ADITYA DEGREE & PG COLLEGE (A)

Autonomous and NAAC Accredited with A++ Grade (3.66/4 CGPA)

KAKINADA

Department of Computer Applications

B.C.A (Data Science)

I SEMESTER				
S.No.		**Name of the Course**	**Hr**	**Credits**
1	**Major**	Fundamentals of Commerce	3+2	4
2		Business Organization	3+2	4
3	**Language**	English	4	3
4		Telugu/Hindi	4	3
5	**Multi.Dis**	Introduction to Social Work	2	2
6	**Skill Enhancement courses**	Analytical Skills	2	2
7		Communication Skills	2	2
		Total	**24**	**20**
II Semester				
1	**Major**	Introduction to Data Science & R Language	3	3
		Introduction to Data Science & R Language Lab	2	1
2		Data Analytics using Excel	3	3
		Data Analytics using Excel Lab	2	1
3	**Minor**	Problem Solving using C - (T)	3	3
		Problem Solving using C- (P)	2	1
4	**Language**	English	4	3
5		Telugu/Hindi	4	3
6	**Skill Enhancement courses**	Digital Literacy	2	2
7		Business Writing	2	2
		Total	**27**	**22**

ADITYA DEGREE & PG COLLEGE (A)

Autonomous and NAAC Accredited with A++ Grade (3.66/4 CGPA)

KAKINADA

Department of Computer Applications

B.C.A (Honours)

I SEMESTER				
S.No.		**Name of the Course**	**Hr**	**Credits**
1	**Major**	Fundamentals of Commerce	3+2	4
2		Business Organization	3+2	4
3	**Language**	English	4	3
4		Telugu/Hindi	4	3
5	**Multi.Dis**	Introduction to Social Work	2	2
6	**Skill Enhancement courses**	Analytical Skills	2	2
7		Communication Skills	2	2
		Total	**24**	**20**

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

Department of Computer Applications

B.C.A.(Data Science) SINGLE MAJOR
(SYLLABUS-CURRICULUM)
SEMESTER-I

Semester	Course Number	Course Name	No. of Hrs/week	No.of Credits
Semester I	1	Fundamentals of Commerce	5	4
	2	Business Organization	5	4

COURSE 1: FUNDAMENTALS OF COMMERCE

Theory Credits: 4 5 hrs/week

Learning Objectives:

- The objective of this paper is to help students to acquire conceptual knowledge of the Commerce, Economy and Role of Commerce in Economic Development.
- To acquire Knowledge on Accounting and Taxation.

Learning Outcomes: At the end of the course, the student will able to identify the role commerce in Economic Development and Societal Development. Equip with the knowledge of imports and exports and Balance of Payments. Develop the skill of accounting and accounting principles. They acquire knowledge on micro and micro economics and factors determine demand and supply. An idea of Indian Tax system and various taxes levied on in India. They will acquire skills on web design and DATA SCIENCE.

UNIT 1: Introduction: Definition of Commerce – Role of Commerce in Economic Development - Role Commerce in Societal Development. Imports and Exports, Balance of Payments. World Trade Organization.

UNIT 2: Economic Theory: Macro Economics – Meaning, Definition, Measurements of National Income, Concepts of National Income. Micro Economics – Demand and Supply. Elasticity of Demand and Supply. Classification of Markets -Perfect Competition – Characteristics – Equilibrium Price, Marginal Utility. .

UNIT 3: Accounting Principles: Meaning and Objectives Accounting, Accounting Cycle - Branches of Accounting - Financial Accounting, Cost Accounting, Management Accounting. Concepts and Conventions of Accounting – GAAP.

UNIT 4: Taxation: Meaning of Tax, Taxation - Types of Tax- Income Tax, Corporate Taxation, GST, Customs & Exercise. Differences between Direct and Indirect Tax –

Objectives of Tax concerned authorities – Central Board of Direct Taxes (CBDT) and Central Board of Excise and Customs (CBIC).

UNIT 5: Computer Essentials: Web Design - Word Press Basics, Developing a Simple Website. DATA SCIENCE - Social Media Marketing, Content Marketing, Search Engine Optimization (SEO), E-mail Marketing. Data Analytics- Prediction of customer behavior, customized suggestions.

Lab Exercise: Provide wide publicity for your product over social media and e-mail. Estimate the customer behavior and provide necessary suggestions regarding the pr

- Build a sample website to display product information.
- Provide wide publicity for your product over social media and e-mail
- Estimate the customer behavior and provide necessary suggestions regarding the products of his interest.

