SREENIDHI EDUCATIONAL GROUP

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY

SNIST Sreenidhi Institute of Science and Technology AUTONOMOUS

(An Autonomous Institution approved by UGC and affiliated to JNTUH))
(Accredited by NAAC with 'A" Grade, Accredited by NBA of AICTE and Recipient of World Bank under TEQIP-I and II)
Yamnampet, Ghatkesar Mandal, Hyderabad - 501 301

COURSE FILE

For

B. Tech. III year - I Semester

COMPUTER SCIENCE ENGINEERING

SNIST
Sreenidhi Institute of Science and Technology
Because, Life is all about taking the right decisions
AUTONOMOUS

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING

JUNE-2020

SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY
AN AUTONOMOUS INSTITUTION

COURSE FILE FOR
CSE BRANCH
3rd Year 1st Sem

CONTENTS

B. Tech (Computer Science and Engineering)

Program objective:

B. Tech in Computer Science and Engineering program emphasizes the use of computer as a sophisticated problem solving tool.

The first two years of this program begins with a set of introductory courses, like Mathematics, physics, English, computer languages (C,C++,Java), Database Management Systems, which provide students with a firm foundation in mathematics, computer science, as well as communication skills. These courses include weekly labs in which students use state-of-the art software development techniques to create solutions to interesting problems.

The last two years of study focuses on the concepts and techniques used in the design and development of advanced software systems. In addition, students choose from a rich set of electives, which covers skills in demand. These advanced courses give broad opening for research and help them to choose specialization in their higher studies. A generous allotment of open electives allows students to learn foreign languages like French, German, Spanish; and it includes computing with a business focus.

Students in this program pursue an inter-disciplinary course of study that combines strong foundation in computer science with a focus on interdisciplinary areas. This program is designed for students who seek to blend their computer science abilities with skills in demand and skills specific to another domain to solve problems in that domain.

Having completed this course, a student is prepared to work independently within a well structured design frame work in the job and for higher studies.

DEPARTMENT OF COMPUTER SCIENCE and ENGINEERING

Vision

To emerge as a leading department in Technical Education and Research in Computer Science and Engineering with focus to produce professionally competent and socially sensitive engineers capable of working in global environment.

Mission

I. To prepare Computer Science and Engineering graduates to be a life long learner with competence in basic science & engineering and professional core, multidisciplinary areas , with continuous update of the syllabus, so that they can succeed in industry as an individual and as a team or to pursue higher studies or to become an entrepreneur.

II. To enable the graduates to use modern tools, design and create novelty based products required for the society and communicate effectively with professional ethics.

III. To continuously engage in research and projects development with financial management to promote scientific temper in the graduates and attain sustainability.

Programme Educational Objectives

I Graduates will have a strong foundation in fundamentals of mathematics, science, computer science and basic engineering with abilities to analyze problems, design and development of optimal solutions to address societal problems.

II Apply knowledge of modern tools to solve the complex problems and enable graduates to be professionally competent engineers to sensitize towards societal, health, safety legal, environmental and sustainable issues by following the ethical ideologies and makes them globally employable.

III Ability to work effectively as an individual, team member or a leader or pursue entrepreneurial skills and be aware of gender sensitization with good communication, practice project and finance management skills.

IV Encouraging students to pursue higher studies in internationally reputed institutes thus making them life-long learners.

Programme Outcomes

The Programme Outcomes (**POs**) of the B.Tech (CSE) programme as stated by the NBA, India are listed below:

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Correlation between the POs and the PEOs

PEOs	Programme Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
I	✓	✓	✓	✓								
II			✓	✓	✓	✓	✓	✓				
III									✓	✓	✓	
IV							✓					✓

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY
Yamnampet, Ghatkesar, Hyderabad – 501 301

COURSE FILE

FOR

INTRODUCTION TO DATA SCIENCE

B. Tech III (CSE) – I SEMESTER

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING
2020-2021

1	2	3	4	5	6	7	8	9	10	11	12
H	M	M		M							

Syllabus for B. Tech. III Year I semester
Computer Science and Engineering
Introduction to Data Science
(Professional Elective –I)

L	T	P	C
3	-	-	3

Code: 7EC16

Prerequisite : Probability and Statistics, OOPs concepts

Course Objectives: To know the fundamental concepts of Data Science. To explore tools and practices for working with Data Science. To learn about Principle component analysis and understand about Predictive Analytics.

Course Outcomes:

At the end of this course the student will be able to

1. Perform Data analysis on variety of data
2. Understand and apply the basic statistical operations using R.
3. Apply the concepts of functions and iterative programming using R.
4. Apply the suitable visualization techniques to output analytical results.
5. Understand and compare the dimensionality reduction techniques.
6. Implement Data analysis techniques for solving practical problems.

UNIT-I DATA TYPES & COLLECTION: Types of Data: Attributes and Measurement, What is an Attribute?, The Type of an Attribute, The Different Types of Attributes, Describing Attributes by the Number of Values, Asymmetric Attributes, Binary Attribute (Pg.No:22-29, Text Book-1), Nominal Attributes, Binary Attributes, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes (Pg. No. 39-44, Text-2), Types of Data Sets, General Characteristics of Data Sets, Record Data, Transaction or Market Basket Data, The Data Matrix, The Sparse Data Matrix, Graph Based Data, Graph- Based Data, Ordered Data. Handling Non-Record Data, Data Quality, Measurement and Data Collection Issues, Precision, Bias and Accuracy. (Pg. No. 29-39, Text-1)

UNIT-II Basics of R: Introduction, R-Environment Setup, Programming with R, Basic Data Types, Vectors: Creating and Naming Vectors, Vector Arithmetic, Vector Subsetting, Matrices: Creating and Naming Matrices, Matrix Subsetting, Arrays, Class.
Factors and Data Frames: Introduction to Factors: Factor Levels, Summarizing a Factor, Ordered Factors, Comparing Ordered Factors, Introduction to Data Frame, Subsetting of Data Frames, Extending Data Frames, Sorting Data Frames. (Text Book-3)

UNIT-III Lists: Introduction, Creating a List: Creating a Named List, Accessing List Elements, Manipulating List Elements, Merging Lists, Converting Lists to Vectors, Conditionals and **Control Flow:** Relational Operators, Relational Operators and Vectors, Logical Operators, Logical Operators and Vectors, Conditional Statements.
Iterative Programming in R: Introduction, While Loop, For Loop, Looping Over List.
Functions in R: Introduction, Writing a Function in R, Nested Functions, Function Scoping, Recursion, Loading an R Package, Mathematical Functions in R.(Text Book -4)

UNIT-IV: DATA VISUALIZATION Data Visualization: Pixel-Oriented Visualization Techniques, Geometric Projection Visualization Techniques, Icon-Based Visualization Techniques, Hierarchical Visualization Techniques, Visualizing Complex Data and Relations. (Pg. No. 56-64, Text-2)
Charts and Graphs : Introduction, Pie Chart: Chart Legend, Bar Chart, Box Plot, Histogram, Line Graph: Multiple Lines in Line Graph, Scatter Plot.(Text Book-4)

UNIT-V: DIMENSIONALITY REDUCTION Eigen values and Eigenvectors of Symmetric Matrices, Definitions, Computing Eigen values and Eigenvectors, The Matrix of Eigenvectors, Principal-Component Analysis, An Illustrative Example, Using Eigenvectors for Dimensionality Reduction, Singular-Value Decomposition, Definition of SVD, Interpretation of SVD, Dimensionality Reduction Using SVD (Pg. No.405-422, Text Book-3)

UNIT VI PREDICTIVE ANALYTICS Data Interfaces: Introduction, CSV Files: Syntax, Importing a CSV File
Statistical Applications: Introduction, Basic Statistical Operations, Linear Regression Analysis, Chi-Squared Goodness of Fit Test, Chi-Squared Test of Independence, Multiple Regression. (Text Book-4)

TEXT BOOKS:

1. Pang-Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to Data Mining, Pearson Education Inc.
2. Han, Jiawei, Jian Pei, and Micheline Kamber, "Data mining: concepts and techniques", 3 rd Edition, Elsevier, 2011.
3. Jure Leskovec, Anand Rajaraman, Jeffrey D. Ullman, Mining of Massive Datasets, Cambridge University Press
4. K G Srinivas ,G M Siddesh "Statistical programming in R", Oxford Publications.

REFERENCE BOOKS:

1. Brain S. Everitt, "A Handbook of Statistical Analysis Using R", Second Edition, 4 LLC, 2014.
2. Dalgaard, Peter, "Introductory statistics with R", Springer Science & Business Media, 2008.
3. Samir Madhavan, "Mastering Python for Data Science", Packt, 2015.
4. Paul Teetor, "R Cookbook, O'Reilly, 2011.

LECTURE SCHEDULE

S.NO	UNIT	NO.OF PERIODS	NO.OF PERIODS & TOPICS TO BE COVERED
1	Unit-I	07	**DATA TYPES & COLLECTION** 1) Types of Data: Attributes and Measurement, What is an Attribute?, The Type of an Attribute, The Different Types of Attributes, Describing Attributes by the Number of Values, Asymmetric Attributes, Binary Attribute (Pg.No:22-29, Text Book-1), 2) Nominal Attributes, Binary Attributes, Ordinal Attributes, Numeric Attributes, Discrete versus Continuous Attributes (Pg. No. 39-44, Text-2), 3) Types of Data Sets, General Characteristics of Data Sets, Record Data, 4) Transaction or Market Basket Data, The Data Matrix, The Sparse Data Matrix, 5) Graph Based Data, Graph- Based Data, Ordered Data. Handling Non-Record Data, Data Quality, 6) Measurement and Data Collection Issues, 7) Precision, Bias and Accuracy. (Pg. No. 29-39, Text-1)
2	Unit-II	08	• **Basics of R:** Introduction, R-Environment Setup, Programming with R, • Basic Data Types, Vectors: Creating and Naming Vectors, Vector Arithmetic, • Vector Subsetting, Matrices: Creating and Naming Matrices, Matrix Subsetting, Arrays, Class. • **Factors and Data Frames:** Introduction to Factors: Factor Levels, • Summarizing a Factor, Ordered Factors, Comparing Ordered Factors, • Introduction to Data Frame, Subsetting of Data Frames, • Extending Data Frames, • Sorting Data Frames. (Text Book-3)

3	UNIT III	12	1. **Lists:** Introduction, Creating a List: Creating a Named List, Accessing List Elements, 2. 2. Manipulating List Elements, Merging Lists, 3. Converting Lists to Vectors, 4. Conditionals and **Control Flow:** Relational Operators, 5. Relational Operators and Vectors, 6. Logical Operators, Logical Operators and Vectors, 7. Conditional Statements. 8. **Iterative Programming in R:** Introduction, While Loop, For Loop, 9. Looping Over List. 10. **Functions in R:** Introduction, Writing a Function in R, Nested Functions, 11. Function Scoping, Recursion, 12. Loading an R Package, Mathematical Functions in R.(Text Book -4)
4	UNIT IV	08	**DATA VISUALIZATION** • **Data Visualization:**Pixel-Oriented Visualization Techniques, • Geometric Projection Visualization Techniques, • Icon-Based Visualization Techniques, • Hierarchical Visualization Techniques, • Visualizing Complex Data and Relations. (Pg. No. 56-64, Text-2) • **Charts and Graphs :** Introduction, Pie Chart: Chart Legend, • Bar Chart, Box Plot, • Histogram, Line Graph: Multiple Lines in Line Graph, Scatter Plot.(Text Book-4)
5	UNIT V	08	1) **DIMENSIONALITY REDUCTION:** Eigen values and Eigenvectors of Symmetric Matrices, Definitions, 2) Computing Eigen values and Eigenvectors, 3) The Matrix of Eigenvectors, 4) Principal-Component Analysis, An Illustrative Example, 5) Using Eigenvectors for Dimensionality Reduction, 6) Singular-Value Decomposition, Definition of

			SVD, 7) Interpretation of SVD, 8) Dimensionality Reduction Using SVD (Pg. No.405-422, Text Book-3)
6	UNIT VI	07	**PREDICTIVE ANALYTICS** 1) **Data Interfaces:** Introduction, CSV Files: Syntax, 2) Importing a CSV File 3) **Statistical Applications:** Introduction, Basic Statistical Operations, 4) Linear Regression Analysis, 5) Chi-Squared Goodness of Fit Test, 6) Chi-Squared Test of Independence, 7) Multiple Regression. (Text Book-4)

Total Periods:07+08+12+08+08+07+ 5 extra=55

UNIT I

- Define an attribute and its measurements.
- What are the types of attributes? Explain in detail.
- Differentiate Asymmetric Attribute with Binary Attribute.
- Explain Nominal Attribute and Binary attribute with an example.
- Differentiate discrete attribute with continuous attribute with an example.
- What are the types of Data sets? Write its Characteristics of data sets.
- Explain Market Basket Data set in brief.
- Explain Sparse Data matrix with an example.
- Explain how to handle non-record data.
- What are the measurement and data collection issues?
- Define Precision.
- What is Data? Collection of data objects and their attributes
- Explain the market basket analysis problem.
- What is the main difference between ordinal and a nominal attributes?
- What is data?
- Describe the properties of data
- Differentiate between ratio and interval.
- Explain about document data.
- Describe about data quality?
- Define Outlier analysis.
- Differentiate between similarity and dissimilarity measures
- Explain different similarity methods
- Explain about proximity measure
- Write short notes on data pre-processing
- Discuss bias and accuracy

UNIT II

1) What are the basic data types of R language?
2) Define a Vector and write an example using R language.
3) Explain Vector Subsetting with an example
4) Explain Matrix subsetting.
5) Explain Arrays and classes using R language.
6) Define a Factor and what are the levels in factors?

7) Define Data frame and explain subsetting of Data frame using R language.
8) Write an example program using sorting Data Frames.
9) Write an R program using Matrix subsetting.
10) Write R program using vector subsetting.
11) Explain in detail about vectors in R.
12) Discuss about matrices in R.
13) Explain in detail about dataframe and arrays with example R code.
14) Write R code to generate first n terms of a Fibonacci series.
15) Explain the importance of dataframe?
16) Write the Advantages of R Programming language.
17) Two vectors X and Y are defined as follows :
    X <- c(3, 2, 4) and Y <- c(1, 2).
    What will be output of vector Z that is defined as Z <- X*Y.
18) How will you merge two data frames in R programming language?
19) What is the difference between data frame and a matrix in R?
20) Explain list data structure and its operation with example.
21) List the differences between vector and list.
22) How to create, name ,access , merging and manipulate list elements? Explain with examples.
23) Write about Arithmetic and Boolean operators in R programming?
24) How to create user defined function in R? How to define default values in R? Write syntax and examples?
25) Write about all summary commands in R?

UNIT III

- How to create a list in R language. Explain with an example.
- Explain the conversion of list to vector using R language.
- What are the relation operators in R language? Write an example program using relational operators.
- What are the logical operators in R language and explain with an example.
- Explain conditional statement with an example.
- Write an example program using while loop
- Write an example program using for loop.
- What are the differences between loop and list in R language.
- Define a function in R language. What the advantages of functions usage in R langaue.
- Write an example program using nested function concept.
- What is Recursion? Write an example program using Recursion.
- Write an R program using mathematical functions in R language.
- How to pass default values for arguments in R.

- Explain control structures in R with example.
- Explain the functioning of lapply () and tapply () in an R program with one example.
- Describe 3 math functions in R?
- Explain different types of operators in R.
- Write about control statements in R
  Write R code to the function by using if else command
  f(x) = x if x<1/2
  = (1-x) if 1/2<x<1
  = 0 otherwise
- Write about nested functions in R.
- Write R script to create a line graph.
- What is the use of par () function.
- Describe R functions for Reading a Matrix or Data Frame From a File
- Write about lines() function.
- Write about the following functions with example
  a)points() b) legend() c)text() d) locator()

25. Implement binary search tree with R

UNIT IV

1. What are the pixel oriented visualization techniques? Explain in detail.
2. What are the Geometric Projection Visualization Techniques? Explain in detail.
3. What are the Icon-Based Visualization Techniques? Explain in detail.
4. What are the Hierarchical Visualization Techniques? Explain in detail.
5. What is the use of pie chart? Explain using your own data set.
6. What is chart legend? Explain with an example data set.
7. What is a bar chart? Explain with an example.
8. What is box plot chart? Explain with an example.
9. Explain Histogram and line Graph with an example.
10. Explain Scatter Plot with an example. Write about scatter plot and histograms with examples? Explain its importance?
11. What is Box plot? Explain importance of boxplot with example?
12. Draw a pie chart for the following data

Section	I,	II,	III ,	IV,	V
No.of workers	220,	370,	190,	70,	250

13. List some Base plot functions.
14. How will you create scatter plot matrices in R language?
15. Explain linear algebra operations on vectors and matrices

16. List classification of visualization techniques and explain at least one
17. Describe Dimensional Stacking
18. What is tree map? Explain
19. Describe about similarity and dissimilarity matrix
20. Differentiate between proximity measures for nominal and binary attributes
21. What is chart legend?
22. Explain about two density estimates on the same graph.
23. Write the syntax of plot().
24. How to plot multiple curves in same graph? Explain with example?
25. Discuss about plot( ) and abline( ) functions with examples.

