Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C10	Data Analytics Methods and Probability Distributions	4	60	4

(Syllabus under CBCS w.e.f. 2021-22)

Course Objectives

1.   The main objective of this course is to provide students with the foundations of probabilistic and statistical analysis mostly used in varied applications in engineering and science like disease modeling, climate prediction and computer networks etc.

Course Outcomes

After successful completion of this course, the student will be able to;

1. Ability to distinguish between discrete and continuous distributions.

2. Knowledge related to concept of curve fitting.

3. Knowledge of important discrete and continuous distributions such as Binomial, Poisson, rectangular , normal, distributions.

4. Acumen to apply standard discrete and continuous probability distributions to different situations.

5. Knowledge related to concept of correlations.

6. Knowledge related to concept of regressions.

7. Knowledge of correlation, regression analysis, regression diagnostics.

UNIT – I

Correlation: Introduction, Meaning of Correlation, Types of correlation ,probable error, Karl-pear sons coefficient of correlation for individual series only, Spearman's Rank correlation for individual series only.

UNIT –II

Regression: Introduction, definition, difference between correlation and regression, Simple linear

regression, properties of regression coefficients, Regression equation x on y, Regression equation y on x , Simple Problems.

UNIT – III

Finite Differences and Interpolation: Forward Differences - Backward differences.

Newton's forward interpolation formula - Newton's backward interpolation formula

UNIT – IV

Curve Fitting : method of least squares, fitting of a straight line only. Linear trend and find trend values by the method of straight line trend.

UNIT –V

Probability Distributions: Binomial, Poisson and Normal Distributions – Definitions, means, variances and applications of these distributions. Simple problems.

Note:

1. Concentration on numerical problems only.

2. Proofs of theorems and Derivations of expressions are omitted.

Text Books:

1. Mathematical Methods by Dr. T.K.V.Iyengar. - S.Chand Publications.

2. Statistical methods - S.P Gupta.

Reference Books:

Fundamentals of Mathematical statistics - S.C. Gupta & V.K.Kapoor.

SRI VENKATESWARA UNIVERSITY
BCA DEGREE COURSE IN DATA SCIENCE
IV SEMESTER

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C10-P	Data Analytics Methods and Probability Distributions Lab	2	30	1

1. Fitting of Binomial by Direct method

2. Fitting of Poisson distribution.

3. Fitting of a Straight Line.

4. Fitting of a Straight Line Trend.

5. Finite Differences.

6. Interpolation.

7. Rank Correlation.

8. Correlation coefficient.

9. Regression lines X on Y.

10. Regression lines Y on X.

SRI VENKATESWARA UNIVERSITY
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(Syllabus under CBCS w.e.f. 2021-22)

DATA ANALYTICS METHODS AND PROBABILITY DISTRIBUTIONS

(Statistical tables and Electronic Calculators are allowed)

MODEL QUESTION PAPER

TIME: 3 HOURS   MAX.MARKS:75

SECTION-A

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 5 MARKS   5X5=25M

1. Explain correlation coefficient of $\sum x^2 = 222, \sum y^2 = 364, \sum xy = 261$

2. The ranks of two subjects A and B are given below. Obtain rank correlation coefficient.

$$(3,2),(4,4),(1,1),(2,3),(6,6),(5,5)$$

3. Define Regression. Write Regression coefficients.

4. Write properties of regression coefficients.

5. Find the forward difference table to the following

x	35	45	55	65	75
y	200	220	243	270	289

6. Construct backward difference table to the following data and find $\nabla^2 y_2, \nabla^4 y_2$

x	0	1	2	3	4	5	6
y	0	1	16	81	256	625	1296

7. Explain Method of list squares for fitting a straight line.

8. To find Normal Equations for fitting a straight line .

x	1	2	3	4	5
y	14	27	40	55	68

9. Define Binomial distribution. Write down its mean and variance.

10. Importance of Normal distribution.

ANSWER ANY <u>FIVE</u> QUESTIONS.EACH QUESTION CARRIES <u>10</u> MARKS.   5 X 10 = 50M

11. Calculate coefficient of correlation of the following data

x	10	12	13	16	17	20	25	30	34
y	20	22	26	27	29	33	37	40	42

12. Calculate rank correlation of the following data

x	72	70	46	69	56	65	65	45	35	75
y	111	110	105	112	115	115	101	118	107	120

13. Calculate regression equation of Y on X from the following data

x	40	38	35	42	30
y	30	35	40	36	29

14.   In correlation study the following values are obtained :

	X	Y
Mean	65	67
Standard Deviation	2.5	3.5

Coefficient of Correlation: 0.8

Find the two regression equations that are associated with the above values.