Activities:

- Assignment on GAAP
- Group Activates on Problem solving.
- Collect date and report the role of Commerce in Economic Development.
- Analyze the demand and supply of a product and make a scheduled based on your Analysis, problems on elasticity of demand.
- Identify the Tax and distinguish between Direct Tax and Indirect Tax
- Assignments and students seminars on Demand function and demand curves
- Quiz Programs
- Assignment on different types of taxes which generate revenue to the Government of India.
- Invited lectures on GST and Taxation system
- Problem Solving Exercises on current economy situation.
- Co-operative learning on Accounting Principles.
- Group Discussions on problems relating to topics covered by syllabus
- Examinations (Scheduled and surprise tests)
- Any similar activities with imaginative thinking beyond the prescribed syllabus

Reference Books:

7. S.P. Jain & K.L Narang, Accountancy - I Kalyani Publishers.
8. R.L. Gupta & V.K. Gupta, Principles and Practice of Accounting, Sultan Chand
9. Business Economics -S.Sankaran, Margham Publications, Chennai.
10. Business Economics - Kalyani Publications.
11. Dr. Vinod K. Singhania: Direct Taxes – Law and Practice, Taxmann Publications.
12. Dr. Mehrotra and Dr. Goyal: Direct Taxes – Law and Practice, SahityaBhavan publications

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

B.C.A.(Data Science) Computer Applications
SEMESTER-I
COURSE 1: FUNDAMENTALS OF COMMERCE

Hours/Week: 5 **Credits: 4**

Course – I & II Model Paper Time:3Hrs (70 Marks)

SECTION A (Multiple Choice Questions) ***30 x 1 = 30 M***

30 Multiple Choice Questions (Each Unit 6 Questions)

SECTION B (Fill in the blanks) ***10 x 1 = 10 M***

10 Fill in the Blanks (Each Unit 2 Questions)

SECTION C (Very short answer questions) ***10 x 1 = 10 M***

10 Very short answer questions (Each Unit 2 Questions)

SECTION D (Matching) (From 5 Units) ***2 x 5 = 10 M***

1

A
B
C
D
E

2

A
B
C
D

E

SECTION E (True or False) ***10 x 1 = 10 M***

10 True or False (Each Unit 2 Questions)

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

B.C.A.(Data Science) Computer Applications

Single Major : SEMESTER-I

COURSE – 1 FUNDAMENTALS OF COMMERCE

Time:3hrs **MAX MARKS: 70 M**

IV Multiple Choice Questions **3x10=30M**

1. Commerce is concerned with _____ __.
a. Production of goods.
b. Transportation of goods.
c. Buying and selling of goods and services.
d. Advertising of goods.

2. Which of the following in not a function of commerce?
a. Hindrance of Time.
b. Hindrance of place.
c. Hindrance of finance.
d. Hindrance of knowledge.

3. The World Trade Organization (WTO) was established in?
a. 1985
b. 1995
c. 2005
d. 2015

4. Aids to trade are like.
a. Middlemen
b. Obstacles.
c. Helpers.
d. Barriers.

5. The main objective of commerce is to:
a. Make a profit.
b. Satisfy consumer needs.
C. Reduce competition
d. Control prices.

6. Which aid to trade ensures that goods are stored safely until they are ready to be sold?
a. Transportation.
b. Warehousing.
c. Packaging.
d. Insurance.

7. Microeconomics deals with the study of economic entities:
a. Aggregate
b. Individual.

c. Macro.
d. Socio.

8. Alfred Marshall introduced approach of_____ utility.
a. Cardinal
b. Ordinal
c. Form
d. Time

9 _____is the base of demand.
a. Price
b. Income
c. Utility
d. Quality

10. As per law of demand, demand and price of good are _____ related.
a. Positively
b. Negatively
c. Inversely
d. ot

11. When the demand is perfectly is elastic, the demand curve is?
a. Steeper.
b. Linear.
c. Horizontal.
d. Vertical.
12. Cross elasticity demand is_____ for unrelated goods.
a. Positive
b. Negative
c. Zero
d. Greater than one

13. The limitations of financial accounting includes its inability to:
a. Calculate total manufacturing costs
b. Report only historical data
c. Comply with tax regulations
d. Record non-monetary transactions

14. Financial accounting is primarily concerned with:
a. Internal decision-making
b. Measuring and recording business transactions
c. Predicting future market trends
d. Evaluating employee performance

15. Cost accounting is primarily concerned with
(a) Preparing financial statements for external stakeholders
(b) Evaluating the overall performance of a company
(C) Recording all expenses incurred by a business
(d) Determining the cost of production of goods or services

16. Management accounting focuses on providing information to:
(a) Tax authorities for compliance purposes
(b) External investors and creditors
(c) Internal management for decision-making
(d) Auditors for financial statement verification

17. Accounting concepts and conventions are guidelines that:
(a) Ensure compliance with local laws and regulations
(b) Define the ethical behavior of accountants
(c) Govern the measurement and presentation of financial data
(d) Determine the salary structure of accounting professionals

18. GAAP stands for
(a) Generally Acknowledged Accounting Procedures
(b) Generally Accepted Auditing Principles
(c) Generally Accepted Accounting Policies
(d) Generally Accepted Accounting Principles

19. What is the primary objective of taxation?
(a) Reducing income inequality
(b) Promoting economic growth
(c) Providing public goods and services
(d) All of the above