UNIT V

- Explain PCA with an example.
- Explain Eigenvectors for Dimensionality Reduction.
- Explain Singular-Value Decomposition.
- Explain about SVD with an example.
- Explain Dimensionality Reduction Using SVD.
- What is dimensionality reduction
- Discuss about dimensionality reductions.
- What are the advantages of Dimensional modeling?
- What is the main idea of principal component analysis?
- Write the strategies for data reduction
- Describe Singular Value Decomposition
- Discuss about linear algebra
- Explain about rank matrix with suitable examples
- Describe about Eigen vectors
- What is symmetric matrix
- Explain SVD with users to movie example
- Discuss about Latent factor model
- What is singular values
- Discuss about latent semantic indexing
- Differentiate between singular values and Eigen values
- Briefly explain about dimensionality reduction by using Eigen vectors
- Discuss about Computing Eigen values and Eigenvectors
- Differentiate between vectors and Eigen vectors
- Explain about Interpretation of SVD
- Define Eigen value

UNIT VI

1. What is CSV file? What are the advantages of this file format over other formats?

2. Explain Linear Regression with an example data set.
3. Explain the Chi-squared Goodness of Fit Test with an example data set.
4. Explain chi-squared Test of independence with an example data set.
5. Explain Multiple Regression with an example.
6. What is Regression & explain Simple Linear Regression
7. Discuss the following:
   i. What does P-value signify about the statistical data?
   ii. What are the disadvantages of the linear model?
   iii. What are the possible ways of improving the accuracy of a linear regression model?
8) Define prediction
9) Write applications of R programming
10) Expand CSV and how it is different from other formats of datasets
11) Discuss about ANOVA
12) Explain in detail about Poisson distribution.
13) Write in detail about Random Forest
14. Write about the following with example
    a)Mean b)Mode c)Median d)Cumulative Sum
    e)Cumulative Max f)Cumulative Min g)Cumulative Product
15. Write about Poisson Distributions
16. Define Correlation and Covariance
17. i. Differentiate between univariate, bivariate and multivariate analysis.
    ii. What do you understand by the term Normal Distribution?
18. Discuss about Survival analysis
19. Write short notes on time series analysis
20. Describe about • Chi-squared goodness of fit test

COURSE FILE
ON

BASICS OF ENTREPRENEURSHIP
(WADHWANI MODEL)
CODE: 7ZC22

B.TECH, SNIST

ACADEMIC YEAR 2020-21

COURSE OBJECTIVES:

CO1. The students' will acquire basic knowledge on Skills of Entrepreneurship.

CO2. The students' will understand the techniques of selecting the customers through the process of customer segmentation.

CO3. Business Models and their validity are understood by the students'.

CO4. The basic cost structure and the pricing policies are understood by the students'.

CO5. The students' will acquire knowledge about the project management and its techniques.

CO6. The students' get exposure on marketing strategies for the Start up.

PROGRAM OUT COMES:

a. Graduate will demonstrate knowledge in fundamentals of mathematics, science and engineering.
b. Graduate will demonstrate an ability to identify, formulate and solve problems in key areas of Engineering
c. Graduate will demonstrate an ability to design and conduct experiment, analyze and interpret data Engineering.
d. Graduate will demonstrate ability in conducting investigations to solve problems using research based knowledge and methods to provide logical conclusions.
e. Graduate will demonstrate skills to use modern engineering and IT tools, softwares and equipment to analyze the problems in the society.
f. Graduate will show the understanding of impact of engineering solutions on the society to assess health, safety, legal, and social issues.

g. Graduate will demonstrate the impact of professional engineering solutions in environmental context and to be able to respond effectively to the needs of sustainable development.

h. Graduate will demonstrate the knowledge of Professional and ethical responsibilities.

i. Graduate will demonstrate an ability to work effectively as an individual and as a team member/leader in multidisciplinary areas.

j. Graduate will be able to critique, writing samples (abstract, executive summary, project report), and oral presentations.

k. Graduate will demonstrate knowledge of management principles and apply these to financial and project management in multidisciplinary environments.

l. Graduate will recognize the need of self education and ability to engage in life - long learning.

Program outcome / **Course Objectives**	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**
Co 1				X							
Co 2				X							
Co 3							X				
Co 4											X
Co 5											X
Co 6				X	X						

a	b	c	d	e	f	g	h	i	j	k	l
				x		x				x	

L	T	P/D	C
2	1	0	2

7ZC22 – BASICS OF ENTREPRENEURSHIP (WADHWANI MODEL)

Course Objective: The objective of the course is to make students understand the nature of Entrepreneurship, and its importance to business to the engineering students, which will allow them to get the required intuition and interest in starting their own start-up's

Course Outcomes:

1. The students' will acquire basic knowledge on Skills of Entrepreneurship.
2. The students' will understand the techniques of selecting the customers through the process of customer segmentation and Targeting
3. Business Models and their validity are understood by the students'.
4. The basic cost structure, Revenue Streams and the pricing strategies are understood by the students'.
5. The students' will acquire knowledge about the project management and its techniques.
6. The students' get exposure on marketing strategies and business regulations for the Start up.

Unit – I: Introduction to Entrepreneurship & Self Discovery: - Define Entrepreneurship, Entrepreneurship as a Career option, Find your Flow, Stock of Your Means, Characteristics, Qualities and Skills of Entrepreneurship, Effectuation, Principles of Effectuation, Life as an Entrepreneur, Stories of Successful Entrepreneurs.

Unit – II: Opportunity & Customer Analysis: - Identify your Entrepreneurial Style, Methods of finding and understanding Customer Problems, Run Problem Interview, Process of Design Thinking, Identify Potential Problems worth Solving, Customer Segmentation, Niche Marketing and Targeting, Craft your Values Proportions, Customer-driven Innovation.

Unit – III: Business Model & Validation: - Introduction to Business Models, Lean approach to Business Model Canvas, Blue and Red Ocean Strategies, the Problem-Solution Fit, Build your Solution Demo, Solution Interview Method, Identify Minimum Viable Product (MVP), Product-Market fit test.

Unit – IV: Economics & Financial Analysis: - Revenue Analysis, Identify different Revenue Streams and Costs Analysis – Startup Cost, Fixed Cost and Variable Cost, Break Even Analysis, Profit Analysis, Introduction to Pricing, different Pricing Strategies, Sources of Finance, Bootstrapping and Initial Financing, Practice pitching to Investors and Corporate.

Unit – V: Team Building & Project Management: - Leadership Styles, Shared Leadership Model, Team Building in Venture, Roles and Responsibilities of team in venture, Explore collaboration tools and techniques, Brainstorming, Introduction to Project Management, Project Life Cycle, Create a Project Plan.

Unit – VI: Marketing & Business Regulations: - Positioning, Positioning Strategies, Branding, Branding Strategies, Selecting and Measuring Channels , Customer Acquisition, Selling Process, Selling Skills, Sales Plans. Business regulations – List of Required Registrations, Compliance Check List, Business Structures and Legal Entities.

References:

- Robert D Hisrich, Michael P Peters, Dean A Shepherd, Entrepreneurship, Sixth Edition, New Delhi, 2006.
- Thomas W. Zimmerer, Norman M. Scarborough, Essentials of Entrepreneurship And Small Business Management, Fourth Edition, Pearson, New Delhi, 2006
- Alfred E. Osborne, Entrepreneur's Toolkit, Harvard Business Essentials, HBS Press, USA, 2005.
- MadhurimaLall, ShikhaSahai, Entrepreneurship, Excel Books, First Edition, New Delhi, 2006.
- S.S. Khanka, Entrepreneurial Development, S. Chand and Company Limited, New Delhi, 2007.
- H. Nandan, Fundamentals of Entrepreneurship, Prentice Hall of India, First Edition, New Delhi, 2007.
- S.R. Bhowmik, M. Bhowmik, Entrepreneurship-A tool for Economic Growth And A key to Business Success, New Age International Publishers, First Edition, (formerly Wiley Eastern Limited), New Delhi, 2007.
- *https://www.wfglobal.org/*
- *https://www.learnwise.org/#/IN/en/home/login*,

LECTURE SCHEDULE

S.NO	UNIT	NO. OF PERIODS	TOPIC TO BE COVERED
1	I	09	Definition of entrepreneurship
2			Entrepreneurship as a Career option,
3			Success Rate of Entrepreneurs related to Experience and Family Backup
4			Benefits and Myths of Entrepreneurship,
5			Characteristics of Entrepreneur,
6			Qualities and Skills of Entrepreneurship,
7			Entrepreneurial Propensity,
8			Life as an Entrepreneur
9			Impact of Entrepreneurship on Economy and Society
10	II	10	Entrepreneurial Styles
11			Identify Business Opportunities
12			Methods of finding and understanding Customer Problems
13			Process of Design Thinking
14			Potential Problems of Entrepreneurs / Starts-ups
15			Customer Segmentation
16			Target Market
17			Customer Adoption Process
18			crafting Values Proportions
19			Customer-driven Innovation.
20	III	10	Definition & Concept of Business Model
21			Types of Business Models
22			Lean approach,
23			the Problem-Solution Test
24			Solution Interview Method
25			Difference between Start-up Venture and Small Business
26			Industry Analysis
27			Identify Minimum Viable Product (MVP)
28			Build-Measure-Lean Feedback loop
29			Product-market fit test.
30	IV	07	Revenue sources of Companies
31			Income Analysis
32			Costs Analysis
33			Product Cost and Operations Cost
34			Basics of Unit Costing
35			Cost Volume Profit Analysis
36			Different Pricing Strategies

37			advantages and disadvantage of various Sources of Finance
38			Investors Expectations
39			Return on Investment
40			Practice pitching to Investors and Corporate
41			Leadership Styles
42			Shared Leadership Model
43			Team Building in Venture
44			Role of good team in venture
45			Roles and Respondents
46			Explore collaboration tools and techniques
47	**V**	**14**	Brainstorming, Mind mapping.
48			Importance of Project Management
49			Time Management
50			Workflow, Network Analysis Techniques
51			Theory and Problems on Critical Path Method
52			
53			Theory and Problems on Project Evaluation Review Technique and Gantt chart.
54			
55			Concept and Definition of Positioning
56			Positioning Strategies
57			building Digital presence and leveraging Social Media
58			Measuring effectiveness of Channels
59			Customer Decision-making Process
60	**VI**	**10**	Sales Plans and Targets, Unique Sales Proposition (USP)
61			Follow-up and close Sales
62			Business regulations of starting and operating a Business
63			Start-up Ecosystem
64			Government schemes.

ESSAY QUESTIONS

Unit-I

1. Define Entrepreneurship and explain the need of entrepreneurship
2. What are the qualities and Skills of an entrepreneur?
3. Explain Benefits and Myths of Entrepreneurship
4. Explain the development of entrepreneurship in the Indian context
5. What are the functions of an entrepreneur?
6. Discuss the impact of Entrepreneurship on Economy and Society.

Unit-II

1. Explain the different Styles of Entrepreneurship.
2. Explain the process of Design Thinking.
3. Discuss the steps in Customer Adoption Process.
4. Explain customer driven innovation with examples
5. List the various methods to finding and understanding customer problems.

Unit-III

1. What are the types of Business Models?
2. Explain the approach of Problems- Solution Test.
3. What are the difference between Start-up Venture and Small Business?
4. Write about Industry Analysis.
5. Explain Minimum Viable Product (MVP) and Build-Measure-Lean Feedback loop.

Unit-IV

1. What are sources of resources for a company?
2. Explain the concept of Income and Cost Analysis.
3. What is the concept of Unit Costing?
4. What are the Advantages and Disadvantages of Various Sources of Finance
5. Explain the Return on Investment with a example.

Unit-V

1. Explain the importance of team building in venture.
2. What are the role and responsibilities of Good Team in Venture
3. Explain the techniques of Brainstorming and Mind mapping.
4. Define Project Management and Time Management
5. Write about CPM and PERT Techniques

Unit VI

1. Define Positioning and Explain Positioning Strategies.
2. Write the Digital and Social Media role in Business Promotion
3. Discuss the Sales Plans and Targets, Unique Sales Proposition.
4. What are the regulations of starting and operating a
5. Explain the Start-up Ecosystem and Government schemes.

SHORT ANSWER QUESTIONS

1. From which French Word the term “Entrepreneur” is derived.
2. Any two benefits of Entrepreneur
3. Define Entrepreneurship Propensity
4. What are the Major two characteristics of successful Entrepreneur
5. List the skill set required for Entrepreneur
6. Name any two successful Entrepreneurs
7. Write one style of Entrepreneurship
8. What is meant by Customer Problem?
9. List the steps in Process of Design Thinking
10. What is AIDA Model?
11. Give one example for Business Model.
12. What are the customer driven innovation
13. What is Demographic Segmentation?
14. Expand MVP
15. What is Lean Approach?
16. Define Start-up Venture.
17. What is Industry Analysis?
18. Types of Cost in Business.
19. Market Skimming and Market Penetration Strategy of Pricing
20. Expand ROI
21. What is Unit Costing Approach?
22. Define Team Building
23. What is Brainstorming?
24. What is Mind Mapping?
25. Who is the Project Manager?
26. Define Positioning.
27. What is Levels of Channels?
28. What is Sales Plan?
29. What is Sales Targets?
30. What Start-up Eco-system?

MODEL PAPER

Sreenidhi Institute of Science and Technology

(An Autonomous Institution)

Code No: 7ZC22

BTECH III-Year I-Semester Examinations, (Regular)

BASICS OF ENTREPRENUERSHIP (WADHWANI)

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

Note: a) No additional answer sheets will be provided.
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Assume any missing data.

Part - A

Max.Marks:20

ANSWER ALL QUESTIONS

S.No	Coverage		Marks
1	From Unit-I	Define Entrepreneurship?	[2M]
2	From Unit-II	Explain customer driven innovation with examples?	[2M]
3	From Unit-III	Explain the approach of Problems- Solution Test?	[2M]
4	From Unit-IV	What is the concept of Unit Costing?	[2M]
5	From Unit-V	Define Project Management and Time Management?	[2M]
6	From Unit-VI	Explain the Start-up Ecosystem?	[2M]
7	From Unit-I / II	Explain the different Styles of Entrepreneurship?	[2M]
8	From Unit-III / IV	Explain the Return on Investment with a example?	[2M]
9	From Unit-V / VI	Write about CPM and PERT Techniques?	[2M]
10	From Any Unit in which two questions are not given	Expand AIDA Model?	[2M]

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

S.No		Coverage		Marks
11.	a)	From Unit-I	Explain the development of entrepreneurship in the Indian context	[5M]
	b)	From Unit-I	Explain Benefits and Myths of Entrepreneurship?	[5M]

12.	a)	From Unit-II	List the various methods to finding and understanding customer problems.	[5M]
	b)	From Unit-II	Discuss the steps in Customer Adoption Process.	[5M]
13.	a)	From Unit-III	What are the difference between Start-up Venture and Small Business?	[5M]
	b)	From Unit-III	Write about Industry Analysis?	[5M]
14.	a)	From Unit-IV	Explain the concept of Income and Cost Analysis?	[5M]
	b)	From Unit-IV	What are the Advantages and Disadvantages of Various Sources of Finance?	[5M]
15.	a)	From Unit-V	Explain the importance of team building in venture?	[5M]
	b)	From Unit-V	What are the role and responsibilities of Good Team in Venture ?	[5M]
16.	a)	From Unit-VI	Write the Digital and Social Media role in Business Promotion?	[5M]
	b)	From Unit-VI	Define Positioning and Explain Positioning Strategies?	[5M]
17.	a)	From Unit-I/II	List the various methods to finding and understanding customer problems?	[4M]
	b)	From Unit-III/IV	Explain Minimum Viable Product (MVP) and Build-Measure-Lean Feedback loop?	[3M]
	c)	From Unit-V/IV	Discuss the Sales Plans and Targets, Unique Sales Proposition?	[3M]

-- 00 -- 00 --

COURSE FILE

FOR

Design and Analysis of Algorithms

FOR

B.Tech III Year I – SEM

CSE/IT

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY

Yamnampet, Ghatkesar Mandal, R.R.Dist. Hyderabad – 501 301

June-2020

Syllabus for B. Tech. II Year II semester
Information Technology
DESIGN AND ANALYSIS OF ALGORITHMS

Code: 7F505	**L**	**T**	**P/D**	**C**
	2	**1**	**0**	**3**

UNIT I:
Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis-Space complexity, Time complexity, Asymptotic Notation- Big oh notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis.

