B.A. B.A. B.COM (TPP) B.COM (A & F) B.COM (GEN) B.COM (C.A.) B.COM (BPM) B.COM (CA) B.C.A. B.Sc. (MPC) B.Sc. (BZC) B.Sc. (M.E.Cs) B.Sc. (M.PCs) B.Sc. (M.S.Cs) B.Sc. (CAME) B.Sc. (CAMS) B.Sc. (MSDS) B.Sc. (CSCS)	CO 1	వర్ణము, పదము, వాక్యములతో భాషాస్వరూపాన్ని పరిస్తూ పూర్ణంగా తెలుసుకొని చక్కని వ్యవహార వైఖరి ప్రదరిస్తారు.	6
	CO 2	సమాజ స్వరూపాన్ని సాహిత్య ప్రక్రియల ద్వారా పూర్తిగా అవగతం చేసుకొని జీవితాన్ని పరిపూర్ణంగా సాధించగలుగుతారు.	4
	CO 3	వివిధ భాషల పై సంప్రదాయము, సంస్కృతుల ప్రభావాన్ని భిన్న సమాజ దృక్పథాన్ని అవగాహన చేసుకుంటారు.	1
	CO 4	సమాజంలో ప్రసార మాధ్యమాల కృషిని గమనిస్తూ చైతన్యవంతమైనస్ఫూర్తిదాయకమైన జీవితాన్ని గడుపుతారు.	3
	CO 5	చక్కని విలువలతో అందర్నీ కలుసుకుంటూ సహజ సిద్ధమైన నైపుణ్యాలని మరింత పెంపొందించగలుగుతూ ఆదర్శవంతులౌతారు.	2

CO – PO MATRIX

Academic Year 2020-21

Course Code : TEL T01A SEMESTER III/IV

CO-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1		L					
CO2			M				
CO3							H
CO4				M			
CO5					H		

SYLLABUS పాఠ్యప్రణాళిక

TELUGU-III / IV **TELT01A** **Credits – 3**

యూనిట్-I వ్యక్తీకరణ నైపుణ్యాలు

1. భాష-ప్రాథమికాంశాలు:- భాష-నిర్వచనం, లక్షణాలు, ఆవశ్యకత, ప్రయోజనాలు.

2. 'వర్ణం-పదం-వాక్యం', వాక్య లక్షణాలు, సామాన్య-సంయుక్త-సంశ్లిష్ట వాక్యాలు.

3. భాషా నిర్మాణంలో 'వర్ణం-పదం-వాక్యం' ప్రాధాన్యత.

యూనిట్-II సృజనాత్మక రచన

4. కవితా రచన:- ఉత్తమ కవిత - లక్షణాలు.

5. కథా రచన:- ఉత్తమ కథ - లక్షణాలు.

6. వ్యాస రచన:- ఉత్తమ వ్యాసం - లక్షణాలు.

యూనిట్-III అనువాద రచన

7. అనువాదం:- నిర్వచనం, అనువాద పద్ధతులు.

8. అనువాద సమస్యలు:- భౌగోళిక, భాషా, సాంస్కృతిక సమస్యలు, పరిష్కారాలు.

9. అభ్యాసము:- ఆంగ్లం నుండి తెలుగునకు ఒక పేరాను అనువదించడం.

యూనిట్-IV మాధ్యమాలకు రచన-I:- ముద్రణ / ప్రింట్ మీడియా

10. ముద్రణా మాధ్యమం / అచ్చు /:- పరిచయం, పరిధి, వికాసం.

11. వివిధ రకాల పత్రికలు - పరిశీలన, పత్రికా భాష, శైలి, వైవిధ్యం.

12. పత్రికా రచన:- వార్తా రచన, సంపాదకీయాలు, సమీక్షలు - అవగాహన.

యూనిట్-V మాధ్యమాలకు రచన-II:- ప్రసార మాధ్యమం / ఎలక్ట్రానిక్ మీడియా

13. ప్రసార మాధ్యమాలు:- నిర్వచనం, రకాలు, విస్తృతి, ప్రయోజనాలు.

14. శ్రవణ మాధ్యమాలు-రచన:- రేడియో రచన, ప్రసంగాలు, నాటికలు, ప్రసార సమాచారం.

15. దృశ్య మాధ్యమాలు-రచన:- వ్యాఖ్యానం / యాంకరింగ్, టెలివిజన్ రచన.

ఆధార గ్రంథాలు / వ్యాసాలు:

1. వ్యక్తీకరణ నైపుణ్యాలు-చూ.

1. ఆధునిక భాషా శాస్త్ర సిద్ధాంతాలు - ఆచార్య పి.ఎస్. సుబ్రహ్మణ్యం. 2. తెలుగు భాషా చరిత్ర - సం.ఆచార్య భద్రిరాజు కృష్ణమూర్తి.
3. తెలుగు వాక్యం - డా.చేకూరి రామారావు.