20. Which tax is levied on the income earned by individuals and businesses?
(a) Goods and Services Tax (GST)
(b) Income Tax
(c) Corporate Tax
(d) Excise Tax

21. What type of tax is levied on the profits earned by corporations?
(a) Excise Tax
(b) Sales Tax
(c) Corporate Tax
(d) Property Tax

22. GST is a
(a) Direct Tax
(b) Indirect Tax
(c) Both Direct and Indirect Tax
(d) None of the above

23. Customs duties are levied on
(a) Imported goods
(b) Exported goods
(c) Domestic goods
(d) All of the above

24. Which authority is responsible for the administration of indirect taxes in India?
(a) CBDT

(b) CBIC
(c) SEBI
(d) RBI
25. What is WordPress?
(a) A popular web hosting service
(b) A content management system (CMS)
(c) A domain registrar
(d) An online graphic design tool

26. Which of the following is NOT a component of web design?
(a) HTML
(b) CSS
(c) JavaScript
(d) PHP

27. Social media Marketing primarily focuses on:
(a) Improving website design
(b) Ranking higher in search engine results
(c) Increasing organic traffic
(d) Promoting products and services on social media platforms

28. Which marketing strategy aims to attract and retain customers through creating valuable and relevant content?
(a) Social Media Marketing
(b) Search Engine Optimization (SEO)
(c) Content Marketing
(d) E-mail Marketing

29. What is the main purpose of Search Engine Optimization (SEO)?
(a) Paid promotion of websites on search engines
(b) Improving the visual appeal of a website
(c) Enhancing user experience on a website
(d) Increasing website visibility and organic traffic through search engines

30. Which of the following is a form of direct marketing that involves sending commercial messages to a group of people via email?
(a) Social Media Marketing
(b) Content Marketing
(c) Search Engine Optimization (SEO)
(d) E-mail Marketing

SECTION – B

V Fill in the Blanks 10x1=10M

31. __ _____is a trade aid designed to stimulate and support a country's exports.
32. Trade surplus occurs when a country's total _____ exceed its total imports.
33. The recording of financial transactions in chronological order is known as __ _.
34. As per law of demand, demand and price of goods are _____ related.
35. The first step in the accounting cycle is the _____ of financial transactions.
36. A ledger is called a book of_____

37. Excises duty is a tax on specific goods at the point of_____
38. The total of Sales Book is posted to _____ Ledger account.
39. Data cleaning involves cleaning and pre-processing data to ensure_____
40. IP addresses are identified by_____

SECTION – C

VI Answer the following Short Questions **10x1=10M**

41. What is balance of payments?
42. Define World Trade Organization?
43. What is Macro Economics?
44. What is the primary purpose of financial accounting?
45. What does GDP stands for?
46. What is the primary goal of GAAP?
47. What is the primary purpose of tax?
48. What does CBDT stand for?
49. What is the primary goal of email marketing?
50. What is the primary focus of content marketing?

SECTION – D

II **Match the following**
10x1=10M

51. Transparency	[ ]	a. Datasets into a unified format
52. MFN	[ ]	b. Search Engine Optimization
53. Monopoly	[ ]	c. Indirect tax
54. GNI	[ ]	d.Transfer of assets through inheritance
55. GAAP	[ ]	e. Most Favored Nation
56. Historical cost	[ ]	f. Provide access to trade policies
57. Inheritance tax	[ ]	g. Generally Accepted Accounting Principle
58. Transport consumer	[ ]	h. Single seller
59. SEO	[ ]	i. Original acquisition cost
60. Data integration	[ ]	j. Gross National Income

SECTION – E

III **True (or) False** **10x1=10M**

61. Profit motive is a significant aspect of commerce.
62. Commerce discourages cultural exchange and diversity.
63. Micro Economics is also called as Price Theory
64. Journal is a ledger account.
65. A Cheque is a kind of bill of exchange
66. GAAP promotes reliability in financial reporting
67. Indirect taxes are collected directly from tax payers by government authorities
68. Data analytics helps business make informed decisions by analyzing customer data
69. Understanding customer demographics is essentials for predicting customer behavior.
70. Video marketing is not an engaging or shareable from of content

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

B.C.A.(Data Science) Computer Applications

SEMESTER-I

COURSE 1: FUNDAMENTALS OF COMMERCE

Hours/Week: 5 **Credits: 4**

QUESTION PAPER TAXONOMY										
Level of Bloom's Taxonomy	Type of Question & m Assigned									
	MCQs		FIB		VSQ		MC		T/F	
	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE
Remembering	3 m	10 m								
Understanding	3 m	10 m								
Applying	4 m	10 m								
Analyzing					5 m	10 m				
Evaluating							5 m	10 m	5 m	10 m
Creating			5 m	10 m						

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B.C.A.(Data Science) Computer Applications
SEMESTER-I

COURSE 2: BUSINESS ORGANIZATION

Theory Credits: 4 5 hrs/week

Learning Objectives:

- The course aims to acquire conceptual knowledge of business, formation various business organizations.
- To provide the knowledge on deciding plant location, plan layout and business combinations.

