KAKARAPARTI BHAVANARAYANA COLLEGE

(AUTONOMOUS)

Kothapeta, Vijayawada – 520 001

DIPLOMA IN DATA ANALYTICS

COURSE STRUCTURE DIPLOMA IN DATA ANALYTICS

Year – I		Credits	Marks	
Semester – I			CIA	SEE
General Education System	**Course Code**			
Soft Skills – I	R20DSS – I	3	-	50
Analytical Skills – I	R20DAS – I	3	-	50
Statistical Methods	R20DSM – I	3	-	50
Skill Component				
Paper I – Random Variables & Probability Distributions (Theory)	R20DDA101	5	25	75
Paper II –Data Analysis using R (Theory)	R20DDA102	5	25	75
Paper III –Random Variables & Probability Distributions (Practical)	R20DDA101P	3		50
Paper IV – Data Analysis using R (Practical)	R20DDA102P	3		50
MOOCS		3		
SEMINAR		**2**		
		30	**50**	**400**
Semester – II				
General Education System				
Soft Skills – II	R20DSS – 2	3		50
Analytical Skills – I	R20DAS – 2	3		50
Sampling Techniques & Forecasting methods	R20DSF – 2	3		50
Skill Component				
Paper I – Inferential Statistics (Theory)	R20DDA201	5	25	75
Paper II – Python Programming (Theory)	R20DDA202	5	25	75
Paper III – Inferential Statistics (Practical)	R20DDA201P	3		50
Paper IV – Python Programming (Practical)	R20DDA202P	3		50
OJT		3		
SEMINAR		**2**		
		30	**50**	**400**

KAKARAPARTI BHAVANARAYANA COLLEGE (AUTONOMOUS)

Programme	Semester	Title of The Course	Course Code	W.E.F
Diploma in Advances in Computer Science, Diploma in Data Analytics, Diploma in Drone Pilot, Diploma in Event management	**I**	**Soft Skills – I**	**R20DSS1**	**2020-21**

Total No of Hours for Teaching - Learning	Instructional Hours for Week	Duration of Semester End Examination in Hours	Max Marks		Credits
	Theory		CIA	SEE	
30	30	2 Hrs.	-	50	3

Learning Outcomes:

By the end of the course the learner will be able to:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings.
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success.

I. UNIT

1. Soft Skills: An Introduction – Definition and Significance of Soft Skills; Process, Importance and Measurement of Soft Skill Development.

2. Self-Discovery: Discovering the Self; Setting Goals; Beliefs, Values, Attitude, Virtue.

II. UNIT

1. Interpersonal Communication: Interpersonal relations; communication models, process and barriers; team communication; developing interpersonal relationships through effective communication; listening skills; essential formal writing skills; corporate communication styles – assertion, persuasion, negotiation.

2. Public Speaking: Skills, Methods, Strategies and Essential tips for effective public speaking.

III. UNIT

1. Interview Skills: Interviewer and Interviewee – in-depth perspectives. Before, During and After the Interview. Tips for Success.

2. Presentation Skills: Types, Content, Audience Analysis, Essential Tips – Before, During and After, Overcoming Nervousness.

3. **Etiquette and Manners** – Social and Business

IV. UNIT

1. Decision-Making and Problem-Solving Skills: Meaning, Types and Models, Group and Ethical Decision-Making, Problems and Dilemmas in application of these skills

V. UNIT

1. Emotional Intelligence: Meaning, History, Features, Components, Intrapersonal and Management Excellence; Strategies to enhance Emotional Intelligence.

KAKARAPARTI BHAVANARAYANA COLLEGE (AUTONOMOUS)

Programme	Semester	Title of The Course	Course Code	W.E.F
Diploma in Advances in Computer Science, Diploma in Data Analytics, Diploma in Drone Pilot, Diploma in Event management	**I**	**Soft Skills – I**	**R20DSS1**	**2020-21**

MODEL QUESTION PAPER

Time: 2Hrs **Marks: 50**

I. Answer any Two questions from the following in 75 words each: **2X5=10M**

1. Define Soft Skills and importance of Soft Skills?
2. Suggest some methods to develop soft skills?
3. Define Attitude and state how Beliefs differ from Values with an example.
4. How important is setting a Goal in order to succeed in one's Career?

II Answer any Two questions from the following in 75 words each: **2X5=10M**

1. Define Communication and the Process of Communication.
2. How can we develop interpersonal relationships through effective communication?
3. Suggest some strategies for effective public speaking.
4. What is public speaking and how important is public speaking in day-today Communication?

III. Answer any Two of the following in 75 words each: **2X5=10M**

1. Suggest some important tips to succeed in an interview.
2. Define the role of an Interviewer and Interviewee.
3. Mention different types of presentation skills.
4. Role of etiquette in successful Business communication.

IV. Answer any Two of the following in 75 words each: **2X5=10M**

1. How important is decision making skills and mention some types of decisions?
2. What are the problems we encounter in making effective decisions?
3. What are the strategies to follow in order to be a good decision maker?
4. How can we identify a problem and respond to that in due time?

V. Answer any Two of the following in 75 words each: **2X5=10M**

1. What is emotional intelligence? Explain.
2. What are the strategies to enhance Emotional Intelligence.
3. How emotional intelligence place a role in managing interpersonal relations and excel in one's career.
4. Define the features and components of emotional intelligence?

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department Of Mathematics

Programme	Semester:	Title of The Course	Course Code:	W.E.F
Diploma	I	ANALYTICAL SKILLS-I	DAS1	2020 – 2021

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
30 Hours	Theory		2 Hours		SEE	2
	2				50	

COURSE OBJECTIVES:

- The aim of this course is to provide necessary information to Analytical Skills and their applications.
- To develop logical thinking and its application to computer science

COURSE OUTCOMES:

- Understand the concept of Divisibility , Averages.
- Will be able to write an argument using logical notation and determine if the argument is or is not valid.
- Will be able to know Percentages, Number, letter series, missing letters.

UNIT-1: (12 hours) - Divisibility:
Introduction to Divisibility by 2,3,4; Introduction to Divisibility by 5,6,8; Divisibility by 9,10,11

UNIT -2: (12 hours) - Averages:
Introduction to average of prime numbers; Introduction to natural numbers; Introduction of results; Introduction to averages of weights.