15. Find $f(1.6)$ using Newton's forward Interpolation formula from the following table

x	1	1.4	1.8	2.2
y	3.49	4.82	5.96	6.5

16. Find $f(3.5)$ by Newton's Backward Interpolation formula from the following data

x	0	1	2	3	4
y	3	4	7	8	10

17. Fit a Straight line to the form y=a+bx for the following data :

x	0	5	10	15	20	25
y	12	15	17	22	24	30

18. Fit a straight line trend for the following series. Estimate the value for 2012 :

Year	2001	2002	2003	2004	2005	2006	2007
Production of Steel (M. Tones)	60	72	75	65	80	85	95

19. Define Poisson distribution and write its properties.

20. Write properties of Normal distribution.

Instruction to Paper Setter:

Paper Setter must select <u>TWO</u> Short Questions and <u>TWO</u> Essay Questions from Each Unit

ACCOUNTING AND SYSTEMS APPROACH TO MANAGEMENT

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C11	Accounting & Systems Approach to Management	4	60	4

Course Objectives:

1. This paper is designed to impart knowledge regarding concepts of Accounting and financial management. This course is useful for Students to get placements in different offices as well as companies in Accounts departments.

Course Outcomes:

1. Company Setup & Configurations.
2. Recording Financial Transactions.
3. Financial Reports

UNIT - I : – Fundamentals of Management

Definition – Nature & scope of Management – Characteristics of Management – Functions of Management – Henry Fayol Principles of Management – Effective Manager

UNIT – II : – Introduction to Accounting

Need for Accounting – Definition – Objectives, Advantages – Book keeping and Accounting – Accounting concepts and conventions – Accounting Cycle – Classification of Accounts and its rules – Double Entry Book-keeping – Journalization – Posting to Ledgers, Balancing of ledger Accounts (problems).

UNIT – III : S**ubsidiary Books:**

Types of Subsidiary Books – purchases Book- Purchase returns Book-Sales Book – Sales returns Book – Cash Book – Simple Cash Book – Two Columnar Cash Book – Three-column Cash Book – Petty cash Book (Problems).

UNIT – IV : - Bank Reconciliation Statement:

Need for bank reconciliation - Reasons for difference between Cash Book and Pass Book Balances- Preparation of Bank Reconciliation Statement- Problems on both favorable and unfavorable balances.

UNIT – V : Trial Balance and Final Accounts:

Meaning objectives - Methods of preparation of trial balance –Totals method –Balances Method
Preparation of Final Accounts: Trading account – Profit and Loss account – Balance Sheet – with adjustments- Bad debts- Provision for bad debts (Simple Problems).

Reference Books:

1. T.S.Reddy & A. Murthy, Financial Accounting , Margham Publications
2. Organization and Management - by R.G. Agarwal TATA Mc Grawhill Pub. Ltd.,
3. S.P. Jain & K.L Narang, Accountancy-I, Kalyani Publishers
4. Tulasian, Accountancy -I, Tata McGraw Hill Co.
5. V.K.Goyal, Financial Accounting, Excel Books
6. K. Arunjothi, Fundamentals of Accounting; Maruthi Publications

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C11-P	Accounting & Systems Approach to Management Lab	2	30	1

1. Preparation of ledger and cash book
2. Practice and functioning of triple column cash book
3. Creation of journal voucher
4. Creation of payment voucher
5. Preparation of Bank reconciliation statements
6. Create company using accounts
7. Displaying trial balance
8. Displaying financial statements

ACCOUNTING & SYSTEMS APPROACH TO MANAGEMENT

MODEL QUESTION PAPER

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

SECTION-A

Answer any <u>FIVE</u> of the following Questions: **(5 x 5= 25 Marks)**

1. Write characteristics of management
2. Explain role of effective manager
3. Write advantages of accounts
4. Differentiate book keeping and accounting
5. From the following particulars prepare Raju's A/c   Rs.