Learning outcomes: After completing this course a student will have:

- Ability to understand the concept of Business Organization along with the basic laws and norms of Business Organization.
- The ability to understand the terminologies associated with the field of Business Organization along with their relevance and to identify the appropriate types and functioning of Business Organization for solving different problems.
- The application of Business Organization principles to solve business and industry related problems and to understand the concept of Sole Proprietorship, Partnership and Joint Stock Company etc

UNIT 1: Business: Concept, Meaning, Features, Stages of development of business and importance of business. Classification of Business Activities. Meaning, Characteristics, Importance and Objectives of Business Organization. Difference between Industry & Commerce and Business & Profession, Modern Business and their Characteristics.

UNIT 2: Promotion of Business: Considerations in Establishing New Business. Qualities of a Successful Businessman. Forms of Business Organization - Sole Proprietorship, Partnership, Joint Stock Companies & Co-operatives and their Characteristics, relative merits and demerits, Difference between Private and Public Company, Concept of One Person Company.

UNIT 3: Plant Location and Layout: Meaning, Importance, Factors affecting Plant Location. Plant Layout - Meaning, Objectives, Importance, Types of Layouts. Factors affecting Layout. Size of Business Unit - Criteria for Measuring the Size and Factors affecting the Size. Optimum Size and factors determining the Optimum Size.

UNIT 4: Business Combination: Meaning, Characteristics, Objectives, Causes, Forms and Kinds of Business Combination. Rationalization: Meaning, Characteristics, Objectives, Principles, Merits and demerits, Difference between Rationalization and Nationalization.

UNIT 5: Computer Essentials: Milestones of Computer Evolution – Computer, Block diagram, generations of computer. Internet Basics - Internet, history, Internet Service

Providers Types of Networks, IP, Domain Name Services, applications. Ethical and Social Implications - Network and security concepts- Information Assurance Fundamentals, Cryptography - Symmetric and Asymmetric, Malware, Firewalls, Fraud Techniques, privacy and data protection

Activities:

- Assignment on business organizations and modern business
- Group Discussion on factors that influence plan location
- Seminars on different topics related to Business organization
- Case study could be given to present business plan of students' choice.
- Identifying the attributes of network (Topology, service provider, IP address and bandwidth of your college network) and prepare a report covering network architecture. Identify the types of malwares and required firewalls to provide security.
- Latest Fraud techniques used by hackers.

Reference Books:

8. Gupta, C.B., "Business Organisation", Mayur Publiction, (2014).
9. Singh, B.P., Chhabra, T.N., "An Introduction to Business Organisation & Management", Kitab Mahal, (2014).
10. Sherlekar, S.A. &Sherlekar, V.S, "Modern Business Organization & Management Systems Approach Mumbai", Himalaya Publishing House, (2000).
11. Bhusan Y. K., "Business Organization", Sultan Chand & Sons.
12. Prakash, Jagdish, "Business Organistaton and Management", Kitab Mahal Publishers (Hindi and English)
13. Fundamentals of Computers by V. Raja Raman
14. Cyber Security Essentials by James Graham, Richard Howard, Ryan Olson

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

B.C.A.(Data Science) Computer Applications
I SEMESTER

COURSE 2 : BUSINESS ORGANIZATION

Hours/Week: 5 **Credits: 4**

Course – 2 Model Paper Time:3Hrs (70 Marks)

SECTION A (Multiple Choice Questions) ***30 x 1 = 30 M***

30 Multiple Choice Questions (Each Unit 6 Questions)

SECTION B (Fill in the blanks) ***10 x 1 = 10 M***

10 Fill in the Blanks (Each Unit 2 Questions)

SECTION C (Very short answer questions) ***10 x 1 = 10 M***

10 Very short answer questions (Each Unit 2 Questions)

SECTION D (Matching) (From 5 Units) ***2 x 5 = 10 M***

1

A
B
C
D
E

2

A
B
C
D
E

SECTION E (True or False) ***10 x 1 = 10 M***

10 True or False (Each Unit 2 Questions)

ADITYA DEGREE & PG COLLEGE (A):: KAKINADA

B.C.A.(Data Science) Computer Applications

Single Major - SEMESTER-I

COURSE – 2 BUSINESS ORGANIZATION

Time:3hrs **MAX MARKS: 70**

***I* Multiple Choice Questions** **3x10=30M**

SECTION A

1. What is one of the key considerations when establishing a new business?
(a) Market research
(b) Sole proprietorship
(c) Franchising
(d) Government regulations

2 Which legal structure allows a single individual to own and manage a business?
(a) Partnership
(b) Joint Stock Company
(c) Sole Proprietorship
(d) Co-operative

3 Which business organization involves sharing profits, losses, and decision-making among two or more individuals?
(a) Joint Stock Company
(b) Co-operative
(c) Partnership
(d) One Person Company

4 A Joint Stock Company is characterized by:
(a) Unlimited liability for shareholders
(b) Limited liability for shareholders
(c) Single ownership
(d) No legal identity