UNIT -3 : (12 hours) – Percentages:
Introduction to the concept of percentage; introduction to express x% as a fraction; introduction to express $\frac{a}{b}$ as a percent; introduction to results on population; introduction to results on depreciation.

UNIT -4: (12 hours) - Number, letter series, missing letters:
Introduction to numbers; introduction to face value and place value; introduction to various types of numbers; introduction to number series; introduction to missing letters.

UNIT-5 : (12 hours) – Blood relations :
Introduction to deciphering jumbled up descriptions; introduction to relations puzzle; introduction to coded relations.

PRESCRIBED BOOK: A Text book of Quantitative Aptitude by R S Agarwal

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department Of Mathematics

Programme	Semester:	Title of The Course	Course Code:	W.E.F
Diploma	I	ANALYTICAL SKILLS-I	DAS1	2020 – 2021

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
30 Hours	Theory		2 Hours		SEE	2
	2				50	

MODEL PAPER

Section A

I. Answer any 10 of the following questions: 10x2=20m

1. Simplify $\frac{(893+786)^2-(893-786)^2}{(893\times786)}$
2. Find the sum$(2+2^2+2^3+2^4+\text{---------}+2^{10})$
3. Show that 4832718 is divisible by 11.
4. Find the average of all prime numbers between 30 and 50.
5. Find the average of first five multiples of 3.
6. The average of four consecutive even numbers if 27. Find the largest of these numbers.
7. Evaluate 28% of 450+45% of 280
8. What percent of 7 is 94.
9. If 15% of x=20% of y. What is x:y
10. 9587-? = 7429-4358
11. What will come in the place of question mark in the following series

BF CH ? HO LT

12. Find the missing number in the series 2 5 10 17 ? 37
13. B is the brother of D, D is sister of F, M is the brother of F. How F id related to B?
14. Introducing a man a woman, said "he is the only son of my mother's mother". How woman related to the man.
15. A man said to a lady "your mother's husband's sister is my aunt". How is the lady related to the man.

Section B

II. Answer any five of the following questions: 5 x6 = 30m

16. Explain divisibility rules.
17. Find the sum of all even natural numbers less than 75.
18. The average monthly income of P and Q is Rs. 5050 the average monthly income of Q and R is Rs. 6250 and average monthly income of P and R is Rs. 5200 then find the monthly income of P.
19. The average weight of 21 boys was recorded as 64kg. If the weight of the teacher was average increased by one kg. What was the teacher's weight.
20. The salaries of A, B, C are in the ratio 2:3:5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be the new ratio of their salaries.
21. Two friends P and Q started a business investing in the ratio of 5:6. R joined them after 6 months investing an amount equal to that of Q's. At the end of the year 20% profit was earned which was equal to Rs.98,000. What was the amount invested by R.
22. In a bag there are coins of 25p, 10p and 5p in the ratio of 1:2:3, if there are Rs.30 in all, how many 5p coins are there.
23. The sum of two numbers is 10 and their sum is 14.
    a. Fins the numbers and
    b. Find the product of two numbers.
24. What is mean by Blood Relation?
25. How many numbers between 11 and 90 are divisible by "7".

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KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	I	**Statistical Methods**	R20DSM – I	2020-21

Total No of Hours for Teaching - Learning	Instructional Hours for Week	Duration of Semester End Examination in Hours	Max Marks		Credits
			CIA	SEE	
30 Hours	2	2 Hours		50	3

Objectives

- The objective of this paper is to throw light on the role of statistics in different fields with special reference to business and economics.
- It gives the students to review good practice in presentation and the format most applicable to their own data.
- The measures of central tendency or averages reduce the data to a single value which is highly useful for making comparative studies.
- The measures of dispersion throw light on reliability of average and control of variability
- The concept of Correlation and Linear Regression deals with studying the linear relationship between two or more variables, which is needed to analyze the real life problems.
- The attributes gives an idea that how to deal with qualitative data.

Course Learning Outcomes

Students will acquire

1) Knowledge of Statistics and its scope and importance in various areas such as Medical, Engineering, Agricultural and Social Sciences etc.
2) knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion etc.
3) knowledge of other types of data reflecting quality characteristics including concepts of independence and association between two attributes,
4) insights into preliminary exploration of different types of data.
5) Knowledge of correlation, regression analysis, regression diagnostics, partial and multiple correlations.

Syllabus

UNIT-I

Curve fitting: Bi- variate data, Principle of least squares, fitting of degree polynomial. Fitting of straight line, Fitting of Second degree polynomial or parabola, Fitting of power curve and exponential curves.

Correlation: Meaning, Types of Correlation, Measures of Correlation: Scatter diagram, Karl Pearson's Coefficient of Correlation, Rank Correlation Coefficient (with and without ties), Bi-variate frequency distribution, correlation coefficient for bi-variate data and simple problems. Concept of multiple and partial correlation coefficients (three variables only) and properties

UNIT-II

Regression: Concept of Regression, Linear Regression: Regression lines, Regression coefficients and it's properties, Regressions lines for bi-variate data and simple problems. Correlation vs regression.

UNIT-III

Attributes : Notations, Class, Order of class frequencies, Ultimate class frequencies, Consistency of data, Conditions for consistency of data for 2 and 3 attributes only , Independence of attributes , Association of attributes and its measures, Relationship between association and colligation of attributes, Contingency table: Square contingency**,** Mean square contingency, Coefficient of mean square contingency, Tschuprow's coefficient of contingency.