     1-1-2014 Amount due from Raju   8,000

     5-1-2014 Sold goods to Raju   14,000

     8-1-2014 Purchased goods from Raju   5,000

     14-1-2014 Cash received from Raju   6,000

     24-1-2014 Cash paid to Raju   4,000

     31-1-2014 Raju's A/c settled by cheque
6. A trader maintains Petty cash book under imprest system. Record the following
     Transactions in his Petty Cash Book:

2014		Rs.
Sep. 1	Received for Petty payments	500
2	Postage	40
5	Stationery	25
8	Advertising	50
12	Wages paid	20

16	Carriage	15
20	Conveyance	22
30	Postage	50

7. From the following particulars prepare bank Reconciliation statement as on 30.04.2010
   a) Bank Balance as per Pass book Rs 12000.
   b) Cheques deposited but not collected Rs.2000
   c) Cheques issued but not presented Rs 1500
   d) Bank Charges appeared in Passbook Rs 200
8. What are the causes for the difference in cash book and pass book balance ?
9. From the following particulars Prepare Trial Balance.

Cash	4000	Plant	30000
Capital	25000	Bank Loan	6000
Stock	5000	Sales	10000
O/S Expenses	1000	Reserve	3000
Drawing	3000	O/S Income	4000
Purchase Returns	1000	Creditors	15000
Purchases	15000		

10. Prepare trading account from the following items

Purchases	50,000
Sales	2,65,000
Opening Stock	20,000
Carriage	1,500
Bad debts	4,000
Sales Returns	1,000
Closing Stock	62,000

SECTION – B

Answer any <u>FIVE</u> of the following Questions   **(5 × 10 =50 Marks)**

11. Define Management. Explain the functions of management
12. Write about Henry Fayol principles of Management
13. Classify the following into Personal, Real and Nominal Accounts

     (a) Capital (b) Rent recovered (c) Accrued Interest

     (d) Discount (e) Bad debts (f) Carriage (g) goodwill

     (h) Premises (i) Investments (j) Work-in-Progress.

14. Journalise the following transactions.
    (a)   Rao starts business with Rs.10,000 cash and a building worth Rs.50,000
    (b) Purchased goods worth Rs.20,000 out of which goods worth Rs.12,000 was on credit from Shyam.

    (c)   Sold goods on credit worth Rs.16,000 to Ram.
    (d) Received Rs.15,600 from Ram in full settlement of his account.
    (e)   Paid Rs.11,800 to Shyam in full settlement of Rs.12,000 due to him.
    (f)   Paid wages Rs.500 and salaries Rs.2,000
15. Enter the following transactions in suitable subsidiary books.

                                           Rs.

		Rs.
Jan.1	Purchased goods from Rekha	7,500
4	Sold goods to Midhum	8,000
5	Returned gods to Rekha	500
6	Sridevi bought goods from us	4,000
8	Received goods returned by Midhun	400
10	Rajesh sold goods to us	4,000
15	Sold goods to Kishore	3,000
16	Returned goods to Rajesh	600
20	Kishore returns goods	500

16. Enter the following transactions in a three column cash book.

	2018		Rs.
January 1		Started business with cash	40,000
	2	Opened savings bank account with Vijaya Bank	16,000
	5	Bought goods by cheque	350
	6	Received cheque from Suhas	400
		Allowed him discount	20
	8	Sold goods for cash	80
	10	Paid into bank – Cash	60
		Cheque	400
	14	Paid Sateesh by cheque	690
		Discount received	10
	17	Paid Carriage	300
	20	Drew from bank for office	400
	31	Paid Salaries by cheque	200

17. From the following particulars prepare Bank Reconciliation Statement.
    (a) Debit balance as per cash book is Rs. 10,000.
    (b) Cheques issued but not presented for payments Rs. 1,500.
    (c) Cheques paid into bank but not credited Rs. 1,000.
    (d) Interest credited in pass book only Rs. 100.
    (e) Cheques received, entered in cash book but omitted to send to bank Rs. 500.
    (f) Bills collected and credited in pass book only Rs. 2,000.

18. From the following transactions prepare bank reconciliation statement of Prabhas as on 30.04.2018
    a) Overdraft balance as per pass book Rs. 20,000
    b) On 24th . April Cheques worth Rs. 8000 were issued of which cheques worth Rs 5000 were presented for payment.
    c) On 29th April Cheques worth Rs. 10000 were Deposited with the bank of which cheques worth Rs 8000 were only collected.
    d) Interest on Investments Rs. 2000 was collected by bank which was appeared in Passbook
    e) Bank Charges Rs 200 and interest on overdraft Rs 150 were debited in pass book.