5 What is a key characteristic of a Co-operative business organization?
(a) It is owned by a single person
(b) It issues shares to the public
(c) It is formed to serve the common interests of its members
(d) It cannot enter into contracts

6. Which form of business organization has perpetual succession?
(a) Partnership
(b) Sole Proprietorship
(c) Co-operative
(d) Joint Stock Company

7. The main objective of business is
(a) To earn profits
(b) To Provide Services
(c) a and b
(d) Only a

8. Commerce includes
(a) Trade
(b) Aids to Trade
(c) a and b
(d) Only a

9. What is the concept of business?
(a) The exchange of goods and services for personal use
(b) The organized effort to earn a profit through commercial activities
(c) The process of manufacturing raw materials into finished products
(d) The provision of services to consumers and businesses

10. Which of the following is a feature of business?
(a) Non-profit motive
(b) Limited risk and uncertainty
(c) Single-stage development
(d) Buyer-seller relationship

11. Which of the following is a tertiary activity in business classification?
(a) Agriculture
(b) Manufacturing
(c) Retail
(d) Mining

12. What is a characteristic of a business organization?
(a) Limited liability for all members
(b) No legal existence
(c) Separate entity from owners
(d) Perpetual succession not allowed

13. The objective of plant layout is to
(a) Minimize productivity
(b) Increase safety hazards
(c) Maximize material movement
(d)-Improve workflow and productivity

14. Which factor is NOT considered when measuring the size of a business unit?
(a) Market demand
(b) Government policies
(c) Labour availability
(d) Weather conditions

15. Optimum size of a business unit is the size at which:
(a) Maximum profits are achieved
(b) Maximum number of employees is hired
(c) Maximum number of products is produced
(d) Maximum market share is obtained

16. Which factor does NOT determine the optimum size of a business unit?

(a) Production capacity
(b) Economies of scale
(c) Technology used
(d) Competitors' sizes

17. The primary objective of a plant layout is to:
(a) Reduce productivity
(b) Maximize material movement
(c) Minimize safety measures
(d) Improve efficiency and workflow

18. Which of the following is NOT a type of plant layout?
(a) Process layout
(b) Product layout
(c) Fixed layout
(d) Random layout

19. What is a business combination?
(a) The process of streamlining business operations
(b) The strategic restructuring of a company
(c) A transaction where two or more businesses merge or are acquired
(d) The process of nationalizing a business

20. Which of the following is a characteristic of a business combination?
(a) Fostering competition among businesses
(b) Diversification of risk
(c) Maximizing inefficiencies
(d) Reducing market share

21. What is the primary objective of a business combination?
(a) Eliminating competition
(b) Achieving sustained growth and profits
(c) Reducing market share
(d) Increasing inefficiencies

22. What is one of the causes of a business combination?
(a) Encouragement of competition
(b) Desire for small-scale operations
(c) Wasteful competition
(d) Decreased market share

23. Which form of business combination involves the integration of different types of inefficient units for economies of scale?
(a) Merger
(b) Acquisition
(c) Joint Venture
(d) Combination

24. What is the objective of simplification in rationalization?
(a) Increase production complexity

(b) Reduce operational efficiency
(c) Increase sales variety
(d) Higher production with lesser costs

25. What is the primary purpose of a firewall in network security?
(a) Encrypt data transmission
(b) Prevent unauthorized access
(c) Monitor website traffic
(d) Provide internet connectivity

26. Which generation of computers used vacuum tubes as the primary electronic component?
(a) First generation
(b) Second generation
(c) Third generation
(d) Fourth generation

27. What does IP stand for in the context of networking?
(a) Internet Provider
(b) Internet Protocol
(c) International Protocol
(d) Internal Processing

28. Which encryption method uses a single secret key for both encryption and decryption?
(a) Asymmetric encryption
(b) Public-key encryption
(c) Symmetric encryption
(d) Private-key encryption

29. What does ISP stand for in the context of the internet?
(a) Internet Security Protocol
(b) Internet Service Provider
(c) Internet Sharing Protocol
(d) Internet Secure Provider

30. What type of network is used to connect devices within a limited geographical area, such as a home or office?
(a) Wide Area Network (WAN)
(b) Local Area Network (LAN)
(c) Metropolitan Area Network (MAN)
(d) Personal Area Network (PAN)

SECTION – B

***II* Fill in the Blanks** **10x1=10M**

31. The factors affecting plant layout include space_____and future Expansion requirements
32. Process layout, product layout and fixed layout are layout of_____ layouts
33. Plant location directly impacts the efficiency and layouts of _____the business.
34. Optimum size is the point at which a business unit achieves maximum_____
35. The night type of plant location Can lead to cost ____ ___ and better market access.
36. A_____ involves the amalgamation of two or more companies.
37. __ _____ involve companies at different stages of the supply chain merging.

38. The process of restructuring a business to improve operational efficiency is called_____

39. One of the causes for business combination is_____

40. __ _____ is a collaboration between two or more companies to undertake a specific project.