Text Books:

1. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. BA/BSc I year statistics - descriptive statistics, probability distribution – Telugu Academy
3. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI

Reference books:

1. Willam Feller: Introduction to Probability theory and its applications. Volume –I, Wiley
2. Goon AM, Gupta MK, Das Gupta B : Fundamentals of Statistics , Vol-I, the World Press Pvt.Ltd., Kolakota.
3. Hoel P.G: Introduction to mathematical statistics, Asia Publishing house.
4. M. JaganMohan Rao and Papa Rao: A Text book of Statistics Paper-I.
5. Sanjay Arora and Bansi Lal: New Mathematical Statistics: Satya Prakashan , New Delhi

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
I B.Sc. (M.S.CS)	I	**Statistical Methods**	R20DSM – I	2020-21

Model Question Paper (w.e.f.: 2020-21)

Section – A

Answer any four questions 4 X 5 = 20M

1. Explain about Scatter Diagram
2. Explain Legenders Principal of Least square
3. Define Regression
4. Write the properties of regression
5. Derive angle between the two regression lines
6. Define Speramans Rank correlation coefficient
7. Explain Class and Class frequencies
8. Explain Yules coefficient of Association

Section - B

Answer the following 3 X 10 = 30M

9. (a) Fit a second degree parabola to the following data

X	1	2	3	4	5
Y	14	23	31	46	57

(OR)

(b) Find correlation coefficient for the following data

X	12	17	32	14	19	28
Y	14	17	23	17	19	22

10. (a)Derive the Regression equation of Y on X.

(OR)

(b) Find two regression lines for the following data

X	12	17	32	14	19	28
Y	14	17	23	17	19	22

13. (a)Define Independence of Attributes and Explain Criteria of Independence.

(OR)

(b) Given

$(ABC) = 225, (AB\gamma) = 148, (A\beta C) = 204, (A\beta\gamma) = 99,$

$(\alpha BC) = 125, (\alpha B\gamma) = 48, (\alpha\beta C) = 244, (\alpha\beta\gamma) = 121$

Find the remaining class frequencies

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)
Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	I	**Random Variables & Probability Distributions**	R20DDA101	2020-21

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
	Theory	Practical		CIA	SEE	
60 Hours	4	2	3 Hours	25	75	5+3

Objectives

- This paper deals with the situation where there is uncertainty and how to measure that uncertainty by defining the probability, random variable and mathematical expectation which are essential in all research areas.
- This paper gives an idea of using various standard theoretical distributions, their chief characteristics and applications in analyzing any data.

Course Learning Outcomes

Students will acquire

1) Ability to distinguish between random and non-random experiments,
2) Knowledge to conceptualize the probabilities of events including frequent and axiomatic approach. Simultaneously, they will learn the notion of conditional probability including the concept of Bayes' Theorem,
3) Knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments,
4) Knowledge of important discrete and continuous distributions such as Binomial, Poisson, Geometric, Negative Binomial and Hyper-geometric, normal, uniform, exponential, beta and gamma distributions,
(e) Acumen to apply standard discrete and continuous probability distributions to different situations.

Syllabus

UNIT-I

Introduction to Probability: Basic Concepts of Probability, random experiments, trial, outcome, sample space, event, mutually exclusive and exhaustive events, equally likely and favourable outcomes. Mathematical, Statistical, axiomatic definitions of probability. Conditional Probability and independence of events, Addition and multiplication theorems of probability for 2 and for n events. Boole's inequality and Baye's theorem and its applications in real life problems.

UNIT-II

Random variable: Definition of random variable, discrete and continuous random variables, functions of random variable. Probability mass function. Probability density function, Distribution function and its properties. For given pmf, pdf calculation of moments, coefficient of skewness and kurtosis. Bivariate random variable - meaning, joint, marginal and conditional Distributions, independence of random variables and simple problems.

UNIT- III

Mathematical expectation : Mathematical expectation of a random variable and function of a random variable. Moments and covariance using mathematical expectation with examples. Addition and Multiplication theorems on expectation. Definitions of M.G.F, C.G.F, P.G.F, C.F and their properties. Chebyshev and Cauchy - Schwartz inequalities.

UNIT-IV

Discrete Distributions: Binomial, Poisson, Negative Binomial, Geometric distributions: Definitions, means, variances, M.G.F, C.F, C.G.F, P.G.F, additive property if exists. Possion approximation to Binomial distribution. Hyper-geometric distribution: Defination, mean and variance.

UNIT - V

Continuous Distributions: Rectangular, Exponential, Gamma, Beta Distributions: mean , variance, M.G.F, C.G.F, C.F. **Normal Distribution**: Definition, Importance, Properties, M.G.F, CF, additive property.

Text Books:

1. V.K.Kapoor and S.C.Gupta: Fundamentals of Mathematical Statistics, Sultan Chand & Sons, New Delhi.
2. BA/BSc I year statistics - descriptive statistics, probability distribution - Telugu Academy
3. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI

Reference books:

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2. Goon AM, Gupta MK, Das Gupta B : Fundamentals of Statistics , Vol-I, the World Press Pvt.Ltd., Kolakota.
3. Hoel P.G: Introduction to mathematical statistics, Asia Publishing house.
4. M. JaganMohan Rao and Papa Rao: A Text book of Statistics Paper-I.
5. Sanjay Arora and Bansi Lal: New Mathematical Statistics: Satya Prakashan , New Delhi
6. Hogg Tanis Rao: Probability and Statistical Inference. 7^{th} edition. Pearson.

Practical

1. Fitting of Binomial distribution – Direct method.
2. Fitting of binomial distribution – Recurrence relation Method.
3. Fitting of Poisson distribution – Direct method.
4. Fitting of Poisson distribution - Recurrence relation Method.
5. Fitting of Negative Binomial distribution.
6. Fitting of Geometric distribution.
7. Fitting of Normal distribution – Areas method.
8. Fitting of Normal distribution – Ordinates method.
9. Fitting of Exponential distribution.

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)
Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Data Analytics	I	**Random Variables & Probability Distributions**	R20DDA101	2020-21

Model Question Paper (w.e.f.: 2020-21)

Section – A

Answer any five questions 5 X 5 = 25M

1. Define Random Experiment, favourable cases
2. Define Axiomatic Probability
3. Define Probability Mass Function and Probability Density function
4. Define marginal functions of X and Y
5. State and prove addition theorems of 2 events
6. State and prove Cauchy Schwartz Inequality
7. Define Geometric Distribution and Derive its mean
8. Define beta Distribution of first and Second kinds

Section - B

Answer the following 5 X 10 = 50M

9. (a) State and Prove Bayes theorem.

(OR)

(b) State and Prove Boole's Inequality .