Objectives:
At the end of this unit the student understands the importance of an algorithm, its complexity, and different measures to judge the efficiency of such algorithms.

UNIT II:
Divide and conquer: General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

Objectives:
At the end of this unit the student will understand the divide and conquer technique and will be able apply that technique to various problems in the real life applications.

UNIT III:
Greedy method: General method, applications-Job sequencing with dead lines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

Objectives:
At the end of this unit the student will understand the greedy method and will be able apply that technique to various problems in the real life applications.

UNIT IV:
Dynamic Programming: General method, applications-Matrix chain multiplication, Optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design.

Objectives:
At the end of this unit the student will understand the dynamic programming technique and will be able apply that technique to various problems in the real life applications.

UNIT V:
Backtracking: General method, applications-n-queen problem, sum of subsets problem, graph coloring, Hamiltonian cycles.Branch and Bound: General method, applications - Travelling sales person problem,0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

Objectives:
At the end of this unit the student will understand the backtracking, branch and bound techniques and will be able apply that technique to various problems in the real life applications.

UNIT VI:
NP-Hard and NP-Complete problems: Basic concepts, non deterministic algorithms, NP-Hard and NP-Complete classes, Modular Arithmetic.

Objectives:
At the end of this unit the student will understand the classification of problems in view of polynomial time complexity in an abstract way.

TEXT BOOKS :
1. Fundamentals of Computer Algorithms, Ellis Horowitz,Satraj Sahni and Rajasekharam,Galgotia publications pvt. Ltd.
2. Algorithm Design: Foundations, Analysis and Internet examples, M.T.Goodrich and R.Tomassia,John wiley and sons.

REFERENCES :
1. Introduction to Algorithms, secondedition,T.H.Cormen,C.E.Leiserson, R.L.Rivest,and C.Stein,PHI Pvt. Ltd./ Pearson Education
2. Introduction to Design and Analysis of Algorithms A strategic approach, R.C.T.Lee, S.S.Tseng, R.C.Chang and T.Tsai, Mc Graw Hill.
3. Data structures and Algorithm Analysis in C++, Allen Weiss, Second edition, Pearson education.
4. Design and Analysis of algorithms, Aho, Ullman and Hopcroft,Pearson education.
5. Algorithms – Richard Johnson baugh and Marcus Schaefer, Pearson Education

Design and Analysis of Algorithms

Objective of the Subject

System Analysis and Design is one of the important phases of system life cycle. In this phase, the system analyst designs various modules, algorithms, data structures and the interaction between them. Design of appropriate algorithm and analysis of algorithms play a vital role in the ever conflicting time and space domains of computer system.

This course provides the techniques to implement the Algorithms and provides the methodology for finding the Time Complexity and Space Complexity of these Algorithms using various Notations.

The Divide-and-Conquer Techniques shows us how a problem can be solved by dividing it into similar sub-problems and conquer them so as to get the final solutions. The Design of different searching & sorting Techniques helps us for arranging the data to easily search for a data item, which is very important in the Data Base Management system. Greedy Method describes how we can get an optimize solution among several feasible solutions.

Sets are useful when we view our data in the form of a tree and Union & Find algorithms are used to provide an optimized way of formation of these Trees so that one can easily find the required data from the Tree with less Time Complexity.

Dynamic Problem approach is a powerful technique which shows how to solve the given problem stage wise. This is useful for the problems related to the Operating systems, Compiler Design, Computer Networks, and Database Management etc.

The Searching & Traversal techniques are also used to locate the data arranged in the form of a Tree or Graph and are very much helpful in Computer Networks. Backtracking technique is another powerful design Technique provides a way to find the solutions which considers some constraints and to reach the solution very quickly. The Branch and Bound Algorithms are used when dealing with tree like formations of data and provide a way to avoid the unnecessary growing of Trees so as to reduce the cost of searching. Finally, the Modular Arithmetic gives an interpolation can be solved with suitable Algorithmic approaches and are very much helpful in the field of Computer Graphics.

LECTURE SCHEDULE

UNIT NO.	No. of Period	S.No.of periods	Lecture on
I	10	1	Definition Of Algorithm, pseudo code for expressing algorithms.
		2	Performance analysis- Space Complexity
		3,4	Time Complexity. Examples
		5	Asymptotic Notation -, Asymptotic Notation – Big oh notation
		6	Omega notation
		7	Theta notation
		8	Probabilistic analysis
		9,10	Amortized analysis
II	10	9	**Divide and Conquer**: General method
		10	Binary search and time complexity
		12	Quick sort Algorithm
		13	Quick sort algorithm Time Complexity
		14	Merge sort Algorithm
		15	Merge sort algorthimTime Complexity
		16,17	Strassen's matrix multiplication
		18,19,20	Matrix Multiplication, Time Complexity, Advantage of Strassen Technique over traditional method. Deriving time complexity.
III	12	18	**Greedy method**: General method
		19	Job sequencing with dead lines
		20	Job sequencing with dead lines time complexity
		21	0/1 Knapsack problem
		22	0/1 Knapsack problem time complexity
		23,24,25	Minimum spanning Tree, examples
		26,27,28	single source shortest path
		29,30,31,32	single source shortest path examples , time complexity
IV	12	33	**Dynamic Programming:** General Method
		34,35	Applications-Matrix chain multiplication
		36	Introduction optimal binary search tree
		37,38	Optimal Binary search tree examples.
		39	0/1 Knapsack problem

		40	0/1 Knapsack problem time complexity
		41	All pairs shortest path problem
		42	Traveling sales person problem design
		43,44	Discussion about Reliability design
V	12	40	**Introduction to Backtracking**
		41	Backtracking general method
		42	8-queens problem
		43	n- queens Problem
		44	sum of subsets problem
		45	Graph coloring problem
		46	Hamiltonian cycles and its examples
		47,48	Branch and Bound: Introduction
		49	Branch and Bound : General method
		50,51	Traveling sales person problem
		52,53,54	0/1 knapsack problem
			LC Branch and Bound solution
		55,56	FIFO Branch and Bound algorithm
VI	7	57,58	**NP – Hard and NP – Complete problems:** Basic concepts
		59	non deterministic algorithms
		60	NP – Hard and Complete classes
		61	Examples on NP – Hard and Complete classes
		62,63	Modular Arithmetic

UNIT – I

Algorithm Analysis, Time and Space Complexity

1. What is an Algorithm?
2. Write the pseudo code for expressing algorithms?
3. Define Space complexity of an Algorithm?
4. Define Time complexity of an Algorithm?
5. Compare two function n^2 and $2^n/4$ for various values of n. Determine when the second becomes larger than the first?
6. Show that the following equalities are correct.
   a) $5n2 - 6n = \theta(n2)$
   b) $n! = 0(n^n)$
   c) $2\,n^2\,2^n + n \log n = \theta\,(n^2\,2^n)$
   d) $\sum_{I=0}^{n} = \theta(n3)$
   e) $6\,n^3 / (\log n+1) = O(n3)$
7. Determine the frequency of counts for all statements in the following two algorithm segments.

```
for  i :=1 to n  do                    I: = 1;
for j :=1 to  I  do                    while (I <= n) do
for k :=1 to j do                      {
        x: = x+1;                              x: = x+I;
                                               I: = I+1;
                                       }
```

8. Write a recursive algorithm for Towers of Hanoi. Trace algorithm for 6 disks. Derive its time and space complexity.

9. Write an algorithm to evaluate a polynomial using Horner's rule.

10. Present an algorithm that searches the element x in unsorted array a[1:n]. If x occurs, then return a position in the array; else return zero. Evaluate it's time complexity.

11. A polynomial of degree n>0 has n derivatives, each one obtained by taking the derivative of the previous one. Devise an algorithm which produces the values of a polynomial and its n derivatives.

12. Define time complexity. Describe different notations used to represent these complexities. Illustrate.

13. Define space complexity. Explain the same with an example.

14. Write the non – recursive algorithm for finding the Fibonacci sequence and derive its time complexity.

15. A complex valued matrix X is represented by a pair of matrices (A, B) where A and B contain real values. Write an algorithm that computes the product of two complex valued matrices (A,B) and (C,D) where (A,B) * (C,D) = (A+iB) * (C+iD)=(AC- BD)+i(AD +BC). Determine the number of additions and multiplications if the matrices are all n*n.

16. Compute time complexity of recursive Fibonacci procedures where

F(n)=F(n-1)+F(n-2).

UNIT-II

Short Answer and Essay Type Questions.

DIVIDE AND CONQUER

1. Solve the recurrence relation

   T (n) = 2 n=0

   T (n) = 2 + T (n - 1) n>0
2. What is divide and conquer? Give the recurrence relation for D AND C.
3. Write the algorithm for mergsort and explain with an example. Derive t ime complexity for the algorithm
4. The worst case time of procedure mergesort is O (n log n) what is its best-case time?

5. What is the time complexity of Quicksort?
6. What is the time complexity of strassen's matrix multiplication?
7. Determine the precise number of multiplications, additions and array element accesses for a 4 x 4 matrix multiplication.
8. Analyze the algorithm for matrix multiplication using Strassen Method.
9. Why is it necessary to have the auxiliary array (low: nigh) in function Merge? Give an example that shows why in place merging is inefficient.
10. Give the Quicksort algorithm and explain
11. Give the average time complexity for Quicksort algorithm.
12. Who how Quick sort sorts the following requence of keys: 1, 1, 1, 1, 1,1,1. And 5, 5, 8, 3, 4, 3, 2.
13. Derive the time complexity of stressen's matrix multiplication
14. Devise a Divide and Conquer algorithm to evaluate the polynomial at a point Analyze carefully the time for your algorithm.
15. a) Compute 2101 * 1130 by applying Divide and Conquer method .
    b) Applying Divide and Conquer strategy, write a recursive algorithm for finding the maximum and the minimum element from a list.

16. a) Trace the Quick Sort algorithm to sort the list C,O,L,L,E,G,E in alphabetical order

b). Give an instance, where the Quick Sort algorithm has worst case time complexity.

17. a) Analyze the average case time complexity of Quick sort.

b) If k is a non-negative constant, then show that the solution to the given recurrence equation, for n a power of 2 is T (n) =3kn power log3 – 2kn.

T (n) =k, n=1

3T (n/2) + KN, n>1

18.a)Compare Merge sort & Quick sort for the given data sets .

10,30,15,45,25,30,35,20,30,40,50

b) Compare their Complexities.

19.a) Design a Divide and Conquer algorithm for computing the number of levels in a binary tree.

b) Compute the efficiency of the above algorithm.

20.a)The worst –case time of procedure MERGESOR is O(n log n). What is its time in the best case? Can we say that the time for merge sort is θ(n log n)?

b) What is a STABLE SORTING Method? Is merge sort a stable sorting method?

UNIT –III

Short Answer and Essay Type Questions.

GREEDY METHOD

1. What is greedy method?
2. What is the criterion for obtaining optimal solution for greedy knopsack problem?
3. Find the optimal solution for the following instance of the knapsack problem n=3, m=20,

   (p1, p2, p3) = (25, 24, 15), and (W1, W2, W3) = (18, 15, 10)
4. Find an optimal solution to the knapsack instance

   n=7, m=15, (p1, p2,…… , p7) = (10,5,15,7,6,18,3) and

   (W1, W2… W7) = (2, 3, 5, 7, 1, 4,1).
5. Prove the theorem:

   If P1/W1 > P2/W2> ……> Pn/Wn, then greedy knapsack generates an optimal solution to the given instance of the knapsack problem.
6. What is spanning tree? What is a minimum cost spanning tee?
7. Give the spanning trees for the given graph
8. What is Prim's algorithm? (Idea behind the algorithm)
9. Compute the minimum spanning tree for the above graph using

   a) Prime's b) Kruskal's algorithm

10. What is the main idea behind the Kruskal's algorithm?

    Let n=3, (l1, l2,l3) = (5,10,13). What is the optimal ordering for storing them on tapes.

11. Give the prim's algorithm and explain, discuss about the time complexity.
12. Give the kruskal's algorithm and explain . Discuss the time complexity.
13. Find an optimal placement for 13 programs on three tapes T0, T1 and T2, where the programs are of the length 12,5,8,32,7,5,18,26,4,3,11,10,6.
14. Define General Solution,Feasible Solution & Optimal Solution .

UNIT – IV

DYNAMIC PROGRAMMING

Short Answers and Essay Type questions:

1. What is Dynamic Programming?
2. How do you view the Knapsack problem as a sequence of Decisions?
3. What is Principle of Optimality?
4. What is the difference between Dynamic Programming and Greedy Method?
5. State the Multistage Graph problem.
6. Give a brief note about how Multi-Stage Graph problem using Forward Approach.
7. Give a brief note about how Multi-Stage Graph problem using Backward Approach.
8. Solve the following Multi-Stage Graph problem using Forward & Backward Approach. Find Minimum Cost path.
9. Write the Algorithm to solve the Multi-Stage Graph using Forward Approach.
10. Write the Algorithm to solve the Multi-Stage Graph using Forward Approach.
11. Write the Concept of Optimal Binary Search Trees with an Example.
12. What is the application of binary Search Trees in real time applications.
13. What is Internal Node. What is the use of adding a Fictitious node in place of every empty subtree.
14. Write the probability expression for Successful and Unsuccessful search of a node.
15. What is the expected cost of a binary search tree.

16. Draw the possible binary search trees for the given identifiers set (a1,a2,a3)=(for, while, do). Identify the optimal Binary Search tree among them which bears less cost to search for a node.

17. How do you view the formation of optimal Binary Search Trees as a sequence of decisions. Derive the expression for the same.

18. Write the Algorithm for Optimal or minimum cost Binary Search Tree.

19. Derive the time complexity for the Optimal Binary Tree Algorithm.

20. Compute w(i,j), r(i,j) and c(i,j) for the identifier set (a1,a2,a3,a4)=(count, float, if, while) with p(1)=1/20, p(2)=1/5, p(3)= 1/10, p(4)=1/20, q(0)=1/5, q(1)=1/10, q(2)=1/5, q(3)=1/20 and q(4)=1/20. Using r(i,j)'s construct the optimal binary search tree.

21. State the 0/1 Knapsack problem.

22. Explain how the 0/1 knapsack problem can be solved with Dynamic programming concept.

23. Consider the knapsack instance n=3, (w1,w2,w3)=)(2,3,4) (p1,p2,p3)=(1,2,5) and m=6. Find the optimal solution for the above given data.

24. Write the formal and informal algorithms for the 0/1 Knapsack Algorithms. Analyze them and find the Time Complexity.

25. State the Reliability Design problem and explain how the problem can be viewed in stages.

26. Express the Reliability Design problem as multiplicative optimization function.

27. Explain how the Reliability Design for a system of n devices connected in series can be obtained using Dynamic programming method.

28. Brief the Traveling Sales Person Problem.

29. Explain the Dynamic programming solution method for the TSP problem.

30. Illustrate the above with an example of 4-node graph whose edge costs are given by

$$\begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

UNIT –V

BACKTRACKING (Chapter – 1)

Short Answer and Essay Type Questions.

1. What is Back Tracking? Explain briefly with an example.
2. State the Implicit and Explicit constraints for Back Tracking.
3. Write the Algorithms for Recursive & Iterative forms of Back Tracking.
4. Explain the 8-Queen problem applying Implicit & Explicit Constraints.
5. What is the importance of Bounding functions in Back Tracking.
6. Define the terms Live node, E-node, Dead node.
7. Explain the Sum of Subsets problem applying Implicit & Explicit Constraints.
8. How do you draw fixed size & variable size tuples.
9. For 8-Queens problem draw the state space tree of fixed size as in Depth first Search.
10. Define state space tree.
11. Define the terms

    a. Problem States
    b. State Space.
    c. Solution States.
    d. Answer States.