SECTION – C

III **Answer the following Short Questions** **10x1=10M**

41. What is business combination?
42. What is meant by take over?
43. What do you mean by horizontal combination?
44. Write any 3 principles of nationalization?
45. Any two dis-advantages of nationalization?
46. What is business?
47. What is the primary objective of a business?
48. What is the legal form of a business owned by a single person?
49. What is a business entity formed by a group of individuals or entities?
50. What type of business organization is a separate legal entity from its owners ?

SECTION – D

IV **Match the following** **10x1=10M**

51. Customers	[ ]	a) Provide goods and services
52. Shareholders	[ ]	b) Generate revenue
53. Suppliers	[ ]	c) Determine market demands
54. Employees	[ ]	d) Own portion of the business
55. Planning	[ ]	e) Identifying market opportunities.
56. Advertising	[ ]	f) Building a positive image
57. Sales Promotion	[ ]	g) Personalized message and emails
58. Content creation	[ ]	h) Creating valuable & relevant content
59. Direct Marketing	[ ]	i) Generating immediate sales
60. Public relations	[ ]	j) Utilizing various media channels

SECTION – E

VIII **True (or) False** **10x1=10M**

61. Sales promotions primarily focus on building a positive image of the business.
62. Digital marketing encompasses activities such as SEO and content marketing.
63. Direct marketing involves reaching out to potential customers through social media platforms.
64. Trade shows and exhibitions are not effective for business promotion.
65. Word-of-mouth marketing relies on negative customer experiences and referrals.
66. The solution of a plant location or facility is a easy decision for any organization
67. Kimball and Kimball define plant location is the function where the plant should be located for maximum operating economy and effeteness
68. Certain industries are sensitive to climatic conditions
69. Arrangement of machine, work areas and service areas with a factory is called plant Location
70. Determining the optional location for the plant become crucial

ADITYA DEGREE & PG COLLEGE (A) :: KAKINADA

B.C.A.(Data Science) Computer Applications

I SEMESTER

COURSE 2 : BUSINESS ORGANIZATION

Hours/Week: 5 **Credits: 4**

QUESTION PAPER TAXONOMY										
Level of Bloom's Taxonomy	Type of Question & m Assigned									
	MCQs		FIB		VSQ		MC		T/F	
	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE	CIA	SEE
Remembering	3 m	10 m								
Understanding	3 m	10 m								
Applying	4 m	10 m								
Analyzing					5 m	10 m				
Evaluating							5 m	10 m	5 m	10 m
Creating			5 m	10 m						

ADITYA DEGREE & PG COLLEGE (A)

Autonomous and NAAC Accredited with A++ Grade (3.66/4 CGPA)

KAKINADA

Department of Computer Applications

B.C.A (Data Science)

II Semester				
S.No.	**Type**	**Name of the Course**	**Hr**	**Credits**
1	**Major**	Data Science & R Language	3	3
		Data Science & R Language Lab	2	1
2		Data Analytics using Excel	3	3
		Data Analytics using Excel Lab	2	1
3	**Minor**	Problem Solving using C - (T)	3	3
		Problem Solving using C- (P)	2	1
4	**Language**	English	4	3
5		Telugu/Hindi	4	3
6	**Skill Enhancement courses**	Digital Literacy	2	2
7		Business Writing	2	2
		Total	**27**	**22**

ADITYA DEGREE & PG COLLEGE (A)

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KAKINADA

SEMESTER-II B.C.A (Data Science)

COURSE 3: I n t r o d u c t i o n t o Data Science & R Language

Theory Credits: 3 3 hrs/week

Aim and objectives of Course:

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, modeling 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.

Learning outcomes of Course:

- 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, modeling, evaluation and visualization.
- Be aware of the challenges that arise in Data Sciences.
- Be able to identify the application of the type of algorithm based on the type of the problem.
- Be comfortable using commercial and open source tools such as the R/Python language and its associated libraries for data analytics and Visualization.

UNIT I:

Defining Data Science and Big data, Benefits and Uses, facets of Data, Data Science Process. History and Overview of R, Getting Started with R, R Nuts and Bolts

UNIT II:

The Data Science Process: Overview of the Data Science Process-Setting the research goal, Retrieving Data, Data Preparation, Exploration, Modeling, data Presentation and Automation. Getting Data in and out of R, Using reader package, Interfaces to the outside world.

UNIT III:

Sub setting R objects, Vectorised Operations, Managing Data Frames with the dplyr, Control structures, functions, Scoping rules of R, Coding Standards in R, Loop Functions, Debugging, Simulation. Case studies on preliminary data analysis.

UNIT IV:

Handling large Data on a Single Computer: The problems we face when

handling large data, General Techniques for handling large volumes of data, generating programming tips for dealing with large datasets.

UNIT V:

Machine Learning: Understanding why data scientists use machine learning- What is machine learning and why we should care about, Applications of machine learning in data science, where it is used in data science, The modeling process, Types of Machine Learning- Supervised and Unsupervised, Naïve Bayes Classifier, Principal Component Analysis.