10. (a) Define distribution function and state its properties.

(OR)

(b) Let X be a random variable with probability distribution

X :	0	1	2	3
P(x):	1/3	1/2	1/24	1/8

Find mean and variance.

11. (a) State and Prove Chebychev's Inequality.

(OR)

(b) Explain MGF along with its properties.

12. (a) Define Binomial distribution and derive its mean and variance.

(OR)

(b) Show that Gemometric distribution posses lack of memory property

13. (a) State and prove Mean, Median and mode coincide in Normal Distribution

(OR)

(b) Define Exponential distribution and its mean and Variance.

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KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department Of Computer Science & Applications

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
Diploma in advances in computer sciences/ Diploma in data analytics	**I**	**DATA ANALYTICS USING-R**	**DIP-CSC-102/ R20-DA-CSC101**	2020-2021

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
60 Hours	Theory	Practical	3 Hours	CIA	SEE	
	5	3		25	75	

Course Objectives:

Data Science is a fast-growing interdisciplinary field, focusing on the analysis of data to extract knowledge and insight. This course will introduce students to the collection. Preparation, analysis, modelling and visualization of data, covering both conceptual and practical issues. Examples and case studies from diverse fields will be presented, and hands-on use of statistical and data manipulation software will be included.

Course Outcomes:

- Recognize the various discipline that contribute to a successful data science effort.
- Understand the processes of data science identifying the problem to be solved, data collection, preparation, modelling, evaluation and visualization.
- Be aware of the challenges that arise in data sciences.
- Develop an appreciation of the many techniques for data modelling and mining.
- Be cognizant of ethical issues in many data science tasks.
- Be comfortable using commercial and open source tools such as the R language and its associated libraries for data analytics and visualization.

UNIT – I - INTRODUCTION:

Introducing to R Data Structures –Help functions in R –Vectors –Scalars –Declarations –recycling –Common Vector operations –Using all and any –Vectorized operations – NA and NULL values –Filtering –Vectorised if-then else –Vector Equality –Vector Element names

UNIT – II - MATRICES, ARRAYS AND LISTS:

Creating matrices –Matrix operations –Applying Functions to Matrix Rows and Columns –Adding and deleting rows and columns –Vector/Matrix Distinction – Avoiding Dimension Reduction –Higher Dimensional arrays –lists –Creating lists –General list operations –Accessing list components and values –applying functions to lists –recursive lists

UNIT – III - DATA FRAMES:

Creating Data Frames –Matrix-like operations in frames –Merging Data Frames – Applying functions to Data frames –Factors and Tables –factors and levels –Common functions used with factors –Working with tables -Other factors and table related functions -Control statements –Arithmetic and Boolean operators and values –Default values for arguments -Returning Boolean values

UNIT– IV

- R - CSV Files: Getting and Setting the Working Directory, Input as CSV File, Reading a CSV File, Analysing the CSV File, Writing into a CSV File
- R - Excel File: Install xlsx Package, Verify and Load the "xlsx" Package, Input as xlsx File, Reading the Excel File
- R - Binary Files: Writing the Binary File, Reading the Binary File
- R - Web Data: Input Data, Verify the File Download
- Mean: Applying NA Option, Applying Trim Option
- Median, Mode
- R - Linear Regression: Steps to Establish a Regression, lm() Function, predict() Function
- R - Multiple Regression: R - Logistic Regression: Create Regression Model
- R - Normal Distribution: dnorm(), pnorm(), qnorm(), rnorm()

BLUE PRINT

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
Diploma in advances in computer sciences/ Diploma in data analytics	I	**DATA ANALYTICS USING-R**	**DIP-CSC-102/ R20-DA-CSC101**	2020-2021

SECTION A (5*5=25 Marks)

- 5 Questions to be answered out of 8 Questions
- 1 Question must be given from each Unit

SECTION B (5*10=50 Marks)

- 2 Questions must be given from each Unit with an internal choice

Illustration of Model Question Paper

	Section A	Section B
UNIT I	1	2
UNIT II	2	2
UNIT III	2	2
UNIT IV	2	2
UNIT V	1	2
	8	10

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
Diploma in advances in computer sciences/ Diploma in data analytics	I	**DATA ANALYTICS USING-R**	**DIP-CSC-102/ R20-DA-CSC101**	2020-2021

MODEL PAPER

Section – A

Answer any five of the following 5*5=25 M

1. Write a procedure to create a function in R.
2. Explain about Vector.
3. Explain NA, NULL values
4. Explain help () function in r.
5. Write in details about matrices
6. Write about list.
7. Write a procedure to import packages.
8. Explain the use of DNORM (), PNORM () functions.

Section – B

Answer all of the following 5*10=50m

9. a) add a row and column to the matrix a=[1,2,3,4,5,6,7,8,9] with a vector [10,11,12].
   (Or)
   b) Explain vector and matrix in r?
10. a) Explain list in R with an example.
    (Or)
    b) Explain DATA FRAME in R with an example
11. a) Write the step by step procedure to read data from CSV file and writing into a CSV file.
    (Or)
    b) Write the step by step procedure to read data from EXCEL file and writing into a EXCEL file.
12. a) Write the step by step procedure to read data from BINARY FILE and writing into a BINARY FILE.
    (Or)
    b) Explain about Mean, Mode, and Median formula with an example.
13. a) Explain the steps to establish a Linear Regression with an example.
    (Or)
    b) Explain the steps to establish a Logistic Regression with an example.