2. ఉత్తమ కవిత-లక్షణాలు - చూ. 1.నవ్యకవిత్వ లక్షణములు-ఆచార్య సి.నారాయణరెడ్డి. 2.ఆధునికాంధ్ర కవిత్వము-సంప్రదాయములు, ప్రయోగములు: చతుర్థ ప్రకరణము**3. ఉత్తమ కథ - లక్షణాలు - చూ.** 1. కథా శిల్పం - వల్లంపాటి వెంకట సుబ్బయ్య, పుటలు:11-17

4. ఉత్తమ వ్యాసం - లక్షణాలు - చూ. 1. చదువు-సంస్కృతి (వ్యాసం) - కొడవటిగంటి కుటుంబరావు.

5. అనువాద రచన - చూ. 1. అనువాద సమస్యలు - రాచమల్లు రామచంద్రారెడ్డి, పుటలు: 61-75, 85-94
2. అనువాద పద్ధతులు ఆచరణ సమస్యలు-చేకూరి రామారావు 3.'భాషాంతరంగం',పుట:130-146, తెలుగు విశ్వవిద్యాలయం ప్రచురణ.

6. ముద్రణా మాధ్యమం-చూ. 1. మాధ్యమాలకు రచన, పుటలు: 9-12, డా.బి.ఆర్. అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

7. పత్రికా భాష-చూ. 1. మాధ్యమాలకు రచన, పుటలు: 67-74, డా.బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

8. పత్రికా రచన- చూ. 1. తెలుగు-మౌలికాంశాలు, పుటలు: 59-69, డా.బి.ఆర్. అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

9. ప్రసార మాధ్యమాలు- చూ. 1. మాధ్యమాలకు రచన, పుటలు: 3-10, డా.బి.ఆర్. అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

10. రేడియో రచన- చూ. 1. మాధ్యమాలకు రచన, పుటలు: 141-148, డా.బి.ఆర్. అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

11. వ్యాఖ్యానం/యాంకరింగ్ - చూ. 1. మాధ్యమాలకు రచన, పుటలు: 178-181, డా.బి.ఆర్. అంబేద్కర్ విశ్వవిద్యాలయ ప్రచురణ.

12. టెలివిజన్ రచన- చూ. 1. మాధ్యమాలకు రచన, పుటలు:153-160, డా.బి.ఆర్.అంబేద్కర్ విశ్వవిద్యాలయం ప్రచురణ.

13. తెలుగు జర్నలిజం- డా. బూదరాజు రాధాకృష్ణ.

నమూనా ప్రశ్నపత్రం

Course Code: TEL T01A (Telugu-III/IV) **Max. Marks: 75M**
Time: 3 Hrs. **Pass Min. : 30M**

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అ-భాగం

I. క్రింది వానిలో ఐదింటికి సంగ్రహరూప సమాధానాలు వ్రాయండి. ఎనిమిదవ ప్రశ్నకు సమాధానం తప్పనిసరిగా వ్రాయాలి. **5 × 5 = 25మా**

1. భాష - ప్రయోజనాలు. **L2**
2. ఉత్తమ వ్యాసం - లక్షణాలు. **L1**
3. అనువాద సమస్యలు. **L2**
4. సంపాదకీయాలు. **L3**
5. టెలివిజన్ రచన. **L6**
6. ఉత్తమ కథ - లక్షణాలు. **L2**
7. సమీక్షలు - అవగాహన. **L2**
8. క్రింది అంశాన్ని నుడికారం చెడకుండా తెలుగులోకి అనువదించండి. **L2**

   To many, Indian thought, Indian manners, Indian customs, Indian philosophy, Indian literature are repulsive at the first-right, but let them preservere, let then read, let them become familiar with the great principles underlying these ideas, and it is ninety-nine to onethat the charm will come over them, and fascination will be the result. Slow and silent, as the gentle dew that falls in the morning, unseen and unheared yet producing, a most tremendous result, has been the work of the calm, patient, all-suffering spiritual race upon the world of thought.

ఆ-భాగం

II. క్రింది వానిలో ఐదింటికి వ్యాసరూప సమాధానాలు వ్రాయండి: **5 × 10 = 50మా**

9. భాషా నిర్మాణంలో 'వర్ణం-పదం-వాక్యా'ల ప్రాధాన్యతను వివరించండి. **L1**
10. ఉత్తమ కవితా లక్షణాలను విశ్లేషించండి. **L2**
11. అనువాద లక్షణాలను తెల్పి, పద్ధతులను రాయండి. **L3**
12. ముద్రణా మాధ్యమాన్ని వివరించి, దాని పరిధి వికాసాలను తెల్పుము. **L2**
13. యాంకరింగ్ నిర్వహణ, తీరు తెన్నుల్ని తెల్పండి. **L6**
14. పత్రికా భాష - శైలి - వైవిధ్యాన్ని వివరింపుము. **L2**
15. సామాన్య-సంయుక్త-సంశ్లిష్ట వాక్యాలను వివరింపుము. **L1**
16. ప్రసార మాధ్యమాల విస్తృతి, ప్రయోజనాలను సమీక్షించండి. **L2**

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