TEXT BOOKS:

1. DavyCielen, Arno.D.B.Maysman, Mohamed Ali, "Introducing Data Science" Manning Publications, 2016.
2. Roger D. Peng, "R Programming for Data Science" Lean Publishing, 2015.

REFERENCE BOOKS:

1. Nina Zumel, John Mount, "Practical Data Science with R", Manning Publications, 2014.
2. Tony Ojeda, Sean Patrick Murphy, Benjamin Bengfort, Abhijit Dasgupta, "Practical Data Science Cookbook", Packt Publishing Ltd., 2014.

Web References for case studies:

https://www.kaggle.com/datasets
https://github.com/

SEMESTER-II

COURSE 3: Introduction to Data Science & R Language Lab

Practical Credits: 1 2 hrs/week

List of Experiments

1. Installing R and R studio, with proper notes on version management, cosmetic settings and different libraries.
2. Basic operations in r with arithmetic and statistics.
3. Getting data into R, Basic data manipulation, Loading Data into R
4. Basic plotting
5. Loops and functions
6. Create Vectors, Lists, Arrays, Matrices, Data frames and operations on them.
7. Demonstrate the visualization and graphics using visualization packages like ggplot2.
8. Implement Loop functions with lapply(), sapply(), tapply(), apply(), mapply().
9. Explore data using Single Variables: Unimodal, Bimodal, Histograms, Density Plots, Barcharts
10. Explore data using two Variables: Line plots, Scatter Plots, smoothing cures, Bar charts
11. Explore and implement commands using dplyr package
12. Download a dataset and work on basic data manipulation followed by Inferential statistics
13. Implement Naïve bayes algorithm to recognize digits from textual images
14. Predict the quality of given data set using Principal component analysis

RECOMMENDED TEXT BOOKS:

1. Mark Gardener, "Beginning R - The Statistical Programming Language", John Wiley &Sons, Inc., 2012.
2. W. N. Venables, D. M. Smith and the R Core Team, "An Introduction to R", 2013. Recommended Reference books:
3. The art of R Programming: A tour of Statistical Software design. Norman Matloff.Kindle Edition
4. The book of R : The first course in Programming and Statistics by Tilman M. Davies.

SEMESTER-II

COURSE 4: Data Analytics using Excel

Theory Credits: 3 3 hrs/week

Course Objectives:

l. The objective of the course is to introduce the concepts of computer fundamental & their applications for the efficient use of Excel software in data analysis.

Course Learning Outcomes:
Upon successful completion of the course, a student will be able to:
1. Understand the evolution and functionality of a Digital Computer.
2. Understand hardware and software components
3. Have exposure to Excel software package
4. Understand various functions & formulae used in data analysis, preparing charts etc.
5. Apply data analysis tools like pivot table, goal seek, scenarios etc.

Syllabus

UNIT - I:
Introduction to Computers: Characteristics and limitations of computer, Block diagram of computer, types of computers, uses of computers, computer generations, Types of Hardware: Input devices and output devices, Memories: Primary memory, Secondary Memory, and cache memory,

UNIT - II:
Types of Software: System software, Application software, commercial, open source, domain and free ware software Microsoft Excel: Fundamentals of Excel : Features of MS-Excel, Excel Program Screen, the Ribbon, Office button and Quick Access tool bar, Worksheets, rows, columns, cells.

UNIT-III
Worksheet basics: Creating a new workbook, Opening a Workbook, Saving a Workbook, Workbooks, Entering labels, values, and formulas in worksheet Editing a worksheet: Editing cell contents - cutting, copying and pasting cells Find and Replace - Undo, Inserting rows and columns, Deleting rows and columns
Formatting Options: Adjusting row height and column width - Formatting cell values, conditional formatting

UNIT-IV
Formulas and Functions: Formulas: Enter and edit formula in Excel, operators

used ln formula, cell references in formula Functions: Definition, Inserting a function in Excel, Types of functions in Excel: Mathematical, Statistical, Logical, Text, Date & Time functions Working with Data ranges: Sorting: Sorting on single column, sorting on multiple columns, Filtering: Filtering data using AutoFilter

UNIT-V

Working with Charts: Different types of charts, creating a chart, Parts of chart, changing chart type, changing chart options Analyzing and Organizing Data: Data Validation, Scenarios, Subtotals, working with PivotTables: Creating a PivotTable, Specifying PivotTable data, Working with PivotTable Layout

Text Books:

l. Fundamentals of Computers by Reema Thareja from Oxford University Press
2. Microsoft Excel 2007/2016/2024, Custom Guide Inc, 2007/2016/2024

Reference Books:

l. Rajaraman, Introduction to Information Technology, PHI
2. Peter Norton, Introduction to Computers, Sixth edition, Tata Mccraw Hill (2007).
3. Microsoft Office 2007 Fundamentals, lst Edition By Laura Story, Dawna Walls
4. Working in Microsoft Office - Ron Mansfield – TMH.
5. MS Office 2007 in a Nutshell -Sanjay Saxena - Vikas Publishing House.