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
Diploma in advances in computer sciences/ Diploma in data analytics	I	**DATA ANALYTICS USING-R**	**DIP-CSC-102/ R20-DA-CSC101**	2020-2021

(PRACTICAL)

1. R Data Frame: Create, Append, Select, Subset, Merging of data frames
2. Exporting data to Excel, CSV,SAS, Text File
3. Handling datasets
4. Mean, Median, Standard Deviation, Variance, Correlation, Covariance in R
5. Correlation in R:Pearson & Spearman with Matrix Example
6. T Test in R
7. Chi-Square Test in R
8. Prediction using linear regression and visualizing the regression graphically
9. Prediction using logistic regression and visualizing the regression graphically
10. Classification algorithms in R
11. Clustering algorithms in R
12. Scatter Plot in R using ggplot2
13. Boxplot in R
14. Barchart & Histogram in R

KAKARAPARTI BHAVANARAYANA COLLEGE (AUTONOMOUS)

DEPARTMENT OF ENGLISH

Programme	Semester	Title of The Course	Course Code	W.E.F
Diploma in Advances in Computer Science, Diploma in Data Analytics, Diploma in Drone Pilot, Diploma in Event management	**II**	**Soft Skills – II**	**R20DSS2**	**2020-21**

Total No of Hours for Teaching - Learning	Instructional Hours for Week	Duration of Semester End Examination in Hours	Max Marks		Credits
	Theory		CIA	SEE	
30	30	2 Hrs.	-	50	3

Learning Outcomes:

By the end of the course the learner will be able to:

- Understand the significance and essence of a wide range of soft skills.
- Learn how to apply soft skills in a wide range of routine social and professional settings.
- Learn how to employ soft skills to improve interpersonal relationships
- Learn how to employ soft skills to enhance employability and ensure workplace and career success.

I. UNIT

1.Positivity and Motivation: Developing Positive Thinking and Attitude; Driving out Negativity; Meaning and Theories of Motivation; Enhancing Motivation Levels.

II. UNIT

1. Group Discussion: Importance, Planning, Elements, Skills assessed; Effectively disagreeing, Initiating, Summarizing and Attaining the Objective.

2. Non-Verbal Communication: Importance and Elements; Body Language

III. UNIT

1.Time Management – Concept, Essentials, Tips.

2. **Personality Development** – Meaning, Nature, Features, Stages, Models; Learning Skills; Adaptability Skills.

IV. UNIT

1.Conflict Management: Conflict - Definition, Nature, Types and Causes; Methods of Conflict Resolution.

2. Stress Management: Stress - Definition, Nature, Types, Symptoms and Causes; Stress Analysis Models and Impact of Stress; Measurement and Management of Stress

V. UNIT

1.Leadership and Assertiveness Skills: A Good Leader; Leaders and Managers; Leadership Theories; Types of Leaders; Leadership Behaviour; Assertiveness Skills.

KAKARAPARTI BHAVANARAYANA COLLEGE (AUTONOMOUS)

Programme	Semester	Title of The Course	Course Code	W.E.F
Diploma in Advances in Computer Science, Diploma in Data Analytics, Diploma in Drone Pilot, Diploma in Event management	II	Soft Skills – II	R20DSS2	2020-21

MODEL QUESTION PAPER

Time: 2Hrs **Marks: 50**

I. Answer any Two questions from the following in 75 words each: **2X5=10M**

5. Define positive attitude and principles to develop positive attitude.
6. Discuss briefly some theories of Motivation.
7. Can you brief some meaningful steps that help in enhancing Motivation?
8. What are the reasons for Negative thinking? Mention some consequences of Negative Thinking?

II. Answer any Two questions from the following in 75 words each: **2X5=10M**

5. How does group discussion help in developing communication skills?
6. How is group discussion different from a debate?
7. What is Non-Verbal Communication? Importance of Nonverbal skills in day-today life.
8. Importance of Body language in Non -Verbal communication.

III. Answer any Two of the following in 75 words each: **2X5=10M**

1. How important is Time Management foe a Successful Career?
2. What are the essential factors that plays a crucial role in observing Time?
3. Define Learning skills and Adaptability skills.
4. Mention some features and models that helps in developing one's personality.

IV. Answer any Two of the following in 75 words each: **2X5=10M**

1. What are the methods that help us in resolving Conflict?
2. What are the Causes of Conflict? Mention some types of conflict.
3. How can we identify stress? Mention some types of Stress.
4. Suggest some strategies to Manage and Measure Stress.

V. Answer any Two of the following in 75 words each: **2X5=10M**

a. Is Manager a leader? What makes a Leader different from a Manager?
b. What makes a good leader? Can you explain some Theories of Leadership?
c. How does assertive skills play a role in making a leader?
d. How does one's behaviour affect a person in becoming an effective leader?

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department Of Mathematics

Programme	Semester:	Title of The Course	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**ANALYTICAL SKILLS-II**	**DAS2**	**2020 – 2021**

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
30 Hours	Theory		2 Hours		SEE	2
	2				50	

COURSE OBJECTIVES

- The aim of this course is to provide necessary information to Analytical Skills and their applications.
- To develop logical thinking and its application to computer science

COURSE OUTCOMES

- Understand the concept of Data Interpretation.
- Will be able to write an argument using logical notation and determine if the argument is or is not valid.
- Will be able to know Directions – Permutations and Combinations , Coding – Decoding and Puzzles,

UNIT -1: (12 hours) – Data Interpretation:

Introduction to tabulation; introduction to problems on tabulation; introduction to bar graphs; introduction to problems on bar graphs; introduction to pie charts.

UNIT -2: (12 hours) – Profit and Loss:

Introduction to cost price; introduction to selling price; introduction to profit; introduction gain %; introduction to loss; introduction to loss percent.

UNIT -3: (12 hours) – Distance-Speed-Time:

Introduction to speed; introduction to distance; introduction to time; introduction to change x km/hr; introduction to speed in km/hr.

UNIT -4: (12 hours) – Directions – Permutations and Combinations:

Introduction to directions; introduction to factorial notation; introduction to permutations; introduction to number of permutations; introduction to combinations; introduction to number of combinations.

UNIT -5: (12 hours) – Coding – Decoding and Puzzles:

Introduction to letter coding; introduction to direct letter coding; introduction to number coding; introduction to symbol coding; introduction to matrix coding.