19. The following trial balance was prepared by a clerk appointed newly by Rao & Company. Some errors were found in the Trial Balance due to lack of experience in preparing accounts. Prepare Trial Balance by rectifying these mistakes.

S.No	Particulars	Debit Rs.	Credit Rs.
	Opening Stock	5,000	
	Capital		60,000
	Discount allowed		500
	Discount received		700
	Fixed Assets		60,000
	Sales	85,000	
	Purchases		45,000
	Purchase returns		1,000
	Sales returns	2,000	
	Carriage inwards		600
	Carriage outwards		700
	Wages, Salaries	25,000	
	Bills receivable	7,000	
	Debtors	9,000	
	Bills Payable		7,000
	Rent	3,000	
	Interest Paid		2,000
	Cash	800	
	Creditors	6,900	
	Closing Stock	33,800	
		1,77,500	1,77,500

20. The following are the figures extracted from the Books of Krishna Murthy on 31-12-2018 ; Prepare Final Accounts :

	Debit Rs.	Credit Rs.
Capital		50,000
Plant & Machinery	20,000	
Furniture	11,500	
Sundry Debtors & Creditors	15,000	20,000
Bills Receivable & Payable	10,000	5,000
Opening Stock	20,000	
Purchases & Sales	60,000	90,000
Depreciation	1,200	
Outstanding Salaries		800
Salaries	10,000	
Wages	22,000	
Insurance	1,000	
Prepaid Insurance	100	
Carriage	400	
10% Loan		5,400
Total	1,71,200	1,71,200

Adjustments : (a) Write off Rs. 1,000 as Bad Debts and provide 5% on debtors for bad debts.

(b) Closing Stock was valued at Rs. 40,000.

(c) Allow 10% Interest on Capital.

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C12	Programming using 'R'	4	60	4

Course Objectives:

1. The course covers practical issues in statistical computing which includes programming in R, reading data into R, accessing R packages, writing R functions, debugging, and organizing and commenting R code. Topics in statistical data analysis and optimization will provide working examples.

Course Learning Outcomes:
Upon successful completion of the course, a student will be able to:
1. be able to use and program in the programming language R
2. be able to use R to solve statistical problems
3. be able to implement and describe Monte Carlo the technology
4. be able to minimize and maximize functions using R

UNIT – I

Introduction to R: R overview and history, Basic features of R, Benefits of R, data types in R, Installing R, Getting started with the RStudio IDE, Running R, Packages in R, variable names and assignment ,operators, Input/output functions , reading and writing data.

UNIT-II

Preview of Some Important R Data Structures: Vectors, Character Strings, Matrices, Lists, Data Frames, and Classes.
Control structures: Conditional statements, Loops, dates and times functions, String manipulations.

UNIT-III

VECTORS: Scalars, Vectors, Arrays and Matrices: Adding and Deleting Vector Elements, Obtaining the Length of a Vector- **Common vector operations:** Arithmetic & logical operations, Vector Indexing, Generating vector sequences with seq (), Repeating vector constants with rep (), using all () and any () functions, Vectorized operations, NA and NULL values.

UNIT-IV

MATRICES AND ARRAYS: Creating Matrices, General Matrix operations- linear algebra operations, matrix indexing, filtering on matrices, using apply() function , Add and Delete matrix rows and columns.
LISTS: Creating Lists, General List Operations, List Indexing Adding and Deleting List Elements, Getting the Size of a List **,**Accessing List Components and Values, Using lapply() and sapply() functions.

UNIT-V

DATA FRAMES: Creating Data Frames, Accessing Data Frames - Other Matrix-Like Operations: Extracting sub data frames, using rbind () and cbind () functions.
FACTORS AND TABLES : Factors and Levels - Common Functions Used with Factors : tapply() , split() and by() - Working with Tables, Matrix/Array-Like Operations on Tables, Extracting a Sub table - Math Functions: aggregate() and cut() functions.

Text Books:
1. The Art of R Programming by Norman Matlof, No starch press, SAN FRANSISCO, 2011.
2. An Introduction to R for Beginners by SASHA HAFNER, on AUG-2019

Reference Books:
1. R Programming for Dummies, Andrie de Vries and Joris Meys, Wiley
2. R for Data Science, Hadley Wickham, Garrett Grolemund, O'Reilly Media
3. R Programming : A Step-By-Step Guide for Absolute Beginners-2nd Edition, Daniel Daniel Bell
4. Learn R programming in 1 Day, Krishna Rungta, Published by Guru99

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C12-P	Programming using 'R' Lab	2	30	1

1) Write an R-Program to take input from user.