12. What is a Static Tree.
13. What is a Dynamic Tree.
14. Solve the 8-Queens problem using Back Tracking and draw the variable- 15. Write an algorithm for solving 8-Queens problem using Backtracking. tuple size state space tree.
16. State the Graph Coloring problem, solve using Back Tracking and draw the variable-tuple size state space tree.
17. Write the algorithm for solving the Graph Coloring problem using Backtracking.
18. Solve the Traveling Sales Person problem using Back Tracking for the following instance using static & Dynamic state space tree.

$$\begin{bmatrix} \alpha & 7 & 3 & 12 & 8 \\ 3 & \alpha & 6 & 14 & 9 \\ 5 & 8 & \alpha & 6 & 18 \\ 9 & 3 & 5 & \alpha & 11 \\ 18 & 14 & 9 & 8 & \alpha \end{bmatrix}$$

Short Answer and Essay Type Questions:

Branch-And-Bound Techniques (Chapter – 2)

1. What does the term branch-and-bound refers to?

2. What is FIFO Search?

3. What is LIFO Search?

4. What is another name for LIFO Search?

5. What is the need for bounding functions?

6. What is the significance of a ranking function while searching for a node?

7. How do we give ranks to the node? Give its notation and brief about the various functions involved.

8. Define LC Search Strategy?

9. Write the control Abstraction for LC Search.

10. What is the LC Branch-and-Bound Search?

11. FIFO search always generates state space tree by _____.

12. What are the differences between LIFO & FIFO Search?

13. State the 15-puzzle problem?

14. What are the properties of the LC Search?

15. Write the Algorithm for LC Search for the least cost answer node.

16. Write FIFO Branch-and-Bound Algorithm.

17. Write the LC Branch-and-Bound Algorithm

18. Draw the state space tree searched and trace the search process for the following problem instance of Job scheduling with deadlines:-

N = 5; p = (5,10,6,3) T = (1,2,1,1) D = (1,3,2,1)

ALGEBRAIC SIMPLIFICATION AND TRANSFORMATION

19. What is the Mathematical symbol manipulation system. What does it do.

20. State the Algebraic Transformation Technique. Why does inverse transformation is performed

21. Give the graphical representation for the transformations.

22. What is algebraic simplification?

23. What is the differencing between Evaluation and Interpolation?

24. Give the difference between straight forward and sparse representation of a polynomial.

25. Give the algorithm for straight forward evaluation.

26. Give the algorithm for implanting the Horner's rule.

27. Give the algorithm for sparse representation.

28. Give the algorithm for evaluating a polynomial represented in coefficient-exponent form.

29. Give the algorithm for implanting the Horner's rule for a polynomial in sparse representation.

30. Give the algorithm for Lagrange's Interpolation.

31. Give the analysis for computing the time for the Lagrange's Interpolation.

32. Give the algorithm for Newtonian Interpolation.

33. Give the analysis for computing the time for the Newtonian Interpolation.

34. Give a brief note on Fast Fourier Transform, specify its applications.

35. Give the Fourier & Inverse Transform of a continuous function.

36. Give the recursive algorithm for fast Fourier Transform.

UNIT – VI

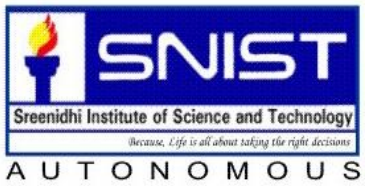
Short Answer and Essay Type Questions

NP – Hard and NP – Complete problem

1. What is a deterministic algorithm?
2. What is non deterministic algorithm?
3. What is a decision problem?
4. Given two sets S1 and S2 , the disjoint sets problem is to check whether the sets have a common element. Present an O(1) time nondeterministic algorithm for this problem.
5. Obtain a nondeterministic algorithm of complexity O(n) to determine whether there is a subset of n numbers Ai , $1<i<n$, that sums to m.
6. Show how to encode the following instructions as CNF formulas : a) **for** and b) **while**
7. Prove or disprove: If there exists a polynomial time algorithm to convert a Boolean formula in CNF into an equivalent formula in DNF, then p=np.
8. Write a short note on Modular Arithmetic.

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY

(An Autonomous Institution approved by UGC and affiliated to JNTUH))
(Accredited by NAAC with 'A" Grade, Accredited by NBA of AICTE and Recipient of World Bank under TEQIP-I and II)
Yamnampet, Ghatkesar Mandal, Hyderabad - 501 301.



COURSE FILE

FOR

DATA WAREHOUSING AND DATA MINING

FOR

B.Tech - III year - I Semester

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
AUG 2020-2021

1	2	3	4	5	6	7	8	9	10	11	12
H	H	H	H								

Syllabus for B. Tech. III Year I semester
Computer Science and Engineering
Data Warehousing and Data Mining

Code: 7EC04

L	T	P	C
3	1	0	4

Prerequisite : Data structures, Database Mangement Systems

Course Objectives: Principles of Data Mining and Pre-processing techniques. Architecture of a Data Warehouse and OLAP operations. Concepts on Attribute Relevance Analysis and Data Mining Query Language. Implementation of Apriori and FP growth Algorithms Implementation of Classification Algorithms of Naïve Baye's & ID3 Decision Tree etc. Various categories of Clustering Algorithms

Course Outcomes:

At the end of this course the student will be able to

1. Fundamentals of Data Mining and various data preprocessing techniques. and the Data Mining Query language primitives.
2. Identify the schemas used in designing Architecture of Data warehouse and OLAP operations.
3. Learn the significance and methods used for Characterization and the Analysis of Attribute Relevance..
4. Applications of Apriori and FP Growth algorithms for mining Association rules in large databases.
5. Applications of various classification models like Naïve Baye's & ID3 Decision Tree along with the prediction of the new samples.
6. Applications of clustering techniques available for numerous applications. Identify the optimal clustering technique for a particular application

UNIT – I: Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Major issues in Data Mining.
Data Preprocessing: Needs Preprocessing the Data, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Applications.

UNIT – II: Data Warehouse and OLAP Technology for Data Mining Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Data Warehouse Implementation

UNIT – III: Concepts Description: Characterization and Comparison: Data Mining Primitives, Data Mining Query Languages, Architectures of Data Mining Systems. Data Generalization and Summarization-Based Characterization, Analytical Characterization: Analysis of Attribute Relevance, Mining Descriptive Statistical Measures in Large Databases.

UNIT – IV: Mining Association Rules in Large Databases: Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transaction Databases.

UNIT – V: Classification and Prediction: Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back propagation, Classification Based on Concepts from Association Rule Mining, k-nearest neighbor classifier, Prediction, Classifier Accuracy.

UNIT – VI: Cluster Analysis Introduction: Introduction to machine learning, Types of Data in Cluster Analysis, A Categorization of Major Clustering Methods, Partitioning Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

TEXT BOOK:

1. Data Mining – Concepts and Techniques - Jiawei Han & Micheline Kamber Harcourt India.

REFERENCES:

1. Data Mining Introductory and advanced topics –Margaret H Dunham, Pearson Education
2. Data Mining Techniques – Arun K Pujari, University Press.
3. Data Warehousing in the Real World – Sam Anahory & Dennis Murray, Pearson Education Asia.
4. Data Warehousing Fundamentals – Paulraj Ponnaiah Wiley Student Edition.
5. The Data Warehouse Life cycle Tool kit – Ralph Kimball Wiley Student Edition

Introduction to Data Mining - First Edition, by Pang-Ning Tan, Michael Steinbach and Vipin Kumar, ISBN-13: 978-0321321367.

Data Warehouse and Data Mining **Lecture Schedule**		
Unit – 1		
S.No.	**No. of Lectures**	**Name of the Topic**
1	1	Fundamentals of Data Mining
2	1	Data mining Functionalities
3	1	Data mining systems classification
4	1	Major Issues in Data Mining
5	2	Needs Preprocessing the Data
6	1	Data Cleaning, Data Integration and Transformation
7	2	Data Reduction, Discretization and Concept Hierarchy Generation
8	1	Data Mining Primitives, Data Mining Query Language
9	1	Architectures of Data Mining Systems
Unit – 2		
10	2	Data Warehouse and OLAP Technology for Data Mining Data Warehouse
11	1	Multidimensional Data Model
12	1	Data Warehouse Architecture, Data Warehouse Implementation
13	2	Efficient Methods for simple Data Cube Computation
14	2	Full Cube, Iceberg Cube
15	2	Closed Cube and Shell Cube
16	1	Discovery Driven exploration of data cubes
17	1	Data Warehouse Implementation
Unit – 3		
18	2	Data Gen. and Summarization-Based Characterization
19	1	Analytical characterization
20	1	Mining class comparisons
21	1	Mining descriptive statistical measures in large DBs
Unit – 4		
23	1	Association rule mining
24	2	Mining single dimensional Boolean association rules
25	1	Mining multi dimensional association rules from Tran. DB's
26	1	Mining multi dimensional association rules from Rel. DB's and Data Warehouses

27	1	From association mining to correlation analysis Constraint-Based Association Mining.
Unit – 5		
28	1	Issues regarding classification & prediction
29	2	Classification by decision tree induction
30	1	Bayesian classification
31	1	Classification by Back propagation
32	1	Classification based on Concepts from Asso. Rule Mining Other Classification Methods
33	1	Prediction, Classifier Accuracy
Unit – 6		
34	1	Types of data in cluster analysis, A Categorization of major cluster methods
35	1	Partitioning methods
36	1	Density based methods
37	1	Grid-Based Methods
38	1	Model-Based Clustering Methods
39	1	Outlier analysis

Total Periods: 11+12+5+6+7+6 = 63

UNIT –I

After completion of this unit, the student will be able to:

1. Define Computer networks and learn the concepts

14) Explain KDD process (Data Flow) & its various Steps?
15) Architecture of a DM System? Explain its component?
16) Explain various data mining functionalities?
17) Compare in brief: characterization & discrimination vs classification & prediction.
18) Classify data mining systems based on kinds of difference?
19) What are major issues in DM?

Data Warehousing

26. What is data warehouse?
27. Differentiate between operational & informational systems?
28. Explain each of data of the feature of Data warehouse
29. Differentiate between OLTP & OLAP
30. Describe multidimensional data model (w.r.t data cube & dimension, fact tables, measures, key of fact table) ?
31. What is meant fact & dimension tables?
32. Schema models of data warehouse?
33. Explain various schemas their advantages & disadvantages
34. What is data mart?
35. DMQL primitives to define DW cube & dimension?
36. Detail snowflake schema with an example in DMQL?
37. Give an example of fact castellation using DMQL statements
38. What are different measures of DMQL?
39. What is meant by concept hierarchy?
40. What are the various OLAP operations?
41. What are views of DW design?
42. What are the DW design steps?
43. DW architecture
44. Strategies of building DW
45. What are the types of OLAP servers?
46. Write a short notes on efficient computation data cubes
47. What is cuboid & relation for number of cuboids?
48. What are the types of materialization of data cube.(Full, None, Partial) ?
49. Write brief notes on cube computations & limitations:
    a) ROLAP-way
    b) MOLAP-way

25.Explain the different indexing types of OLAP data
    a) Bitmap index
    b) Join indexes

26) What are the steps to process the OLAP queries efficiently?
27) Explain back end tools of data mining and utilities?

UNIT II

After completion of this unit, the student will be able to:

1. What is the need for preprocessing the data?
2. Explain various types of preprocessing (with diagrams)?
3. Explain the data smoothing techniques for noisy data?
4. What is meant by data cleaning? Explain its basic methods?
5. What is meant by incorrect data ? Specify a way to correct them?
6. What is meant by data integration & transformation?
7. Explain data integration issues?
8. Explain the methods of data transformation?
9. What is data reduction? Describe the strategies for data reduction?
10. Explain data cube aggregation?
11. Explain the methods of dimensionality reduction?
12. Explain the decision tree induction?
13. Explain the following methods?
    a) Data complexion
    b) Wavelet transforms
    c) Principle component analysis
14. Explain the strategies of numorosity reduction?

- Explain the methods of concept hierarchy generation for categorical data?
- What are the various data-mining primitives?

17. What is meant by task relevant data? Explain how to drill task relevant data?
18. What are kinds of knowledge to be mined?
19. What is meant by background knowledge?
20. Explain the concept hierarchies & its types?
21. What are interestingness measures?
22. Explain presentation and visualization?
23. Explain DMQL?
24. Explain designing GUI based on DMQL?
25. Describe the architecture of data mining systems?

UNIT III

After completion of this unit, the student will be able to:

1. What is data generalization and summarization?
2. Explain characterization based on summarization?
3. Explain analytical characterization?
4. Write the description on analysis of attribute relevance?
5. Explain the mining class comparisons?
6. How can we discriminate between different classes?
7. Explain mining descriptive statistical measures in large databases?
8. Explain attribute oriented induction for data characterization?
9. Explain the presentation of both characterization and comparison?

UNIT IV

After completion of this unit, the student will be able to:

8) What is association rule mining?
9) Explain the process of mining 1-Dimensional Boolean association rules from transactional database?
10) Explain the mining of multidimensional association rules from relational database?
11) Explain the mining of multidimensional association rules from data warehouse?
12) Explain the correlation analysis from the association mining?
13) Explain constraint based association mining?
14) Explain the frequent item sets with association rules?
15) Explain the closed item sets with association rules?
16) Explain constraint pushing?
17) What is frequent pattern mining?
18) Explain apriori algorithm? How can we improve the efficiency of apriori?
19) Explain mining quantitative association rules?
20) Explain constrain based association mining using
21) Meta rule
22) Constraint pushing

UNIT V

After completion of this unit, the student will be able to:

7. What is classification? Explain the issues regarding classification?
8. Explain classification by decision tree induction
9. Explain the tree pruning?
10. Explain Bayesian classification?
11. Explain Bayels theorem?
12. What is back propagation? Explain classification by back propagation?
13. Explain the following classification methods
    14. Genetic algorithms
    15. Rough set approach
    16. Fuzzy set approach
17. What is prediction? Issues regarding the prediction?
18. Explain the prediction by linear regression?
19. Explain the prediction by non-linear regression?
20. What is rule-based classification?
21. Explain the rules extraction from a decision tree?
22. Explain classification accuracy?
23. Describe the basic algorithm for inducing the decision tree from training couples?

24. Explain the following
    a) Information gain
    b) Gain ratio
    c) Gini index
25. Evaluate the accuracy of a classifier or predictor with the following
    a) Cross validation

b) Boot strap
c) Hold out method and random sampling

UNIT VI

After completion of this unit, the student will be able to:

26) What is cluster analysis? What are the types of data in cluster analysis?
27) What are the categories of major clustering methods?
28) Explain the partitioning methods?
29) Explain the density-based methods?
30) Explain the grid-based methods?
31) Explain the following model based clustering methods?
    32) Expectation –maximization.
    33) Conceptual clustering
    34) Neural network approach.
35) Explain statistical distribution Based outlier distribution?
36) Explain distance based outlier distribution?
37) Explain density based outlier distribution?
38) Explain deviation based outlier distribution?
39) Explain the K-mean partitioning algorithm?
40) Explain the hierarchical clustering algorithm for categorical attributes? (ROCK)
41) Explain the following grid based methods?
    a) STING
    b) Wave cluster
42) Explain following
    a) K-medoids
    b) CLARA
    c) Chameleon
    d) DBSCAN

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Code No: 4FC05 **Date: 18-Apr-2018 (AN)**

B.Tech IV-Year I-Semester End External Examination, April - 2018
(Supplementary)
DATA WAREHOUSING AND DATA MINING (CSE & ECM)

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

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Part - A

Max.Marks:20

ANSWER ALL QUESTIONS.