PRESCRIBED BOOK : Text book of Quantitative Aptitude by R S Agarwal

BLUE PRINT

UNIT	SAQ	LAQ
I	3	2
II	3	2
III	3	2
IV	3	2
V	3	2

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department of Mathematics

Programme	Semester:	Title of The Course	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**ANALYTICAL SKILLS-II**	**DAS2**	**2020 – 2021**

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
30 Hours	Theory		2 Hours		SEE	2
	2				50	

MODEL PAPER

Section A

I. Answer any ten of the of following questions: 10 x2 =20m

1. Find cp when sp=Rs. 40.60 and Gain=16%.
2. If a ratio is purchased for Rs.490 and sold for Rs.165.50 find the loss percent.
3. A chair is bought for Rs.460/- and sold at a gain of 15% find the selling price.
4. By selling an article for Rs.100, a man gains Rs.15 find the gain percent.
5. A train travels 450km's in 7hrs and another train 740km's in 10hrs. Find the average speed of the train.
6. A 250mts long train crosses a pole in 15sec. What is the speed of the train in km/hr.
7. The speed of train is 90km/hr. What is the distance covered by it in 10mins.
8. A car moves at the speed of 80kn/hr, What is the speed of the car is mt/sec.
9. Evaluate $\frac{30!}{28!}$
10. How many words can be formed by using all letters of the word "BIHAR".
11. Find the value of

a. 10_{c_3}

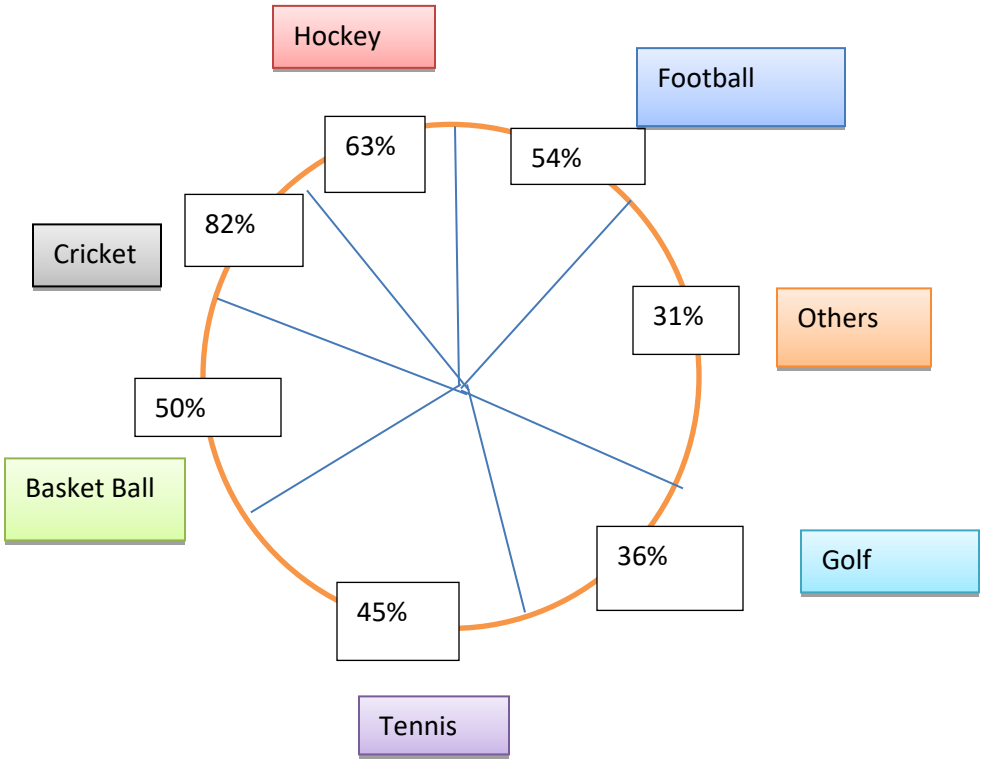
b. $100_{c_{98}}$

12. In how many ways can a cricket team eleven be choosen out of batch of 15 players.
13. In how many ways can the letters of the word"APPLE"
14. If HEALTH is written as GSKZDG then how will NORTH be written in that code?
15. In a certain code, TEACHER is written as VGCEJGT. How is CHILDREN written in that code.

Section B

II. Answer any five of the following questions: 5 x 6 =30

16. A book was sold for Rs.27.50 with a profit of 10%. If it were sold for Rs.25.75 then what would have been the percentage of profit (or) loss.
17. A man gain 20% by selling an article for a certain price. If he sells it at the double the price. What is the percentage of profit.
18. An article is sold at a certain price. By selling it at 2/3 of that prices one loses 10%. Find the gain percent at original price.
19. Explain profit and loss.
20. How many minutes does Ramana takes to cover a distance of 400mts if he runs at a speed of 20km/hr.
21. How many words can be formed from the letters of the word "DIRECTPR" so that the vowels come together.
22. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that bat least one boy should be there.
23. Explain permutation and combination.
24. In a certain code EAT is written as 318 and CHAIR is written as 24156. What will TEACHER be written as?
25. The circle graph drawn here shows the spendings of a country on various sports during a particular year. Study the carefully and answer the questions given below.



i. How much percent of total spending is spent on Tennis?
ii. How much percent more is spent on Hockey than on Golf?
iii. How much percent is less is spent on Football than that on cricket?
iv. If the total amount spent on sports during the year was Rs.2 crores, the amount spent on cricket and Hockey together was?
v. If the total amount spent on sports during the year be Rs.1,80,00,000 the amount of spent on Basketball exceeds that on Tennis by?

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KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**Sampling Techniques & Forecasting methods**	**R20DSF – II**	**2020-21**

Total No of Hours for Teaching - Learning	Instructional Hours for Week	Duration of Semester End Examination in Hours	Max Marks		Credits
			CIA	SEE	
30 Hours	2	2 Hours		50	3

Objectives

- The sampling techniques deals with the ways and methods that should be used to draw samples to obtain the optimum results, i.e., the maximum information about the characteristics of the population with the available sources at our disposal in terms of time, money and manpower to obtain the best possible estimates of the population parameters
- This paper throw light on understanding the variability between group and within group through Analysis of Variance

Course Learning Outcomes

The students shall get

1) Introduced to various statistical sampling schemes such as simple, stratified and systematic sampling.
2) an idea of conducting the sample surveys and selecting appropriate sampling techniques,
3) Knowledge about comparing various sampling techniques.
4) carry out one way and two way Analysis of Variance,
5) understand the basic terms used in design of experiments,
6) use appropriate experimental designs to analyze the experimental data.