2) Write an R-Program to demonstrate working with operators (Arithmetic, Relational, Logical, Assignment operators).

3) Write an R Program to Check if a Number is Odd or Even

4) Write an R Program to check if the given Number is a Prime Number

5) Write an R Program to Find the Factorial of a Number

6) Write an R Program to Find the Fibonacci sequence Using Recursive Function

7) Write an R Program to create a Vector and to access elements in a Vector

8) Write an R Program to create a Matrix from a Vector using dim() function.

9) Write an R Program to create a List and modify its components.

10) Write an R Program to create a Data Frame.

11) Write an R Program to access a Data Frame like a List.

12) Write an R Program to create a Factor.

(Syllabus under CBCS w.e.f. 2021-22)

PROGRAMMING USING 'R'

MODEL QUESTION PAPER

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

SECTION-A

Answer any __FIVE__ of the following Questions: **(5 x 5= 25 Marks)**

1. Define R. Write any two packages in R.
2. Write basic features of R.
3. Write the syntax of While loop with an example
4. Define function.
5. Define vector and scalars.
6. Explain about Vector indexing.
7. Define matrices.
8. Define list. How do you creating a list in R
9. Define data frame.
10. Write about aggregate( ) function.

SECTION – B

Answer any __FIVE__ of the following Questions   **(5 × 10 =50 Marks)**

11. Write about data types used in R.
12. Write about various types of operators.
13. Explain any five Data Structures in R.
14. Explain various conditional statements used in R.
15. Define vector. Write about arithmetic and logic operations in vector.
16. Write all( ) and any( ) functions with an examples.
17. What is an array? Explain how to create a matrix in R.
18. Write about various operations of List.
19. Write procedure for creating and accessing data frames with an example.
20. Define factor. Explain about different types of functions used with factors.

Instruction to Paper Setter:

Paper Setter must select __TWO__ Short Questions and __TWO__ Essay Questions from Each Unit

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C13	Web Technology Fundamentals	4	60	4

Course Overview

1. This course introduces World Wide Web as a fundamental information and application platform for today's information systems. This Subject is useful for making own Web page and how to host own web site on Internet. Students will examine core aspects of web technologies and web applications, and will develop usable websites.

Course objectives/learning outcomes

1. Learn about Internet and its environment in making web sites
2. Understand different components and technologies of World Wide Web as a platform.
3. Design and develop web pages using various tags
4. Distinguish between server-side and client-side web technologies.
5. Describe various web technology and application development issues and trends.
6. Conduct independent research on a subject related to the course material.

UNIT -I

Introduction to Internet: Definition of Internet – History of Internet – Advantages & disadvantages of Internet – Tools of internet - How internet works. **Introduction to WWW:** Definition of WWW – WWW tools - Web Terminology – web browser – web server

E-Mail : Definition of e-mail – advantages & disadvantages of e-mail, message components

UNIT-II
Introduction to HTML: Basic HTML – HTML document structure – HTML tags – Basefont tag – title tag – body tag – Horizontal Rule Tag - Text formatting tags – Character tags - Character entities

HTML Lists : Ordered List , Unordered List & Definition List – Using colors – Using Images

Hyperlinks: Textual links, Graphical links, types of document links, anchor tag

UNIT -III

HTML Tables – table creations tags, Nested Tables

Frames: Frame introduction - frame creation tags – Nested Frames – **Forms:** Form Controls : textbox, button, password, checkbox, radio button, select, text area - Processing of forms

UNIT – IV

Introduction to Scripting: JavaScript Introduction - Simple Program - Obtaining User Inputs with Prompt Dialogs - variables – operators (arithmetic, relational, logical, increment and decrement).
JavaScript – Control Statements: Introduction – conditional control statements (if, if…else, switch) – Repetitive statements (for, while, do…while) - break and continue Statements

UNIT – V

JavaScript Functions: Introduction - Program Modules in JavaScript - Programmer-Defined Functions - Function Definitions - Scope Rules - JavaScript Global Functions

Advanced HTML : Cascading Style Sheets (CSS): Introduction – Using Styles: As an attribute, tag & external file – Defining Your own styles – **Properties and values :** properties related to Fonts , Backgrounds & colors, text , boxes & borders

Prescribed Books:

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley.
2. Deitel & Deitel, Goldberg "Internet and world wide web – How to program", Pearson Educations Asia

Reference Books:

1. Paul S.WangSanda S. Katila, An Introduction to Web Design Plus Programming,Thomson.
2. Robert W.Sebesta, Programming the World Wide Web, Third Edition, Pearson Education.
3. Joel Sklar, Principles of Web Design, Thomson.
4. Raj Kamal, Internet and Web Technologies, Tata McGraw Hill.
5. Gopalan&Akilandeswari, Web Technology: A Developer"s Perspective, PHI.