1.	List the steps involved in the process of knowledge discovery in data bases.	[2M]
2.	Write any four differences between OLTP and OLAP.	[2M]
3.	Define Data Discrimination.	[2M]
4.	What is apriori property?	[2M]
5.	Define precision and recall measures used in classifier evaluation.	[2M]
6.	What are the objectives of clustering?	[2M]
7.	What is concept hierarchy and write its role in data preprocessing?	[2M]
8.	Define Support and Confidence measures.	[2M]
9.	What is the importance of outlier?	[2M]
10.	List out various OLAP server architectures	[2M]

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

11.	a)	Write about major issues in data mining in detail.	[5M]
	b)	Explain various methods to fill missing values in the data.	[5M]
12.	a)	Explain various components in three tier data warehouse architecture.	[5M]
	b)	Write about multi-dimensional data model and its characteristics.	[5M]
13.	a)	Write about class characterization in detail with suitable example.	[5M]
	b)	Explain how to mine descriptive measures in large data bases.	[5M]

14. Generate all possible association rules from the following transactional dataset using apriori algorithm considering minimum support=3, minimum confidence=70%. [10M

Tid	Items
101	A,B,C,D
102	B,C,D
103	A,C,D
104	B,D
105	A,D
106	B,D,E

15. a) Explain any one lazy learner for classification in detail. [5M]
    b) Explain how decision tree induction algorithm works to determine the decision tree. [5M]

16. a) Explain K-Means clustering algorithm in detail. [5M]

    b) Explain how DBSCAN clustering technique generates clusters in detail [5M]

17. a) Explain the need for preprocessing the data. [3M]

    b) Write about Fact-constellation schema used in data warehouse modeling. [4M]

    c) Brief about various measures for data exploration. [3M]

18. a) Explain how to overcome the impact of minimum support threshold in association analysis. [4M]

    b) Write about K-fold cross validation. [3M]

    c) Explain different binary attribute similarity measures that can be used for clustering. [3M]

SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY

(An Autonomous Institution approved by UGC and affiliated to JNTUH))
(Accredited by NAAC with 'A" Grade, Accredited by NBA of AICTE and Recipient of World Bank under TEQIP-I and II)
Yamnampet, GhatkesarMandal, Hyderabad - 501 301.

COURSE FILE

For

COMPUTER NETWORKS

For

B. Tech. III year - I Semester
CSE Branch

Sreenidhi Institute of Science and Technology
Because, Life is all about taking the right decisions
A U T O N O M O U S

DEPARTMENT
OF
COMPUTER SCIENCE AND ENGINEERING

JULY 2020

1	2	3	4	5	6	7	8	9	10	11	12
H	H	L									

Syllabus for B. Tech. III Year I semester
Computer Science and Engineering
Computer Networks

	L	T	P	C
Code: 7EC05	**3**	**-**	**-**	**3**

Prerequisite : Data Communication

Course Objectives:

Understand primitives of computer networks Learn flow control, error control and access control mechanisms. Learn routing and congestion control algorithms, internet protocols. Understand Transport layer entities such as DNS and HTTP.

Course Outcomes:

At the end of this course the student will be able to

1 Identify the different types of network topologies and protocols useful for real time applications and transmission medias.
2 Discuss design issues of data link layer and solve problems on Checksum and flow control.
3 Describe Channel allocation issues, MAC protocols such as ALOHA, CSMA and CSMA/CD and MAC addresses with IEEE 802.X and wireless LAN.
4 Discuss network layer design issues, routing algorithms and Internetworking concepts.
5 Discuss network layer sub netting concepts, its protocols of control and congestion and QOS.
6 Describe concepts and services and protocols of transport, Application layers along with the network security issues.

UNIT I Introduction: Uses of Computer Networks, Types of networks: WAN, LAN, MAN, Network Topologies, Reference models: OSI, TCP/IP.
Physical Layer: Transmission media: magnetic media, twisted pair, coaxial cable, fiber optics, wireless transmission.
UNIT II: Data link layer: Design issues in data link layer: framing, flow control, error control, Error Detection and Correction: Parity, CRC checksum, Hamming code, Flow Control: Sliding Window Protocols, Applications: Data link layer protocols HDLC, PPP.
UNIT III: Medium Access sub layer: Channel allocation problem, MAC Protocols: ALOHA, CSMA, CSMA/CD, MAC addresses, IEEE 802.X, Standard Ethernet, Wireless LANS. Bridges, Types of Bridges.
UNIT IV: Network Layer: Design issues in Network Layer, Virtual circuit and Datagram subnets-Routing algorithm: Shortest path routing, Flooding, distance vector routing, Link state routing, Hierarchical routing, Broad casting, Multi casting, Routing for mobile hosts.

Internetworking: Concatenated Virtual Circuits, Connectionless internetworking, Tunneling, Internetwork routing, Fragmentation

UNIT V: Network layer in internet: IPv4, IP addresses, Sub netting, Super netting, NAT.Internet control protocols: ICMP, ARP, RARP, DHCP**.**

Congestion Control: Principles of Congestion, Congestion Prevention Policies.

Congestion Control in datagram Subnet: Choke packet, load shedding, jitter control.

Quality of Service: Leaky Bucket algorithm and token bucket algorithm.

UNIT VI: Transport Layer: Transport Services, Connection establishment, Connection release and TCP and UDP protocols.

Application Layer: Domain name system, FTP, HTTP, SMTP, WWW.

TEXT BOOKS:

1. Computer Networks — Andrew S Tanenbaum, 4th Edition. Pearson Education/PHI
2. Data Communications and Networking – Behrouz A. Forouzan.Third Edition TMH.
3. Data Communication and Networks-Bhushan Trivedi-OXFORD Publications.

REFERENCES:

1. An Engineering Approach to Computer Networks-S.Keshav, 2nd Edition, Pearson Education
2. Understanding communications and Networks, 3rd Edition, W.A. Shay, Thomson

COURSE SCHEDULE

Units	No. of periods allocated	Periods	Topic to be covered
Unit-I	10	2	**Introduction**:uses of computer networks
		2	Types of networks,Network Topologie**s**
		4	OSI, TCP/IP.
		1	**Physical Layer**: Transmission media magnetic media, twisted pair, coaxial cable.
		1	Fiber optics, wireless transmission.
Unit-II	10	1	**Data link layer** : Design issues in data link layer
		1	Logical link control
		3	framing, flow control,error control,error detection &correction codes
		1	Protocol-stop and wait
		2	Sliding Window
		1	Applications:HDLC
		1	PPP
Unit-III	10	1	**Medium Access sub layer:** Channel allocation problem ALOHA
		1	MAC addresses
		2	Carrier sense multiple access,CSMA/CD
		2	IEEE 802.X
		2	wireless LANS
		2	Bridges,Types of Bridges
Unit-IV	12	2	**Network Layer :** Design issues in Network Layer**,** Virtual circuit and Datagram subnets
		1	Routing algorithm - shortest path routing
		1	Flooding
		1	Hierarchical routing
		1	Broad cast
		1	Multi cast
		5	Distance vector routing, Link state routing,Routing for mobile hosts.Internetworking: Concatenated Virtual Circuits, Connectionless internetworking, Tunneling, Internetwork routing, Fragmentation
Unit-V	10	2	Network layer in internet: IPv4, IP addresses, Subnetting, Super netting, NAT.
		4	Internet Control Protocols: ICMP,ARP,RARP,DHCP. Congestion Control: Principles of Congestion, Congestion

			Prevention Policies.
		2	Congestion Control in datagram Subnet: Choke packet, load shedding, jitter control.
		2	Quality of Service: Leaky Bucket algorithm and token bucket algorithm.
Unit-VI	13	2	**Transport Layer:** Transport Services
		2	Connection management(establishment,release)
		2	TCP
		1	UDP protocol
		2	**Application Layer**
		1	Domain name system, FTP
		3	HTTP, SMTP, WWW

Total Classes - 65

UNIT-I

After completion of this unit, the student will be able to:

1. Define Computer networks and learn the concepts of data communication and networking.
2. Understand the various applications of computer networks.
3. Understands the various reference models and can list differences and application of each level of a reference model.
4. Learn about different types of topologies, categories of networks, and the general idea behind the internet.

UNIT-II

After completion of this unit, the student will be able to:

- Learn about data link layer design issues.
- Understands the various framing methods.
- Will be able to detect and correct the errors in the data.
- Understand the importance of the different protocols that are designed to handle the services required from the data link layer in relation to the network layer.
- By looking at the nature of errors, their causes, and how they can be detected and corrected, the student will be able to understand the usage of various protocols.
- Understand and analyze the correctness of the protocols

UNIT-III

After completion of this unit, the student will be able to:

1. Understand the different types of multiple access protocols, the duties of the data link layer that are related to the use of the physical layer
2. Understand the concept of multi-access channel as the basis for communication. Will be able to understand and analyze the multiple access protocols like ALOHA & CSMA.
3. Understands Ethernet and its evolution.
4. Understands wireless local area networks.
5. Understand the concept of bridges which are used to connect multiple LANs.

UNIT-IV

After completion of this unit, the student will be able to:

23) Can clearly differentiate between the roles of DLL and Network Layer.

24) Have a clear understanding of the design issues in the network layer.

25) Understand the importance and working of various protocols used in the Network Layer for routing purposes

UNIT-V

After completion of this unit, the student will be able to:

1. Define congestion
2. Will be able to explain congestion and ways of controlling congestion..
3. Understand and analyze the problems that occur when multiple networks are connected and also understand the ways of finessing these problems.
4. Discusses logical or IP addressing.
5. Learns some protocols defined at network layer, that help the IP protocol do its job.
6. Understand the mechanism of delivery and routing.

UNIT-VI

After completion of this unit, the student will be able to:

11. Understand the various types of transport services.
12. Understand the elements of transport protocols.
13. Understand the internet transport protocols (TCP,UDP).
14. Understand the underlying architecture of DNS, FTP, HTTP,SMTP,WWW

Assignment Questions

UNIT –I

Knowledge

- Write short notes on interfaces, services and protocols?
- Briefly explain about OSI reference model?
- Briefly explain TCP/IP reference model.
- Differentiate connection oriented and connection less service.
- Define topology and list various topologies
- What are the uses of computer networks?
- What are the three major classes of guided media?
- Name the two major categories of transmission media.

Comprehensive

1. List two ways in which the OSI reference model and the TCP/IP reference model are the same and list in which they differ.
2. With a neat diagram explain the functionality of layers, protocols and interface

3. Compare and contrast OSI and TCP/IP model.
4. Explain with neat diagrams the various topologies of networks.
5. How do guided media differ from unguided media?
6. Name the advantages of optical fiber over twisted-pair and coaxial cable.

Analysis

1. What is the significance of layering concept in any network reference model?
2. List the advantages and disadvantages of having international standards for networks, Protocols.
3. Why interfaces are required between layers. Explain in brief.
4. What is the significance of the twisting in twisted-pair cable?

UNIT-II

Knowledge

9) What is hamming distance? What is the minimum hamming distance?
10) What kind of error is undetectable by the checksum?
11) Discuss the concept of redundancy in error detection and correction.
12) What are the three protocols for noisy channels?
13) Define framing and the reason for its need.
14) What are the two protocols for noiseless channels?
15) Briefly describe the services provided by the data link layer.
16) Define piggybacking and its usefulness.

Comprehensive

1. Distinguish between forward errors corrections versus error correction by retransmission.
2. What kind of arithmetic is used to add data items in checksum calculation?
3. How is the simple parity check related to the two-dimensional parity check?
4. How does a single-bit error differ from a burst error?
5. Which of the protocols utilize pipelining?
6. Compare and contrast the Go-Back-N ARQ protocol with Selective-Repeat ARQ.
7. Compare and contrast flow control and error control.
8. Compare and contrast HDLC with PPP. Which one is byte-oriented; which one is bit-oriented?

9. Given 1101011011 data frame and generator polynomial $G(X) = X^4+X+1$. Derive the transmitted frame?

Analysis

- Can the value of a checksum be all 0s (in binary)? Defend your answer. Can the value be all 1s (in binary)? Defend your answer?
- In CRC, show the relationship between the following entities (size means the number of bits):

  The size of the datawordand the size of the codeword.

  The size of the divisor and the remainder.

  The degree of the polynomial generator and the size of the divisor.

  The degree of the polynomial generator and the size of the remainder.
- If the bit string 011 0 111 1110 0 111111111 0 is bit stuffed. What is the output string?4.
- Explain the reason for moving from the Stop-and Wait ARQ protocol to the Go-Back-N ARQ protocol.
- Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?
- Compare and contrast byte-stuffing and bit-stuffing. Which technique is used in byte-oriented protocols? Which technique is used in bit-oriented protocols?

UNIT-III

Knowledge

- Define controlled access and list three protocols in this category.
- List three categories of multiple access protocols discussed in this chapter.
- What are the common Ten-Gigabit Ethernet implementations?
- What is the access method used by wireless LAN?
- Discuss the three types of mobility in a wireless LAN.

Comprehension

1. Explain why collision is an issue in a random access protocol but not in controlled access or channelizing protocols.
2. Compare and contrast a random access protocol with a channelizing protocol.
3. Compare and contrast a random access protocol with a controlled access protocol.
4. What are the advantages of dividing an Ethernet LAN with a bridge?
5. What are the common Fast Ethernet implementations?
6. What are the common Standard Ethernet implementations?

7.What are the common Gigabit Ethernet implementations?

Analysis

- Do we need a multiple access protocol when we use the local loop of the telephone company to access the Internet? Why?
- Why there is no need for CSMA/CD on a full-duplex Ethernet LAN?
- Compare and contrast CSMA/CD and CSMA/CA.

UNIT-IV

Knowledge

1. Give two examples computer applications for which connection-oriented service is appropriate. Now give two examples for which connectionless service is best.
2. Give three examples of protocol parameters that might be negotiated when a connection is set up.
3. What is the difference between a direct and indirect delivery?
4. List three forwarding techniques and give brief description of each.

Comprehensive

- What are the differences between classful addressing and classless addressing inIPv4 addressing?
- What is the difference between Virtual Circuit and Datagram Subnet?
- Explain briefly about the Shortest-Path Routing algorithm. Illustrate with an example

4. Give a brief description of two groups of multicast routing protocols.
5. Contrast two different routing tables.

Analysis

26. Explain in detail unicast routing protocols?
27. Explain in detail multicast routing protocols?

UNIT-V

Knowledge

- Define Congestion. What is choke packet?
- What is the difference between open-loop congestion control and closed-loop congestion control?
- Name the policies that can prevent congestion
- What is meant by Load Shedding? Define Jitter control.
- Write briefly about the Leaky Bucket and Token Bucket Algorithms.
- Explain briefly internetworking?

- Explain briefly tunneling?

Comprehension

- Can tunneling be used in datagram subnets? If so, how?
- How is ARP different from RARP?

Analysis

43) Write briefly about the general principles of congestion control
44) How is Congestion Control performed in Datagram subnets.
45) Write briefly about the IP Protocol.
46) Write in detail about NAT.
47) Briefly define subnetting and supernetting. How do the subnet mask and super net mask differ from a default mask in classful addressing?
48) Explain in detail address mapping?
49) Explain in detail ICMP?

UNIT-VI

Knowledge

- Explain transport service primitives.
- Compare and contrast internet transport protocols TCP and UDP.
- Briefly discus the concepts of flow control and buffering in transport layer.
- Explain UDP header format.
- Explain TCP header format.
- What is DNS? Explain usage of resource records.
- What are the two main categories of DNS messages?
- What are the three domains of the DNS?
- What are the three FTP transmission modes?
- What is the purpose of FTP?
- How is HTTP similar to SMTP?

Comprehensive

1. Illustrate different protocol scenarios for establishing a connection using three way handshakes.
2. Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header.Give the reason for their absence.
3. Explain DNS in internet.

6.Describe the functions of the two FTP connections.

7.Explain in detail HTTP.

Analysis

20)Explain in detail TCP protocol.

21)Explain in detail UDP protocol.

22)What kinds of file types can FTP transfer?

23)Explain in detail architecture of WWW

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A15

Code No: 5EC06 **Date:13-Nov-2017 (FN)**

B.Tech III-Year I-Semester External Examination, Nov - 2017 (Regular)
COMPUTER NETWORKS (CSE)

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

Note: ***a****) No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Part - A **Max.Marks:25**

ANSWER ALL QUESTIONS.