UNIT I

Time series and its components with illustrations, additive, multiplicative and mixed models. Determination of trend by Least squares method, moving average methods. Determination of seasonal indices by Ratio to trend method, Ratio to moving average method and Link relative methods

UNIT II

Vital statistics: Introduction, Definition and uses of vital statistics. Sources of vital statistics: Registration method and Census method, Rates and ratios, Mortality rates: Crude death rate, Age specific death rate, Standardized death rates (Both direct and indirect methods).

UNIT III

Fertility rates: Crude birth rate, Age specific fertility rate, General fertility rate, and Total fertility rate. Measurement of population growth: Crude rate of natural increase, Pearle's vital index, Gross reproduction rate and Net reproduction rate and Notation of population projection.

Text Books:

1. Telugu Academy BA/BSc III year paper - III Statistics - applied statistics - Telugu academy
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI.

Reference Books:
Fundamentals of applied statistics : VK Kapoor and SC Gupta.

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**Sampling Techniques & Forecasting methods**	**R20DSF – II**	**2020-21**

Model Question Paper (w.e.f.: 2020-21)

Section – A

Answer any four questions 4 X 5 = 20 M

1. Explain Models of Time Series
2. Explain Moving averages method
3. Explain Sources of Vital Statistics
4. Explain Rates and Ratios
5. Explain Pearls vital index
6. Define Specific fertility rate
7. Define General Fertility Rate
8. Explain National income

Section - B

Answer the following 3 X 10 = 30M

9. a) Explain Mortality rates

   OR

   b) Explain Complete life table and its construction

10. a) Explain Link Relatives method

    OR

    b) Explain Ratio to trend method

11. a) Explain the measures of fertility rates

    OR

    b) Explain GRR and NRR

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)
Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**INFERENTIAL STATISTICS**	**R20DDA201**	**2020-21**

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
	Theory	Practical		CIA	SEE	
60 Hours	4	2	3 Hours	25	75	5+3

Objectives

- This paper deals with standard sampling distributions like Chi Square, t and F and their characteristics and applications.
- This paper deals with the different techniques of point estimation for estimating the parameter values of population and interval estimation for population parameters.
- In this paper, various topics of Inferential Statistics such as interval estimation, Testing of Hypothesis, large sample tests (Z-test), small sample tests (t-test, F-test, chi-square test) and non-parametric tests are dealt with. These techniques play an important role in many fields like pharmaceutical, agricultural, medical etc.

Course Learning Outcomes

The students will acquire

1) Concept of law large numbers and their uses
2) Concept of central limit theorem and its uses in statistics
3) concept of random sample from a distribution, sampling distribution of a statistic, standard error of important estimates such as mean and proportions,
4) knowledge about important inferential aspects such as point estimation, test of hypotheses and associated concepts,
5) knowledge about inferences from Binomial, Poisson and Normal distributions as illustrations,
6) concept about non-parametric method and some important non-parametric tests.

UNIT-I

Concepts: Population, Sample, Parameter, statistic, Sampling distribution, Standard error. Convergence in probability and convergence in distribution, law of large numbers and central limit theorem (statements only). Student's t- distribution, F – Distribution, χ^2- Distribution: Definitions, properties and their applications.

UNIT-II

Theory of estimation: Estimation of a parameter, criteria of a good estimator – unbiasedness, consistency, efficiency, &sufficiency and. Statement of Neyman's factorization theorem. Estimation of parameters by the method of moments and maximum likelihood (M.L), properties of MLE's. Binomial, Poisson &Normal Population parameters estimate by MLE method. Confidence Intervals.

Testing of Hypothesis: Concepts of statistical hypotheses, null and alternative hypothesis, critical region, two types of errors, level of significance and power of a test. One and two tailed tests.

UNIT – III

Large sample Tests: large sample test for single mean and difference of two means, confidence intervals for mean(s). Large sample test for single proportion, difference of proportions. standard deviation(s) and correlation coefficient(s**).**

Small Sample tests: t-test for single mean, difference of means and paired t-test. χ2-test for goodness of fit and independence of attributes. F-test for equality of variances.

UNIT – IV

Non-parametric tests- their advantages and disadvantages, comparison with parametric tests. Measurement scale- nominal, ordinal, interval and ratio. One sample runs test, sign test and Wilcoxon- signed rank tests (single and paired samples). Two independent sample tests: Median test, Wilcoxon – Mann-Whitney U test, Wald Wolfowitz's runs test**.**

UNIT – V

Analysis of variance : Analysis of variance(ANOVA) –Definition and assumptions. One-way with equal and unequal classification, two way classification.

TEXT BOOKS

1. BA/BSc II year statistics - statistical methods and inference Telugu Academy
2. K.V.S. Sarma: Statistics Made Simple: Do it yourself on PC. PHI.

REFERENCE BOOKS:

1. Fundamentals of Mathematics statistics : VK Kapoor and SC Guptha.
2. Outlines of statistics, Vol II : Goon Guptha, M.K.Guptha, Das Guptha B.
3. Introduction to Mathematical Statistics : Hoel P.G.
4. Hogg Tanis Rao: Probability and Statistical Inference. 7th edition. Pearson.

Practical's:

1. Large sample test for Single mean
2. Large sample test for difference of means
3. Large sample test for single proportion
4. Large sample test for difference of proportions
5. Large sample test for difference of standard deviations
6. Large sample test for correlation coefficient
7. Small sample test for single mean
8. Small sample test for difference of means
9. Small sample test for correlation coefficient
10. Paired t-test(paired samples).
11. Small sample test for single variance(χ 2 - test)
12. Small sample test for difference of variances(F-test)
13. χ 2 - test for goodness of fit and independence of attributes
14. Nonparametric tests for single sample(run test, sign test and Wilcoxon signed rank test)
15. Nonparametric tests for related samples (sign test and Wilcoxon signed rank test)
16. Nonparametric tests for two independent samples (Median test, Wilcoxon – Mann- Whitney - U test, Wald - Wolfowitz' s runs test)

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)
Department of Mathematics & Statistics

Class:	Semester:	Title of The Paper:	Course Code:	W.E.F
Diploma in Data Analytics	**II**	**INFERENTIAL STATISTICS**	**R20DDA201**	**2020-21**