SEMESTER-II

COURSE 4: Data Analytics u s i n g Excel Lab

Practical **Credits: 1** **2 hrs/week**

List of Experiments

1.Prepare your class time table using different Text formatting

2.Create a pay slip with details of employee salary

3. Prepare an Excel sheet to calculate students result and grades based on their marks

4.Prepare an excel sheet to enter some strings and perform the following text functions

a. Find length of strings

b. Convert strings into uppercase and lowercase

c. Remove extra spaces in the strings

d. Extract substrings from the strings

5. Prepare an excel sheet to perform the following statistical analysis

a.Find mean of the values

b.Find mode of the values

c.Calculate standard deviation

d.Find largest and smallest values

6. Draw different types of charts for weather analysis of 5 successive years

7.Prepare an excel sheet for creating a pie chart for budget analysis

8.Prepare an excel sheet to illustrate the sorting

9. Prepare an excel sheet to illustrate the filtering

10. Prepare an excel sheet to illustrate the concept of sub totals

11. Prepare an excel sheet for restricting data entry using data validation feature

12.Create and demonstrate to analyze the data using a pivot table

MODEL QUESTION PAPER - THEORY

Time: 3 Hours. Max Marks: 70

SECTION – A

Answer any 5 questions. Each question carries 4 marks ***(5 X 4 = 20M)***

(Total 8 questions, questions 1-5 from Units 1-5 & questions 6-8 from any of the units)

1. Unit -I
2. Unit-II
3. Unit-III
4. Unit-IV
5. Unit-V
6. From any Unit
7. From any Unit
8. From any Unit

SECTION – B

Answer all the questions. Each question carries 10 marks. ***(5 X 10 = 50M)***

(Each question (both 'A' or 'B') from each Unit.

9. from Unit I

(OR)

from Unit I

10. from Unit II

(OR)

from Unit II

11. from Unit III

(OR)

from Unit III

12. from Unit IV

(OR)

from Unit IV

13. from Unit V

(OR)

from Unit V

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Single Major Model Question Paper

SEMESTER-II
Data Science and R Language

Time:3hrs ***MAX MARKS: 70 M***

SECTION – A

Answer any 5 questions. Each question carries 4 marks (5 X 4 = 20M)

1. What are the uses of data science and big data in R programming?
2. What is meant by data presentation and automation?
3. Write few applications of machine learning in data science?
4. What are the Generating programming tips for dealing with large datasets?
5. Write a short note on loop functions?
6. Write about Control structures, functions, Scoping rules of R?
7. What are the problems we face when handling large data?
8. What is meant reader package? write it uses?

SECTION – B

Answer all the questions. Each question carries 10 marks. (5 X 10 = 50M)

9.a) Explain briefly about Data Science Process?
(OR)
b) Write about history and Overview of R?

10.a) Explain about Data Science Process?
(OR)
b) Write an essay on getting Data in and out of R, Using reader package?

11.a) Write about coding Standards in R, Loop Functions, Debugging, Simulation?
(OR)
b) Explain briefly about Vectorised Operations?

12.a) What are the techniques used to handle the large amount of data on a single computer?
(OR)
b) Generating programming tips for dealing with large datasets.?

13.a) What is machine learning? Explain it's types?
(OR)
b) What are the uses of machine learning in data science and write it's applications?

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Single Major Model Question Paper

SEMESTER-II

Data Analytics using Excel

Time:3hrs **MAX MARKS: 70 M**

SECTION-A

I. Answer any FIVE of the Following questions **5x10=50M**

1. Write in detail on characteristics of computer.
2. Explain Quick Access Tool bar in Ms-Excel?
3. Explain how to insert rows and columns in MS-Excel?
4. Write a short note on filtering in MS-Excel.
5. What is validation in MS- PowerPoint?
6. Write about different types of computers.
7. Explain the features of MS-ACCESS
8. Discuss on find and replace is MS-Excel.

SECTION-B

II. ANSWER ALL QUESTIONS EACH ONE CARRIES 10 MARKS **5 X 10 =50 M**

1. A) Explain Block diagram of computer with a neat sketch.

(OR)

B) Define memory. Explain various types of memories in detail.

2. A) What are various kinds of software illustrating them in brief?

(OR)

B) Write about Excel Program Screen.

3. A) Explain how to write formulas in MS Excel with suitable examples.

(OR)

B) What do you mean by conditional and unconditional formatting in MS-Excel?

4. A) What is an operator? Write different types of operators in MS Excel withappropriate examples.

(OR)

B) Explain various types of functions in MS-Excel.

5. A) Explain how to create different types of charts in MS-PowerPoint.

(OR)

B) Write the steps to create a custom animation in PowerPoint presentation

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Computer Science: MINOR

COURSE STRUCTURE

Year	Semester	Course No.	Title	No. Hrs./ Week	No. of Credits
I	II	1	Problem Solving using C - (T)	3	3
			Problem Solving using C- (P)	2	1

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