1	Write short notes on any three network topologies.	[3M]
2	Explain Bit stuffing with an example.	[3M]
3	Draw and explain IEEE 802.3 frame format.	[3M]
4	Write short notes on internetworking routing protocols.	[3M]
5	Explain the importance of DHCP.	[3M]
6	Write about WWW.	[2M]
7	How repeater can extend the physical length of LAN. Justify?	[2M]
8	Explain bit-map CSMA protocol.	[2M]
9	What is load shedding?	[2M]
10	What are the services provided by transport layer protocol?	[2M]

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

1	a)	Compare and contrast TCP/IP and OSI reference models.	[6M]
	b)	What are two reasons for using layered protocols? What is one possible disadvantage ofusing layered protocols?	[4M]

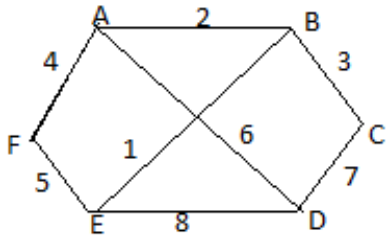
2 a) How many check bits are needed to ensure that the receiver can detect and correct single-bit errors? Show the bit pattern transmitted for the message 11001101. Assume that even parity is used in the Hamming code. [6M]

b) Compare data link layer protocols(HDLC and PPP). [4M]

3 a) Why learning bridges are preferable? Explain the operation of learning bridge with an example. [5M]

b) Differentiate 1-persistent, non-persistent and p-persistent protocols in CSMA protocol. [5M]

4 a) Using Distance vector routing algorithm for the given network. The following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The cost of the links from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the cost. [5M]



b) With a neat sketch explain the benefits of hierarchical routing algorithm. [5M]

5 a) List various approaches to congestion control. Explain in detail about Traffic throttling. [5M]

b) What is CIDR? Explain with suitable example the benefits of CIDR over subnetting. [5M]

6 a) Explain the various steps that are followed in connection establishment in TCP. [5M]

b) Discuss how SMTP works?. Can multimedia messages be transmitted using SMTP? Discuss. [5M]

7 a) Explain TCP/IP Protocol stack in detail. [3M]

b) Sketch the Manchester Encoding and Differential Manchester Encoding for the bit stream: 001111010000. Assume the line is initially in the low state. [3M]

c) Write a procedure to obtain spanning tree for a given network of LANs & Bridges with your own example. [4M]

8 Write short on :

a) i).Multicasting, ii).Broadcasting, and iii) Any casting. [3M]

b) In classful addressing how is an IP address in class A, Class B and Class C divided? [3M]

c) Explain the Remote procedure call with neat sketch. [4M]

-- 00 -- 00 –

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A14

Code No: 4E528 **Date: 23-Nov-16**

B. TECH. III-Year I-Semester Examinations, Nov/Dec 2016 (Regular)
COMPUTER NETWORKS (IT)

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

Note: No additional answer sheets will be provided.

Part - A **Max.Marks:20**

ANSWER ALL QUESTIONS.EACH QUESTION CARRIES 2 MARKS.

1. Differentiate between a passive star and an active repeater in a fiber network.
2. A bit string 0111101111101111110, needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing.
3. Write the layers in which the devices such as bridges, hubs and routers are used.
4. Define a concatenated virtual circuit.
5. List the different protocols used in the network layer.
6. Using the RSA public key cryptography if p=7 and q=11 find d.
7. Write the algorithm for computing checksum.
8. Briefly explain a remote bridge.
9. Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimalNotation.
10. Write the elements of a resource record in DNS.

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

Note:- All sub-sections of a question must be answered at one place only

1.a) List the different types of network and explain about them. (6M)
b) Briefly describe transmission using fiber optics. (4M)
2. a) Draw the frame format of HDLC and write the function of each field. (7M)
b) List different error correcting and detecting codes. (3M)
3. a) Distinguish between persistent and non-persistent CSMA.
Explain CSMA / CD. (7M)
b) Draw the protocol stack of 802.11 (3M)
4. a) List different types of dynamic routing algorithms and explain any one of them (6M)
b) Write short notes on Tunneling. (4M)
5. a) Explain token bucket algorithm. (5M)
b) Give the classification of IP addresses. (5M)
6. a) Describe DES algorithm. (6M)
b) What is DNS. Elaborate in detail. (4M)

7. a) Write short notes on Go Back N and Selective RepeatProtocols. (7M)
b) Differentiate between Manchester encoding and differentialManchester encoding with example . (3M)
8. a) Write short notes on routing for mobile hosts. (5M)
b) Describe authentication using public-key cryptography. (5M)

-- 00 -- 00 –

Regulations: A12

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Code No: 3EC05 **Date:16-Jun-16**

B. Tech. III-Year I-Semester Examinations, June 2016 (Supplementary)
COMPUTER NETWORKS (Common to CSE and IT)

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

Note: No additional answer sheets will be provided.

Part - A

Max.Marks:20

ANSWER ALL QUESTIONS.EACH QUESTION CARRIES 2 MARKS.

1. Differentiate between OSI and TCP/IP Reference Models.
2. What is the size of send window in Go-Back-N protocol and why?
3. List Multiple Access protocols.
4. Write a short note on indirect delivery.
5. Describe the purpose of the ARP protocol.
6. Draw the UDP header.
7. 200.17.21.128/27 is the one host IP address in the block. Find the range of addresses in this block.
8. A bit string 01111011111101111110 needs to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing?
9. Write a short note on Cryptography.
10. Explain role of ICMP protocol.

Part – B

Max.Marks:50

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

1. a. Explain each layer functionality in OSI reference model with neat sketch.
   b. Write about different unguided transmission media.
2. a. Explain Go-Back-N and selective repeat sliding window protocols
   b. Let g(x) = x3 +x +1 and the data word is x3+1, then find the code word generated at senderusing CRC. Check whether it is correctly arrived or not at receiver.

3. a. Explain CSMA/CD in detail with neat sketch.
   b. Discuss the four basic network topologies and give advantages and disadvantages of each type.

4. a. Discuss briefly about the techniques used to improve Quality of Service.
b. Explain various categories of Congestion control algorithms.

5. a. Explain how authentication and confidentiality can be achieved using public key Cryptography.
b. Explain the RSA algorithm.

6. a. Compare TCP, UDP, SMTP protocols.
b. What is connection? Explain connection release with a neat diagram.

7. a. Explain virtual circuit switching.
b. Explain datagram switching.

8. a. Discuss briefly about DNS.
b. Explain FTP in detail.

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A14

Code No:4E528 **Date:06-May-17 (AN)**

B.Tech III-Year I-Semester End Examination, May- 2017 (Supplementary)
COMPUTER NETWORKS (IT)

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

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Assume any missing data.

Part - A **Max.Marks:20**

ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 2 MARKS.

1. Write a short note on LAN, MAN, WAN?
2. What is framing?
3. List out problems in PURE ALOHA.
4. Define multicasting with an example.
5. What is congestion?
6. Write about Domain Name System.
7. What is parity bit?
8. Write a short note on flooding.
9. What is need of NAT (Network Address Translator)?
10. Explain ARP protocol?

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

1. a. Compare OSI and TCP/IP Reference model.
   b. Explain briefly Guided Transmission Media.
2. a. Explain briefly about hamming code with suitable example.
   b. Write about PPP in detail.
3. a. Explain CSMA in detail.
   b. Write notes on Standard Ethernet.
4. Explain about distance vector algorithm with neat diagram.
5. a. Explain Leaky Bucket congestion control algorithm.
   b. Describe congestion prevention policies.
6. a. Discuss briefly connection establishment and connection release in TCP.
   b. Write notes on HTTP and SMTP protocols.
7. a. Explain CSMA/CD in detail
   b. Write notes on HDLC.
8. a. Describe Link state routing algorithm.
   b. Explain briefly RSA Encryption algorithm.

-- 00 -- 00 --

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Regulations: A14

Code No:4E502 **Date:06-May-17 (AN)**

B.Tech III-Year I-Semester End Examination, May- 2017 (Supplementary)
DATA COMMUNICATIONS AND NETWORKS (CSE)

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

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Assume any missing data.

Part - A **Max.Marks:20**

ANSWER ALL QUESTIONS. EACH QUESTION CARRIES 2 MARKS.

1. What is the difference between a port address, a logical address, and a physicaladdress?
2. What are the responsibilities of the data link layer in the Internet model?
3. Distinguish between baseband transmission and broadband transmission.
4. List different modulation techniques for analog – to – digital signal conversion.
5. What is the Hamming distance? What is the minimum Hamming distance?
6. What are the two approaches to packet-switching?
7. What is the difference between a BSS and an ESS?
8. What are the differences between classful addressing and classless addressing in IPv4?

9. List three transition strategies to move from IPv4 to IPv6.
10. List five functions of network management.

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

1. a) Explain TCP/IP reference model in detail.
   b) Explain the three major classes of Guided Media?

2.a) What is Multiplexing. Why is it needed? Compare Synchronous Time Division Multiplexing with StatisticalTime Division Multiplexing.
b) Discuss in detailAnalog-to-Analog conversion?

3. A sender needs to send the four data items Ox3456, OxABCC, Ox02BC and OxEEEE.
answer the following:
   i) Find the checksum at the sender site. [4+3+3M]
   ii) Find the checksum at the receiver site if there is no error.
   iii) Find the checksum at the receiver site if the second data item is changed toOxABCE.

4. List the categories of Multiple Access Protocols in Datalink layer and discussed briefly.

5. a) Explain in detail Shortest Path Routing with example.
   b) What is Congestion and explain briefly Congestion controlling techniques.

6. a) Discuss how Connection is Established in TCP in details.
b) Explain the architecture of SNMP in details.

7. What is Switching?Explain different Switching techniques in Computer Networks.

8. Write short notes on the following
   i) FTP ii) ARP

-- 00 -- 00 --

H.T No										

Regulations: A15

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Code No: 5EC06 **Date:27-Apr-2018 (AN)**

B.Tech III-Year I-Semester External Examination, April - 2018 (Supplementary)
COMPUTER NETWORKS (CSE)

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

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Part - A **Max.Marks:25**

ANSWER ALL QUESTIONS.

1. Write any three reasons for using layered protocols. [3M]
2. Write about flag bytes with byte stuffing. [3M]
3. Draw and explain IEEE 802.11 protocol stack. [3M]
4. Write short notes on internetworking [3M]
5. List the any six ICMP message types. [3M]
6. What is DNS? Explain. [2M]
7. Write about mesh topology. [2M]
8. What is flooding? [2M]
9. What is Proxy ARP? [2M]
10. What is jitter control? [2M]

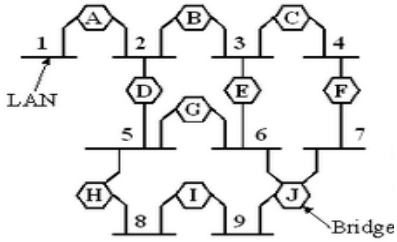
Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

11. a) Draw and explain the functionalities of all layers of OSI reference model. [5M]
    b) Write about various guided transmission media with neat sketch. [5M]

12. a) Explain any three framing mechanisms in data link layer with suitable examples. [5M]
    b) Solve 4-bit CRC code for data bitsequence:10011011100 using the generator polynomial x^4+x^2+1. [5M]

13. a) Compare the performance of pure ALOHA and slotted ALOHA. [5M]
    b) Construct the spanning tree for following Network. [5M]



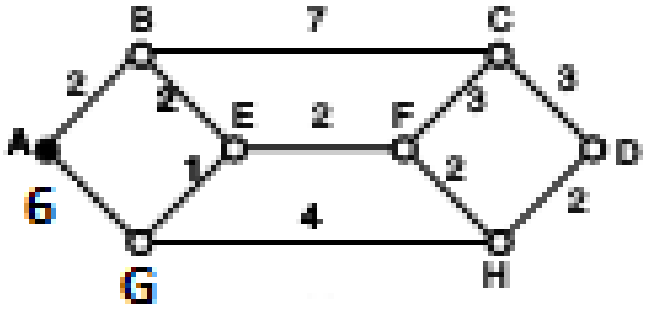
14. a) What are the limitations of Distance Vector Routing? Explain the Count-to-Infinity problem with an example [5M]
    b) What is packet fragmentation? Explain the necessary of packet Fragmentation in heterogeneous networks. [5M]

15. a) What is subnetting? Explain the importance of subnetting with an example. [5M]
b) With neat sketch explain IPv4 header fields. [5M]

16. a) Explain the various steps that are followed in releasing a TCP connection. [5M]
b) How does a DNS Resolver bootstrap the domain name lookup process? [5M]

17. a) Write about wireless transmission media. [3M]
b) Differentiate Go back N and Selective Repeat protocols for sliding window protocol in terms of bandwidth utilization. [3M]
c) Explain IEEE 802.3 Frame format [4M]

18. a) Calculate the shortest-path from router A to router D using shortest path routing algorithm for the following figure. [3M]



b) Write short on leaky bucket and token bucket algorithm. [3M]
c) What is HTTP? [4M]

-- 00 – 00

H.T No										

Regulations: A14

Sreenidhi Institute of Science and Technology
(An Autonomous Institution)

Code No:4EC05 **Date: 18-Apr-2018 (AN)**

B.Tech IV-Year I-Semester End External Examination, April - 2018
(Supplementary)
FUNDAMENTALS OF COMPUTER NETWORKS (ECE)

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

Note: ***a)*** *No additional answer sheets will be provided.*
b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.
c) Missing data can be assumed suitably.

Part - A **Max.Marks:20**
ANSWER ALL QUESTIONS.

1. Define MAN. [2M]
2. What is Piggybacking? [2M]

3. What is ALOHA? List types of ALOHA. [2M]
4. What is datagram? [2M]
5. What is Congestion? Mention two types of congestion control. [2M]
6. What is Multimedia? [2M]
7. Write a short notes on fibre optics. [2M]
8. Define Routing with an example. [2M]
9. How Security is provided in Electronic Mail? [2M]
10. Write a short note on CRC. [2M]

Part – B **Max.Marks:50**

ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.

11. a) Describe the Seven layers of OSI model with a suitable example. [5M]

    b) Differentiate between the Guided Transmission Media and Un-guided Transmission Media. [5M]

12. a) Why framing is used in data transmission, and write briefly about fixed size framing and variable-size framing. [5M]

    b) Implement the Bit-stuffing and Un-stuffing in character oriented framing. [5M]

13. a) Illustrate briefly on ISDN. [5M]

    b) Functionality of the wireless LANswith a suitable example. [5M]

14. a) Differentiate between the Virtual circuit and Data gram subnets in a Network. [5M]

    b) Explain the concept of Shortest Path Routing Algorithm with a given graph diagram? [5M]

15. a) Describe how congestion occurs and define techniques used in congestion control? [5M]

    b) Write about Network layer in the internet. [5M]

16. a) Illustrate the TCP/IP Reference Model. [5M]

    b) How the ATM Reference Model differs from OSI Model and TCP/IP Model? [5M]

17. a) Mention about the any two Network topologies along with diagram? [3M]

b) A TCP Machine is sending windows of 65,535 bytes over a 1-Gbps channel that has a 10m/sec one-way delay. What is the maximum throughput achievable? What is the Line efficiency? [4M]

c) Write the importance of CSMA. [3M]

18. a) Define about Multicasting, and Broadcasting. [3M]

b) Briefly discus RSA algorithm. [4M]

c) Write a short notes on WWW, DNS. [3M]

-- 00 -- 00 –

Course File for
Soft Skills and Technical Communication
B.Tech III year(R-18) 2020-2021

Subject Code: 7HC74

L – T –P/D - C
0 0 2 1

Maximum Marks: 100
Internal – 30 / External – 70

A	B	C	D	E	F	G	H	I	J	K	L
							X	X	X		X

UNIT-I
Know Yourself – SWOT / SWOC Analysis

'Know Thyself' is a term coined by the great Greek philosopher Socrates, meaning 'Know Yourself'. Knowing oneself is a long process. To know the true self, one has to get down to the core of one's essence and get rid of one's false self-images.

The Benefits of Self-Knowledge

Maybe it's obvious, but here in a nutshell are a few reasons why you might want to know your own nature:

- *Happiness*. You will be happier when you can express who you are. Expressing your desires, moreover, will make it more likely that you get what you want.
- *Less inner conflict*. When your outside actions are in accordance with your inside feelings and values, you will experience less inner conflict.
- *Better decision-making*. When you know yourself, you are able to make better choices about everything, from small decisions like which sweater you'll buy to big decisions like which partner you'll spend your life with. You'll have guidelines you can apply to solve life's varied problems.
- *Self-control*. When you know yourself, you understand what motivates you to resist bad habits and develop good ones. You'll have the insight to know which values and goals activate your willpower.
- *Resistance to social pressure*. When you are grounded in your values and preferences, you are less likely to say "yes" when you want to say "no."
- *Tolerance and understanding of others*. Your awareness of your own foibles and struggles can help you empathize with others.
- *Vitality and pleasure*: Being who you truly are helps you feel more alive and makes your experience of life richer, larger, and more exciting.

Personal SWOT / SWOC Analysis

To carry out a personal SWOT / SWOC analysis, you need o complete the matrix in terms of four boxes made of two intersecting lines.

Strengths: What do you do well? What do other people see as your strengths? What are your skills, values and interests?

Weaknesses: What areas need development? What should you avoid?

Opportunities: What possibilities are open to you? What resources do you have? Who can help you?

Threats/ Challenges: What might cause you difficulties? What responsibilities do you have? What might restrict you?

For example, look at the following chart to understand the distribution of all the negative and positive qualities

SWOT/SWOC Analysis Grid

A SWOT/SWOC analysis is typically created in a grid format with Strengths, Opportunities listed on the left, and Weaknesses and Threats or Challenges on the right.