Model Question Paper (w.e.f.: 2020-21)

Section – A

Answer any five questions 5 X 5 = 25M

1. Define t – distribution and explain its properties
2. State Neymann Factorization theorem
3. Define Critical Region
4. Explain test for single Proportion
5. Explain t test for single mean
6. Explain Run test for one sample
7. Define NP tests along with its advantages and disadvantages
8. Define Anova along with its Assumptions

Section - B

Answer the following 5 X 10 = 50M

9. a) Define χ^2- Distribution along with its Applications and Properties

   OR

   b) Define F - Distribution along with its Applications and Properties
10. a) Explain Criteria of Good Estimator

    OR

    b) Explain the Method of MLE
11. a) Explain large sample test for two means

    OR

    b) Explain χ2-test forgoodness of fit
12. a) Explain Median test

    OR

    b) Explain Wilcoxon – Mann-Whitney U test
13. a) Explain Anova one way classification

    OR

    b) Explain Anova two way classification.

KAKARAPARTI BHAVANARAYANA COLLEGE (Autonomous)

Department Of Computer Science & Applications

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
DIPLOMA IN ADVANCES IN COMPUTER SCIENCES/ DRONE PILOT/ DATA ANALYTICS	II	**PYTHON PROGRAMMING**	**DIP-CSC-201/R20-DRONE-CSC201/R20-DA-CSC201**	2020-2021

Total No of Hours for Teaching - Learning	Instructional Hours for Week		Duration of Semester End Examination in Hours	Max Marks		Credits
60 Hours	Theory	Practical	3 Hours	CIA	SEE	
	5	3		25	75	

Course Objectives:

The objective of the course is to introduce the concepts of Python Programming.

Course Outcomes:

- To understand the Basics of python language and Python IDLE.
- To gain problem solving capability.
- To Install and run python Interpreter.
- To gain knowledge about different data types and operators.
- To use and explore control structures and loop constructs in python.
- To understand and create built in and user defined data types.
- To identify the various form of input and output statements and its purposes
- To import and create arrays using array module.
- To insert predefined functions and operations on array.
- To understand the basics of numpy module and importing the functions from numpy module.
- To gain knowledge about multidimensional array and its link with numpy module.
- To understand and use the concept declaring functions and returning results from a function.
- To explore the use of Lambdas, List, Tuples.

SYLLABUS

UNIT-I

- Introduction to Python: Python, Features of Python, Python virtual Machine (PVM), Memory Management in Python, Comparisons between C and Python, Comparison between Java and Python
- Writing Our First Python Program: Installing Python for Windows, Writing our First Python Program, Executing a Python Program, Using Command line window, using IDLE Graphics Window, Running Directly from System Prompt.

UNIT-II

- Data types in Python: Comments in Pythons, Built-in data types, none type, numeric type, bool Data type, Sequences, Sets, Literals. User-Defined Data types, Constraints in python, Identifiers and reserved words, Naming Conventions in python, Arithmetic Operators, Assignment operators, unary Minus, Relational operators, Logical Operators, Boolean Operators, Bitwise Operators, Membership Operators, Identity Operators, mathematical functions, using IDLE window, Using command line window.

UNIT-III

- Input and Output: Output Statements, Input Statements , Command line arguments, Parsing command line arguments, Control statements, The If statement, if-else statement, is elif else statement , while loop, for loop, infinite loop, nested Loop, else Suite, break, continue statements. Pass statements.

UNIT-IV

- Arrays in Python: Array, Advantages of array, Creating array, importing the array module, types of arrays, Creating arrays using array(),Creating Arrays using line space, creating arrays using zeros() and ones() Functions, Mathematical operations in array, Viewing and copying arrays, Dimensions of arrays, Working with multidimensional arrays, matrices ,creating strings, Length of a string.

UNIT-V

- Lists and Tuples: Defining a function, calling a function, Returning Results from a function, pass by object References, Recursive Functions, anonymous functions or Lambdas, Lists, Creating Lists using range() Function, Updating the elements of a lists, Concatenation of two Lists.

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
DIPLOMA IN ADVANCES IN COMPUTER SCIENCES/ DRONE PILOT/ DATA ANALYTICS	II	**PYTHON PROGRAMMING**	**DIP-CSC-201/R20-DRONE-CSC201/R20-DA-CSC201**	2020-2021

Model Question paper

SECTION-A

Answer any five of the following question 5 x 5 = 25M

1.Explain Python virtual Machine(PVM)?
2.Explain Built in Data Types in Python?
3.Explain Input and Output statements in Python with simple Example Program?
4.Explain Advantages of Array?
5.Explain Recursive Functions in Python?
6.Write the difference between Java and Python?
7. Explain Bitwise Operators in Python?
8.write a Python program for Swap of Two Numbers?

SECTION-B

Answer ALL of the following questions 5 x 10 = 50M

9. A) Explain features Of Python.
(OR)
B)Explain procedure to Executing a Python Program.
10. A) Explain Operators in Python.
(OR)
B) Explain Looping Statements in Python
11. A) Explain Command Line Arguments in Python
(OR)
B)Explain Looping statements in Python
12.A) Write a program to read and print array in python?
(OR)
B)Explain Different Types of Arrays?

13.A) Define a function? Explain Functions calling, returning, Results from functions
(OR)
B) Define List. Explain Procedure to create list with Example

BLUE PRINT

Class:	Semester	Title of The Paper:	Paper Code:	W.E.F
DIPLOMA IN ADVANCES IN COMPUTER SCIENCES/ DRONE PILOT/ DATA ANALYTICS	II	PYTHON PROGRAMMING	DIP-CSC-201/R20-DRONE-CSC201/R20-DA-CSC201	2020-2021

SECTION A (5*5=25 Marks)

- 5 Questions to be answered out of 8 Questions
- 1 Question must be given from each Unit

SECTION B (5*10=50 Marks)

- 2 Questions must be given from each Unit with an internal choice

Illustration of Model Question Paper

	Section A	Section B
UNIT I	1	2
UNIT II	2	2
UNIT III	2	2
UNIT IV	2	2
UNIT V	1	2
	8	10