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C13-P	Web Technology Fundamentals Lab	2	30	1

1. Create a simple HTML page which demonstrates all types of lists.
2. Create a letter head of your college using following styles
   i. image as background
   ii. use header tags to format college name and address
3. Create a web page, which contains hyperlinks like fruits, flowers, animals. When you click on hyperlinks, it must take you to related web page; these web pages must contain with related images.
4. Create a hyperlink to move around within a single page rather than to load another page.
5. Create a leave letter using different text formatting tags.
6. Create a table format given bellow using row span and colspan.

RNO	NAME	MARKS				
		M1	M2	M3	M4	M5

   Insert 5 records.

7. Create a table with different formats as given bellow.
   i. Give different background and font colors to table header, footer and body.
   ii. Use table caption tag.
8. Divide a web page vertically and horizontally with scroll bars, name them as shown below decorate it with some items.

F1	F2
	F3

9. Create a student Bio-Data, using forms.
10. Create a web page using following style sheets
    i. Inline style sheets.
    ii. Embedded style sheets.
    iii. External style sheets
11. Create a web page by using html & CSS

(Syllabus under CBCS w.e.f. 2021-22)

WEB TECHNOLOGY FUNDAMENTALS

MODEL QUESTION PAPER

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

SECTION-A

Answer any <u>FIVE</u> of the following Questions: **(5 x 5= 25 Marks)**

1. What is a web server? Explain
2. Write short notes on the working of Internet.
3. Write about HTML document structure.
4. Explain ordered lists in HTML
5. Write a short notes on table tag in HTML
6. Write differences between table and frame
7. Write about variables in Java script
8. Explain switch statement in Java Script
9. Define function in Java script with an example
10. Define CSS. Explain with an example

SECTION – B

Answer any <u>FIVE</u> of the following Questions   **(5 × 10 =50 Marks)**

11. Define Internet. Write the tools of Internet
12. Write advantages and disadvantages of e-mail.
13. Explain Text Formatting tags in HTML
14. What is a Hyperlink? Discuss different types of hyperlinks in HTML
15. Write a short notes on Form controls
16. Explain how do you create frames using HTML
17. Briefly explain various operators used in Java Script
18. Write about repetitive control statements in Java Script
19. What are the various scope rules? Explain
20. Write about properties used in cascading style sheets

Instruction to Paper Setter:

Paper Setter must select <u>TWO</u> Short Questions and <u>TWO</u> Essay Questions from Each Unit

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C14	Computer Networks	4	60	4

Course Objectives:

1. To provide an introduction to the fundamental concepts on data communication and the design of computer networks.

2. To get familiarized with the basic protocols of computer networks.

Course Outcomes:

After this course, the student will be able to

1. Identify the different components in a Communication System and their respective roles.

2. Describe the technical issues related to the local Area Networks

3. Identify the common technologies available in establishing LAN infrastructure.

UNIT -I:

Introduction to Network:- Definition, Applications, line configuration, Network topologies, Transmission mode, Types of Networks (LAN, WAN, MAN), Protocols, Network models: The OSI model, TCP/IP Protocol Suite.

Physical Layer: Signals –Analog signals, Digital signals, Transmission media - Guided & Un-Guided.

UNIT -II:

Network LAN Technologies: Ethernet, Fast Ethernet, Gigabit Ethernet, and Wireless LAN's.

Data Link Layer: Error Detection and correction - Types of Errors, Error Detection, Error correction. Data link Protocols – Stop-and-wait ARQ, Go-back-n ARQ, Automatic Repeat Request (ARQ).

UNIT - III:

Network Devices: Modem, Hub, Switch, Router, Repeaters, bridges, Gateway.

Network Layer: Internetwork Protocol (IP), Addressing (Classes, Dotted-decimal notation, Sample Internet), Subnet mask, Network layer Protocols – ARP, IPv4, and IPv6.