<table>
<tr><td rowspan="4">POSITIVE
HELPFUL</td><td colspan="2">INTERNAL</td><td rowspan="4">NEGATIVE
HARMFUL</td></tr>
<tr><td>Build Strength</td><td>Overcome Weakness</td></tr>
<tr><td>Explore Opportunity</td><td>Overcome Threats and Face Challenges</td></tr>
<tr><td colspan="2">EXTERNAL</td></tr>
</table>

Exercise

Identify your Strengths, Opportunities, Weaknesses and Threats or Challenges with the help of the grid provided here.

Questions to complete the grid

Strengths:

-What do you do well?

-What unique resources can you draw on?

-What do others see as your strengths?

Weaknesses:
- What could you improve?
-Where do you have fewer resources than others?
-What are others likely to see as weakness in you?

Opportunities:
-What good opportunities are open for you?
-What trends could you take advantage of?
- How can you turn your strengths into opportunities?

Threats/Challenges:
-What trends could harm you?
-What is your competitor doing?

Strengths **1.** **2.** **3.** **4.** **5.**	**Weaknesses** **1.** **2.** **3.** **4.** **5.**
Opportunities **1.** **2.** **3.** **4.** **5**	**Threats/Challenges** **1.** **2.** **3.** **4.** **5**

This analysis will help you to focus on the main issues you need to consider when deciding what your long term and short-term goals should be. Explore what you do well, the areas you need to work on, the possibilities that are open to you and the things that might cause difficulties. In particular, you need to be absolutely honest about your weaknesses because you can take steps to develop those areas. It's a good idea to keep things simple at this stage.
You may not know about yourself totally. This may be analyzed from what is known as JOHARI WINDOW which explains or helps one in realizing facts about your true self.

Johari Window

Open/free space (known to self and others)	**Blind Area (not known to self and known to others)**

Hidden Area (known to self but not known to others)	Unknown Area (not known to self and not known to others)

How you manage your life, guide others, take charge, perform and behave in relationships depend on how effectively you use your strengths and identify your weaknesses.

- Corporate life has become complex. You need to work with people belonging to different regions, religions, languages and cultures. It is impossible to understand others unless a person understands himself/herself. Therefore, it is essential for everyone to strive hard to identify one's true 'self'.

-If you know yourself you will be able to know your strength and weaknesses. Subsequently, you will be able to remove/overcome your weakness/point.

Activity: Knowing Yourself Better ……Questionnaire (www.commonsenseethics.com)

This self assessment was designed to help you take an honest and objective look at your own personality traits, both positive and negative. There are no right and wrong answers, just try to be as honest as possible. The question and answer process may help you to:

• Understand your behaviors and subconscious motivations.

• Accept and work with negative personality traits and emotions.

• Change problematic patterns of behavior by addressing the root causes.
• Develop a greater acceptance and appreciation for yourself as a person.

Questions:

1. What traits do I dislike in others? Do my own behaviors ever reflect any of these traits? To what level have I acknowledged or accepted responsibility for my own negative traits?
2. What have I done in my life that I am most ashamed of? What internal forces within my own psyche may have led me to do this? What can I learn about myself from this experience?
3. What are my strengths? What are my weaknesses? What about my personal history might account for the strengths and weaknesses that I have?
4. Do I have any feelings of guilt or shame that I may be holding inside? If I feel guilty about past actions, is there any way I can atone for them now? Can I take responsibility for my actions and learn to forgive myself?
5. Is it hard for me to be happy for others, or do I sometimes feel jealous? If so, what inadequacies do I have which might lead to these feelings? What can I learn about myself from the successes of others?
6. Was there a time when I lost my temper, got stressed out, or snapped at anyone? What internal and external factors led to this behavior? What can I do to prevent a similar situation in the future?
7. How often do I feel a sense of gratitude? How can I learn to be more appreciative of what is going on in my life? What do I most like about myself?
8. What are my deepest fears? Are these fears actually rational? What can these particular fears teach me about myself?
9. Can I learn about my own vulnerabilities by examining the mistakes and failings of others? What can I do to avoid making similar mistakes myself?
10. What sexual fantasies or fetishes do I have? Am I ashamed of any of them? If yes, what about myself causes me to like or do anything sexually that I may feel ashamed of later on?
11. What do I most dislike about myself and why? Can I openly accept my negative qualities and choose to grow from them?
12. In what ways am I susceptible to flattery? Does this reflect any insecurity that I have or may have about my abilities, looks, or level of material success?
13. To what extent are my problems self created? Which of my feelings or actions have created problems for me?
14. What mistakes have I made in my life? What can my past mistakes teach me about myself?
15. Do I tend to be overly critical of myself, my mistakes and my failures? Can I learn to be more accepting of myself in spite of these?
16. Do I have any insecurity about my abilities, looks or level of material success? Are these feelings rational? If yes, what can I do to improve myself? Can I accept insecurities and learn to have more compassion for myself?
17. Have I ever lied to myself about my own negative qualities or poor conduct? What about myself, am I most afraid to face? Why?
18. What problems do I find repeating over and over again in my life? How can I take responsibility for these problems? What can I do to get to the bottom of the pattern and change it?

Emotional Intelligence:

Emotional intelligence has been defined as "the ability to monitor one's own and other people's emotions, to discriminate between different emotions and label them appropriately, and to use emotional information to guide thinking and behavior" by Peter Salovey and John Mayer. This definition was later broken down and refined into four proposed abilities: perceiving, using, understanding, and managing emotions. These abilities are distinct yet related. Emotional intelligence also reflects abilities to join intelligence, empathy and emotions to enhance thought and understanding of interpersonal dynamics. However, substantial disagreement exists regarding the definition of EI, with respect to both terminology and operationalizations. Currently, there are three main models of EI.

Emotional intelligence involves the ability to understand and manage emotions. Experts agree that this type of intelligence plays an important role in success, and some have suggested that emotional intelligence might even be more important than IQ. In any case, research has suggested that emotional intelligence is linked to everything from decision-making to academic achievement.

So, what does it take to be emotionally intelligent? Psychologist and best-selling author Daniel Goleman has suggested that there are five components critical to emotional intelligence. Take a look at these five factors and see if there might be things that you can do to improve your skills in each area.

Five aspects of Emotional Intelligence:

1. **Self-awareness**:

The ability to recognize and understand your own emotions, is a critical part of emotional intelligence. Beyond just recognizing your emotions, however, is being aware of the effect of your own actions, moods, and emotions on other people.

In order to become self-aware, you must be capable of monitoring your own emotions, recognizing different emotional reactions, and then correctly identifying each particular emotion. Self-aware individuals also recognize the relationships between the things they feel and how they behave. These individuals are also capable of recognizing their own strengths and limitations, are open to new information and experiences, and learn from their interactions with others.

Goleman suggests that people who possess this self-awareness have a good sense of humor, are confident in themselves and their abilities, and are aware of how other people perceive them.

2. **Self-Regulation:**

In addition to being aware of your own emotions and the impact you have on others; emotional intelligence requires you to be able to regulate and manage your emotions. This doesn't mean putting emotions on lock-down and hiding your true feelings — it simply means waiting for the right time, place, and avenue to express your emotions. Self-regulation is all about expressing your emotions *appropriately*.

Those who are skilled in self-regulation tend to be flexible and adapt well to change. They are also good at managing conflict and diffusing tense or difficult situations.

Goleman also suggests that those with strong self-regulation skills are high in conscientiousness. They are thoughtful of how they influence others and take responsibility for their own actions.

3**. Social skills**:

Being able to interact well with others is another important aspect of emotional intelligence. True emotional understanding involves more than just understanding your own emotions and the feelings of others - you also need to be able to put this information to work in your daily interactions and communications.

In professional settings, managers benefit by being able to build relationships and connections with employees, while workers can benefit from being able to develop a strong rapport with leaders and co-workers. Some important social skills include active listening, verbal and nonverbal communication skills, leadership, and persuasiveness.

4 **Empathy:**

Empathy, or the ability to understand how others are feeling, is absolutely critical to emotional intelligence. But this involves more than just being able to recognize the emotional states of others.

It also involves your responses to people based on this information. When you sense that someone is feeling sad or hopeless, for example, it will likely influence how you respond to that individual. You might treat them with extra care and concern or you might make an effort to buoy their spirits.

Being empathetic also allows people to understand the power dynamics that often influence social relationships, especially in workplace settings. Those competent in this area are able to sense who possess power in different relationships, understand how these forces influence feelings and behaviors, and accurately interpret different situations that hinge on such power dynamics.

5 **Motivation:**

Intrinsic motivation also plays a key role in emotional intelligence. People who are emotionally intelligent are motivated by things beyond mere external rewards like fame, money, recognition, and acclaim.

Instead, they have a passion to fulfill their own inner needs and goals. They seek things that lead to internal rewards, experience flow from being totally in tune with an activity, and pursue peak experiences.

Those who are competent in this area tend to be action-oriented. They set goals, have a high need for achievement, and are always looking for ways to do better. They also tend to be very committed and are good at taking the initiative when a task is put forth before them.

In a competitive workplace, developing your EQ skills is vital to your professional success.

Below are 10 ways to increase your EQ:

1. **Utilize an assertive style of communicating.**

Assertive communication goes a long way toward earning respect without coming across as too aggressive or too passive. Emotionally intelligent people know how to communicate their opinions and needs in a direct way while still respecting others.

2. **Respond instead of reacting to conflict.**

During instances of conflict, emotional outbursts and feelings of anger are common. The emotionally intelligent person knows how to stay calm during stressful situations. They don't make impulsive decisions that can lead to even bigger problems. They understand that in times of conflict the goal is a resolution, and they make a conscious choice to focus on ensuring that their actions and words are in alignment with that.

3. **Utilize active listening skills.**

In conversations, emotionally intelligent people listen for clarity instead of just waiting for their turn to speak. They make sure they understand what is being said before responding. They also pay attention to the nonverbal details of a conversation. This prevents misunderstandings, allows the listener to respond properly and shows respect for the person they are speaking to.

4. **Be motivated.**

Emotionally intelligent people are self-motivated and their attitude motivates others. They set goals and are resilient in the face of challenges.

5. **Practice ways to maintain a positive attitude.**

Don't underestimate the power of your attitude. A negative attitude easily infects others if a person allows it to. Emotionally intelligent people have an awareness of the moods of those around them and guard their attitude accordingly. They know what they need to do in order to have a good day and an optimistic outlook. This could include having a great breakfast or lunch,

engaging in prayer or meditation during the day or keeping positive quotes at their desk or computer.

6. **Practice self-awareness**.

Emotionally intelligent people are self-aware and intuitive. They are aware of their own emotions and how they can affect those around them. They also pick up on others' emotions and body language and use that information to enhance their communication skills.

7. **Take critique well.**

An important part of increasing your emotional intelligence is to be able to take critique. Instead of getting offended or defensive, high EQ people take a few moments to understand where the critique is coming from, how it is affecting others or their own performance and how they can constructively resolve any issues.

8. **Empathize with others.**

Emotionally intelligent people know how to empathize. They understand that empathy is a trait that shows emotional strength, not weakness. Empathy helps them to relate to others on a basic human level. It opens the door for mutual respect and understanding between people with differing opinions and situations.

9. **Utilize leadership skills**.

Emotionally intelligent people have excellent leadership skills. They have high standards for themselves and set an example for others to follow. They take initiative and have great decision making and problem-solving skills. This allows for a higher and more productive level of performance in life and at work.

10. **Be approachable and sociable.**

Emotionally intelligent people come off as approachable. They smile and give off a positive presence. They utilize appropriate social skills based on their relationship with whomever they are around. They have great interpersonal skills and know how to communicate clearly, whether the communication is verbal or nonverbal.

Many of these skills may seem to be best suited for those who understand basic human psychology. While high EQ skills may come more easily to naturally empathetic people, anyone can develop them. Less empathetic people just have to practice being more self-aware and conscious of how they interact with others. By utilizing these steps, you'll be well on your way to an increase in your emotional intelligence level.

Unit-I Questions

1. What is SWOT?
2. What is the difference between SWOT and SWOC?
3. Prepare your SWOT analysis grid.
4. How does SWOT grid help you to develop your personality?
5. What are the benefits of SWOT analysis?
6. No one can give you better advice than yourself. Substantiate the statement.
7. How could you improve after knowing yourself through SWOT analysis?
8. List out your weaknesses. How do you wish to change those weaknesses into strengths?
9. What trends could harm you? How do you want to protect yourself?
10. What good opportunities are open for you? How do you want to utilize them?
11. Conduct a research on your traits that are known/unknown and develop your personal JOHARI Window.
12. Define Emotional Intelligence.
13. What are the aspects of Emotional Intelligence?
14. Discuss at least five ways to increase your EQ.
15. What is the role of self-awareness in developing one's EQ?

UNIT 2
SOFT SKILLS

Introduction
It's not enough to have a brilliant idea. It is equally important to communicate it effectively to the right people and garner the support needed to implement it. It's not just enough to work hard. We have to subtly promote it so that the right people appreciate our skills. There are some

skills that we should hone and develop over the course of our career. These are the skills we use to interact with others at work.
A person is expected to speak, act and react depending on the situation and surroundings he is in. What would you generally say of a person who starts speaking loudly on his mobile phone during a funeral? Though it is evident that he lacks good manners, we tend to say that he lacks common sense. See how good manners got connected to common sense.

What are Soft Skills?

Soft Skills can be defined as "associated with a person's 'EQ' (Emotional Intelligence Quotient), the cluster of personality traits, social graces, communication, language, personal habits, friendliness, and optimism that characterize relationships with other people."

Soft skills are a synonym for "people skills." The term describes those personal attributes that indicate a high level of emotional intelligence.

The Difference between hard skills and soft skills

Hard skills are teachable abilities or skill sets that are easy to quantify. Typically, you'll learn hard skills / technical skills in the classroom, through books or other training materials, or on the job.

Examples of hard skills include:

- Proficiency in a foreign language
- A degree or certificate
- Typing speed
- Machine operation
- Computer programming

These hard skills are often listed in your cover letter and on your resume, and are easy for an employer or recruiter to recognize.

Soft skills, on the other hand, are subjective skills that are much harder to quantify. Also known as "people skills" or "interpersonal skills," soft skills refer to the way you relate to and interact with other people.

Importance of Soft Skills

Knowing how to get along with people – and displaying a positive attitude – is crucial for success. The problem is, the importance of these soft skills is often undervalued, and there is far less training provided for them than hard skills. Unlike hard skills, which describe a person's technical skill set and ability to perform specific tasks, soft skills are broadly applicable across job titles and industries. It's often said that hard skills will get you an interview but you need soft skills to get -- and keep -- the job.

Many soft skills are tied to an individual's personality rather than any formal training, and are thus considered more difficult to develop than hard skills. Good manners, optimism, common sense, a sense of humor, empathy and the ability to collaborate and negotiate are all important soft skills. Other soft skills include situational awareness and the ability to read a situation as it unfolds to decide upon a response that yields the best result for all involved.

Following is a list of soft skills often cherished by the industry

- Communication – oral, written, presenting, listening….
- Courtesy – manners, business etiquette, grace….
- Flexibility – adaptability, willing to change, lifelong learner, accepts new things, adjusts….
- Integrity – honest, ethical, high morals, has personal values, does what's right.
- Interpersonal skills – personable, sense of humor, friendly, nurturing, empathetic, has self-control, patient, sociable.
- Positive attitude – optimistic, enthusiastic, encouraging, happy, confident.
- Professionalism – businesslike, well-dressed, poised.
- Responsibility – accountable, reliable, gets the job done, resourceful, self-disciplined, wants to do well, conscientious.
- Teamwork – cooperative, gets along with others, agreeable, supportive, helpful, and collaborative.
- Work ethic – hard working, willing to work, loyal, initiative, self-motivated, on time, good attendance.

How to improve soft skills?

We have certain skills that can be developed by proper observation and consistent practice. Social grace, empathy, language, communication, team work, sociability, adjustability, negotiation, leadership etc are some of the skills that characterize inter-personal relationships and develop in a person through the various stages of his life.

A critical view may be taken that these skills can be taught to a person. Yes, one can be taught as to what communication is and how to communicate. But one's basic behavioral tendencies will have its impact when the theory is put into practice and that is where the soft skills gain prominence.