UNIT-IV:

Transport Layer: TCP protocol, UDP protocol, Process-to-Process delivery, Congestion: Congestion control, congestion avoidance, congestion discarding, Quality of Service (QOS).

UNIT- V:

Application Layer: Domain Name System (DNS) **-** domain name space, distribution of name space, DNS in the Internet, SMTP, SNMP, FTP, POP3, HTTP, WWW.

Text Books:

1. Data Communication and Computer Networks by Behrouz A. Forozoun, Published by Thomas casson, MC GRAW HILL 2nd edition.

References Books:

1. Andrew S. Tanenbaum, "Computer Networks", Fourth Edition, 2003
2. An introduction to computer network by PETER L DORODAL.
3. Communication networks by JEAN WAIRAND –WCB/MCGRAW HILL -1998, 2nd Edition.
4. Computer Networks by Bhushan Trivedi, Oxford University Press
5. Nader F. Mir, "Computer and Communication Networks", Pearson Education, 2007

SRI VENKATESWARA UNIVERSITY
BCA DEGREE COURSE IN DATA SCIENCE
IV SEMESTER

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C14	Computer Networks Lab	2	30	1

1. Write a program for print the IP Address of a WWW.YAHOO.COM
2. Write a program for to print the IP Address of the local machine and hostname.
3. Write HTML program to implement get( ) and post( ) methods
4. Write a program for to identify the well known ports on a Remote system.
5. Write a program for to print the parts of URL.
6. Write a program for to send & receive data from datagram packet.
7. Write a program for a chat application.
8. Write a program for the simple file transfer between two systems by opening socket connection to out server on one system and sending a file from one system to another.
9. Write a program for the HTTP server.

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COMPUTER NETWORKS

MODEL QUESTION PAPER

Time: 3 Hours   Max. Marks : 75

SECTION-A

Answer any __FIVE__ of the following Questions: **(5 x 5= 25 Marks)**

1. Write various transmission modes in network
2. Write difference between Analog and Digital signals
3. Write about wireless network
4. Briefly explain Data link protocols
5. Write about modem and router
6. Explain about Internet Protocol
7. What is QOS? Explain
8. Briefly explain TCP protocol
9. Write and explain domain name space
10. What is WWW? Explain

SECTION - B

Answer any __FIVE__ of the following Questions   **(5 × 10 =50 Marks)**

11. What is network? Explain various types of networks
12. Explain about OSI model
13. Explain about Ethernet technologies
14. Write about error detection and correction
15. Explain various network devices involved in a computer network
16. What is Protocol? Illustrate different network layer protocols.
17. Explain uses of Transport layer in the computer network
18. What is congestion? Explain
19. Write about Domain Name System
20. Explain about the working of Application Layer

Instruction to Paper Setter:

Paper Setter must select __TWO__ Short Questions and __TWO__ Essay Questions from Each Unit

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(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C15	Python Programming	4	60	4

Course Objectives:

1. Python is a language with a simple syntax, and a powerful set of libraries. It is an interpreted language, with a rich programming environment, including a robust debugger and profiler. While it is easy for beginners to learn, it is widely used in many scientific areas for data exploration.

Course Outcomes:

Upon successful completion of the course, a student will be able to:

1. Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
2. Demonstrate proficiency in handling Strings and File Systems.
3. Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.
4. Interpret the concepts of Object-Oriented Programming as used in Python.

UNIT – I

Introduction to Python: Features of Python Language, installing Python, Environment Setup, python syntax, running a python script, Python 2.x Vs Python 3.x,

Python Programming basics: Literals, **Data Types:** Numeric data types: int, float, complex, string data type, python variables, Expressions, comment statements.

Operators-Arithmetic operators, Assignment operators, Comparison operators, Logical operators, Identity operators, Membership operators, Bitwise operators

UNIT-II

Standard I/O Operations, python casting

Control statements- Conditional branching: if, if-else, nested if, if-elif-else statements, Iterative statements: while loop, for loop, nested loops, pass statement, continue statement, break statement, and else statement used with loops, Programming using Python conditional and loops block

UNIT – III

Functions: Introduction, function definition, creating a function, Function Calling, declaration and defining functions, variable scope and lifetime, built-in functions

Sequences: Lists : Creating lists, accessing values in lists, list operations, **Tuples :** Creating Tuples, accessing values in Tuples, Tuple operations, **Sets :** Creating a set, accessing values in Set, Set operations, and **Dictionaries:** Creating a dictionary, Accessing values in Dictionary, Dictionary operations

UNIT – IV

Strings and Regular expressions: Introduction to strings, String operations, Built-in string methods and functions, comparing strings, Functions in regular expression.

Object Oriented Programming: Classes and Objects, Class method and self argument, The __Init__ Method, Class Variables and Object Variables, The __Del__ Method, Public and Private Data Members Private Methods, Built-In Functions to Check, Get, Set and Delete Class Attributes, Garbage Collection (Destroying Objects)

UNIT - V

Inheritance and polymorphism: Inheriting Classes in Python, Polymorphism and Method Overriding, Types of Inheritance, Composition/ Containership, Abstract Classes and Interfaces,

Exception Handling: Introduction, Handling exceptions, multiple except blocks and multiple exceptions, finally block.

Text Books:

1."Reema Thareja", Python Programming using problem solving approach, First Edition, Oxford higher Education.

Reference Books:

1. Kenneth A. Lambert, Fundamentals of Python
2. James Payne, Beginning Python using Python 2.6 and Python 3
3. Charles Dierach, Introduction to Computer Science using Python

(Syllabus under CBCS w.e.f. 2021-22)

Semester	Course Code	Course Title	Hours/Week	Hours	Credits
IV	C15	Python Programming Lab	2	30	1

1. Write a program to demonstrate different number data types in Python
2. Write a program to perform different Arithmetic Operations on numbers in Python
3. Write a program to create, concatenate and print a string and accessing
4. Write a python script to print the current date in the following format "Sun May 29 02:26:23 IST 2017"
5. Write a program to create, append, and remove lists in python.
6. Write a program to demonstrate working with tuples in python.
7. Write a program to demonstrate working with dictionaries in python.
8. Write a python program to find largest of three numbers.
9. Write a Python program to convert temperatures to and from Celsius, Fahrenheit. [Formula: c/5 = f-32/9]
10. Write a Python program to construct the following pattern, using a nested for loop

```
            *

            *

            * *

            * * *

            * * * *

            * * * * *
```

11. Write a Python script that prints prime numbers less than 20.
12. Write a python program to find factorial of a number using Recursion.
13. Write a python program to define a module to find Fibonacci Numbers and import the module to another program.
14. Write a python program to define a module and import a specific function in that module to another program.
15. Write a Python class to convert an integer to a roman numeral.
16. Write a Python class to implement pow(x, n)
17. Write a Python class to reverse a string word by word.

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PYTHON PROGRAMMING

MODEL QUESTION PAPER

Time: 3 Hours   Max. Marks : 75

SECTION-A

Answer any <u>FIVE</u> of the following Questions: **(5 x 5= 25 Marks)**

1. Write the features of Python language.
2. Explain briefly about comment statements
3. What is casting? Explain with an example
4. Illustrate pass statement with an example
5. Write about declaring a function in Python
6. Define dictionary. Explain briefly about creating a dictionary in Python
7. What is a regular expression? Explain
8. Briefly explain about destroying objects in Python
9. What is Polymorphism? Explain briefly with an example
10. Write about types of errors.

SECTION – B

Answer any <u>FIVE</u> of the following Questions   **(5 × 10 =50 Marks)**

11. Write about various data types used in Python
12. Explain different operators used in Python.
13. Write and explain I/O statements in Python
14. Write the conditional statements with an example
15. Define function. Explain the scope and lifetime of variables
16. What is a list? Explain how to create and manage lists in Python
17. Write about string operations in Python with examples
18. Explain OOP concepts in Python
19. What is Inheritance? Explain various types of Inheritance
20. Explain about exception handling in Python

Instruction to Paper Setter:

Paper Setter must select <u>TWO</u> Short Questions and <u>TWO</u> Essay Questions from Each Unit

MODEL QUESTION PAPER

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

SECTION-A

Answer any FIVE of the following Questions: **(5 x 5= 25 Marks)**

1.
2.   } UNIT-1

3.
4.   } UNIT-2

5.
6.   } UNIT-3

7.
8.   } UNIT-4

9.
10.   } UNIT-5

SECTION - B

Answer any FIVE of the following Questions   **(5 × 10 =50 Marks)**

11.
12.   } UNIT-1

13.
14.   } UNIT-2

15.
16.   } UNIT-3

17.
18.   } UNIT-4

19.
20.   } UNIT-5