- Soft skills revolve around personal relationships, character, and attitude.
- By developing these skills, you can increase your work performance, build stronger relationships, and work toward earning a promotion.
- If you are finding that some of these soft skills do not come naturally to you, you need to learn how to improve soft skills so they'll become a natural reflex for you in dealing with people every day

Follow these simple tips to develop soft skills:

- develop communication skills
- practice active listening skills

- build relationships
- practice leading
- take initiative
- request when required
- cultivate kindness
- appreciate accordingly
- accept and learn from all criticism
- be adaptable
- multi-task effectively
- motivate and keep a positive attitude
- sharpen your creativity
- have a sense of humor

It is said that hard skills may earn you an interview but it is your soft skills that will get you the job. CEOs and HR Managers today are suggesting that companies can do better if they hire people with good soft skills and then train them to develop their hard skills in the area of specialization. Lack of soft skills has been pointed out by MNCs as a reason for not preferring many candidates.

Top skills employers look for:

While certain hard skills are necessary for any position, employers increasingly look for job applicants with particular soft skills. This is because, while it is easy for an employer to train a new employee in a particular hard skill (such as how to use a certain computer program), it is much more difficult to train an employee in a soft skill (such as patience).

Here's a list of some of the top skills employers seek in candidates for employment. You need to develop these skills and incorporate them into your resume, cover letters, and also mention them during job interviews.

Communication skills
Organization
Team work
Critical thinking
Punctuality
Analytical skills
Adaptability and flexibility
Planning
Decision-making
Leadership
Problem-solving
Computer-skills

Emphasize both hard and soft skills

During the job application process, you should therefore be sure to emphasize both your hard and soft skills. This way, even if you lack a particular hard skill required by the company, you can emphasize a particular soft skill that you know would be valuable in the position.

ATTITUDE: "ATTITUDE IS EVERYTHING!"

Meaning of Attitude

- Manner, disposition, feeling, position, etc., with regard to a person or thing; tendency or orientation, especially of the mind: a negative attitude, group attitudes.
- position or posture of the body appropriate to or expressive of an action, emotion, etc.: a threatening attitude, a relaxed attitude

Developing opinions and forming likes and dislikes about everything around us are part of our daily lives. These attitudes affect the way we live and the choices we make. The definition of an attitude is a way of feeling or acting toward a person, thing or situation. Passion for a sport, dislike for a certain actor and negativity toward life in general are each an example of an attitude.

Features of Attitude

Attitudes can be defined as evaluations of ideas, events, objects, or people. Attitudes are generally positive or negative, but they can also be uncertain at times. For example, sometimes we have mixed feelings about a particular issue or person. Regardless, attitudes are an important topic of study for social psychologists because they help determine what we do - what we eat, how we vote, what we do with our free time, and so on.

Every attitude has three components that are represented in what is called the **ABC model of** attitudes: **A for affective, B for behavioral and C for cognitive**. Although every attitude has these three components, any particular attitude can be based on one component more than another. Where does an attitude come from? There are affectively-based attitudes, behaviorally-based attitudes, and cognitively-based attitudes.

Affective Component

The **affective** component refers to the emotional reaction one has toward an attitude object.

Behavioral Component

The next component of an attitude is the **behavioral** component, and it refers to the way one behaves when exposed to an attitude object.

Cognitive Component

The third and final component of an attitude is the **cognitive** component, and it refers to the thoughts and beliefs one has about an attitude object.

A prevailing form of negative thinking is to take stock of a situation or an interaction, and presume the negative. For many people, this "looking at the glass half empty" attitude is habitual and automatic. One might look at a crowded commute, a rainy day, or paying the bills as automatic negative experiences.

Negative Attitude

Negativity can change the way you look at everything and keep you from enjoying many things that can bring you joy. It keeps you from trying new things that may be wonderful. It can also keep you from maturing and learning how to cope with the challenges of life.

Negativity can lead to sadness, depression, stress, and giving up on life.
It can take away your energy and motivation. Instead of a go-getter, you become a hopeless person who cannot help themselves.

Change of Attitudes: How to change attitude for the betterment?

When you make attitude changes it helps with all aspects in your life. It helps you to build a successful life and career. Four helpful Steps for attitude change are:

- Expectations
- Adaptability
- Confidence
- Appreciation

It is important to explore these steps when learning to change your attitude.

Attitude in a workplace

A positive attitude in the workplace helps employees to accomplish tasks faster and in a better manner. ... A good relationship can be established only when employees demonstrate a positive attitude towards their work and colleagues.

A negative attitude in the workplace creates an atmosphere of distrust among employees and causes employees to attempt to achieve success at the expense of each other. In a workplace with a positive attitude, competition is seen as a motivator that inspires employees to perform at their best to improve productivity.

The power of positive attitude - Developing Positive Attitude

With a positive attitude you see the bright side of life, become optimistic, and expect the best to happen. It is certainly a state of mind that is well worth developing.

Positive attitude manifests in the following ways:

- Positive thinking.
- Constructive thinking.
- Creative thinking.
- Optimism.
- Motivation and energy to do things and accomplish goals.
- An attitude of happiness.

Positive frame of mind can help you in many ways, such as:

- Expecting success and not failure.
- Making you feel inspired.
- It gives you the strength not to give up, if you encounter obstacles on your way.
- It makes you look at failure and problems as blessings in disguise.
- Believing in yourself and in your abilities.
- Enables you to show self-esteem and confidence.
- You look for solutions, instead of dwelling on problems.
- You see and recognize opportunities.

Negative Attitude and its results

- Self-defeating talk
- Negative assumptions
- Negative comparison with others
- The desire to blame
- The struggle to forgive oneself
- The fear of failure and making mistakes

Activity 1:

Ask for volunteers to act out a short role play. Each skit requires two people: one employee and one supervisor.

In the first role play, Raj has a job of mowing lawns and receives some not-so-positive feedback from Mr. Z., a client.

After the skit is done, ask the following questions:

• Role Play 1: How did Raj handle Mr. Z.'s comments? Was he right? Was there anything he could have done differently? What about Mr. Z.? What could he have done differently?

Activity 2:

Divide the batch into groups of four. Ask each group to choose any two soft skills which are useful to them. Then ask them to discuss among themselves the benefits of possessing these skills and the disadvantages of lacking them.

Give them some time for discussion, say about 20-30 minutes.

Now, ask each pair in the group to present the advantages and disadvantages of possessing and lacking each skill citing examples of situations from their own experience or observation.

For instance, in case of team building skills- students have to present the benefits of possessing good team building skills and on the other side of the coin, the disadvantages of bad team skills.

Activity 3:

Students work in groups. Ask students to choose real-life situations or problems (after approved by the teacher). They then instruct them to suggest solutions or make decisions as a group after discussion.

A group discussion can be conducted and students can express their views justifying their solutions and decisions.

Goal Setting

A goal properly set is halfway reached. **- Abraham Lincoln**

A successful student must learn to be proactive. Rather than waiting for things to happen and reacting, proactive persons make things happen. They identify what they want to accomplish and they do it!

What do YOU want to accomplish? Are you going through the motions or do you have an ultimate destination in sight? Assuming you have a destination in sight, how are you going to get there?

Goals act as a vehicle which successful persons use to reach their ultimate destination. Goal setting provides direction, purpose, and motivation.

Successful people begin with goals then set their priorities to accomplish their goals. Furthermore, successful people are able to manage their time according to their priorities. If our priorities are not lined up with our goals, then it is like "the tail wagging the dog."

Goal-setting…

- Focuses your sights on something you want to attain
- Deals with the why, when and how of our lives
- Turns your daydreams and fantasies into reality
- Lets you prioritize the detailed steps needed to reach your dreams
- Helps break down overwhelming larger tasks into smaller manageable tasks
- Helps to manage your time management more efficiently
- Leads to a sense of accomplishment and self-fulfillment

Aids to Successful Goal Setting

1. Brainstorm - List everything you would like to accomplish.

2. Prioritize - Look at your list: decide which goal you would like to work with first. Keep your list of goals so that you can check on your progress.

3. Describe in Detail - Be very specific: break your goals into objectives, a step-by-step plan so you can check on your progress.

4. Identify Your Barriers - Look for internal and external blocks to reaching your goals.

5. Develop a Game Plan - Decide ways to overcome the barriers to your goals.

6. Develop a Timeline - Look at your goals and work out a realistic timeline.

7. Reward Yourself - Reward yourself for each step you accomplish towards your goals.

SMART Goals:

A useful way of making goals more powerful is to use the SMART mnemonic. SMART stands for:

- ***S - Specific***
- ***M - Measurable***
- ***A - Attainable***
- ***R - Relevant***
- ***T - Time-bound***

For example, instead of having "Go to class" as a goal, it is more powerful to say "Go to all my classes this semester". See the difference? Rather than "Study Hard", a goal may be "Always recopy my class notes within 24 hours of my last class". This makes your goal more specific, measureable, and time-bound. It is also realistically attainable and relevant to a bigger, long term goal of graduating with a GPA of 3.0 or above.

Goals are set on a number of different levels: First you create your "big picture" of what you want to do with your life, and what large-scale goals you want to achieve. Second, you break these down into the smaller and smaller targets that you must hit so that you reach your lifetime goals. Finally, once you have your plan, you start working to achieve it.

Take a look at the example of how to set both long term and short-term goals. Next, write down some of your long-term goals on the specified lines. After you have established your **long-term goals**, use the attached worksheet to map out the **short-term goals** you need to achieve in order to be successful!

Remember… When you have achieved a goal, take the time to enjoy the satisfaction of having done so! Absorb the implications of the goal achievement, and observe the progress you have made towards other goals. If the goal was a significant one, reward yourself appropriately. All of this helps you build the self-confidence you deserve.

"Success is not final; failure is not fatal: it is the courage to continue that counts."
-Sir Winston Churchill

<u>Time Management</u>

Definition:

"Time management" is the process of organizing and planning how to divide your time between specific activities. Good time management enables you to work smarter – not harder – so that you get more done in less time, even when time is tight and pressures are high. Failing to manage your time affects your effectiveness and causes stress.

Time is one of life's most valuable possessions, as it is something you can never get back. Subsequently, one of the most essential life skills to master is time management. After all, time management is really life management. Learning how to make every day count for something is the objective. But it takes ridding your life of procrastination and a great deal of self-discipline.

Mastering time management does more than just increase productivity. It can yield important health benefits as well. When time is managed wisely, it minimizes stress and improves the overall quality of your life.

If you often find yourself run down by your daily workload or overwhelmed by the complexity of projects and tasks in your life, it is likely because you have not fully mastered effective time management. As the day flies by, you realize you're behind, or you are on schedule only because you haven't put forth your best effort in hopes of completion.

Nothing great ever transcends from haste. Cutting corners will eventually catch up to you, and as with anything, quality always beats quantity.

Lay the foundation for effectively managing your time.

Delegating the appropriate amount of time to get adequate sleep, maintain a healthy diet and exercising regularly are all essential elements to improve both focus and concentration. Making the time to create a healthy lifestyle will help improve your efficiency throughout the day, allowing for more time to complete other tasks.

Identify and evaluate how you are currently spending your time.

If you drive to work, how do you pass the time during your commute? If you take a bus or train, how do you spend all those hours a week? How many audiobooks or language tapes could you have completed while in traffic last month? How many books could you read on the train while getting to and from work the next few weeks?

These are the best times throughout your day to incorporate all those little things that you "wished" you had time for. Over time, these habits become a lifestyle, and you will find yourself well ahead of the pack.

Say no to nonessential tasks and prioritize the ones of extreme value.

Consider your goals and look at your schedule before agreeing to take on more work. If a task is time consuming but not necessarily important to the main goal, pass it off or add it to the bottom of the list.

Dedicate time blocks and limit distractions.

Everyone has a place where they work the most effectively. Some people love to have music in their ear-buds, while others need complete silence. Some people can work just as efficiently from their dining table as they can in a library cubicle. Wherever that place is, utilize it. Turn the television off, silence the cell phone, put away the tablet and dedicate complete focus to the task at hand. No responding to texts, no browsing the web.

When you operate your life in a healthy, organized fashion, and are able to execute daily tasks efficiently, stress is reduced, productivity increases and overall satisfaction manifests.

Never hesitate to take a break if needed.

Everyone gets worn out from time to time and piling on more and more tasks leads to stress that will simply derail you from the mission at hand. Take a walk, go to the gym, get some fresh air or take that sick day you've been holding out on. Sometimes all we need is a moment of clarity and solitude to clear our overworked minds and recharge our bodies to give us that next big push.

"Time management" refers to the way that you organize and plan how long you spend on specific activities.

It may seem counter-intuitive to dedicate precious time to learning about time management, instead of using it to get on with your work, but the benefits are enormous:

- Greater productivity and efficiency.
- A better professional reputation.
- Less stress.
- Increased opportunities for advancement.
- Greater opportunities to achieve important life and career goals.

Failing to manage your time effectively can have some very undesirable consequences:

- Missed deadlines.
- Inefficient work flow.
- Poor work quality.
- A poor professional reputation and a stalled career.
- Higher stress levels.

Spending a little time learning about time-management techniques will have huge benefits now – and throughout your career.

Tips for Answering Time Management Interview Questions

Being prepared with a thorough, detailed answer that is carefully reasoned will impress a prospective manager. Mentioning how you handle different aspects of time management will set you apart from other candidates, especially if you provide specific examples.

Daily Prioritization

Employers want to know you can handle your own tasks each day without being directly told each step of what needs to be done. They also want to know you can manage prioritizing work appropriately. You can accomplish this in your answer by saying you create a fresh to-do list for yourself at the beginning of each work day, ordered by deadline and by level of importance.

Since you know that surprises and interruptions can occur, you create three "must-wins" for yourself of tasks that need to be completed by the end of business.
You can also utilize the "80/20 Rule" (also known as "Pareto's Principle") to prioritize work tasks.
The 80/20 Rule states that, in any project, 20% of the activities yield 80% of the results. Typically, the first 10% and the final 10% of time spent on a project consume the most resources and are the most labor-intensive. Thus, you might explain how you schedule your time so that you can give your full attention to the most critical stages of any given project (typically, the beginning and the end / roll-out).

Avoiding Multitasking

Although there was a time when employees who could do many things at once were valued, recent studies have shown that multitasking is, in general, vastly overrated. Too often people who try to complete multiple tasks at the same time end up doing sloppy work, losing the time they have "saved" when they are subsequently forced to correct their errors.

A key element of effective time management is the ability to schedule your time so that you can focus on one thing at a time. If you can demonstrate, with an example or two, your ability to efficiently "single-task" challenging work assignments, you'll give your interviewer the favorable impression that you are dedicated to providing quality work.

Meeting Deadlines

Meeting important deadlines is an important aspect of your work. When a potential employer asks how you handle deadlines, emphasize your understanding of processes and of the importance of working ahead.
For instance, your answer could be that you work backwards from the deadline when planning your approach to a project, breaking it into smaller tasks and setting mini-deadlines for each task leading up to the project's overall due date. In that way, you are continually making progress each day and you ensure the project is completed on time.

Handling Interruptions

Interruptions and distractions are common in the workplace. Your ability to block them out and handle them appropriately is pivotal to your overall performance. Employers are looking for workers who can set firm boundaries, keeping themselves from getting distracted at work by coworkers or fun websites. Mention strategies you put into place, such as wearing headphones to

block out chit-chat, putting blocks on your computer for certain chunks of core "work time," and limiting water-cooler gossip.

Work-Life Balance

For a good employer, making sure employees are balanced and not stressed or burned out is important for company morale and productivity. When employers ask about this, they really are not looking for someone to say "work is my life" or that they have no hobbies or obligations outside of the workplace; managers know that is not healthy.

Instead, focus your answer on how you give your full effort at work and are completely present while you are on the clock, and that your efficiency allows you to disconnect when you are at home.

After all, time management is really life management.

UNIT II Questions

1. What are soft skills? Discuss the significance of soft skills in today's work and social environment.
2. Explain the various soft skills that are to be nurtured by the students for a successful career.
3. Differentiate between hard skills and soft skills.
4. Describe an incident when you felt uncomfortable and anxious to speak – Evaluate the situation and analyze the reasons.
5. What is attitude? How are attitudes formed?
6. What are the factors responsible for formation of attitudes?
7. Is there any difference between attitude and behaviour? Explain with examples.
8. What is the need to have Positive attitude? Substantiate with examples.
9. What are the benefits of being positive?
10. What are the obstacles in developing positive attitude?
11. What is negative attitude? How are negative attitudes formed?
12. Suggest the ways of overcoming negative attitude.

13. How does one's attitude alter one's life? Give suitable examples.
14. Why do we need to set goals?
15. Describe different types of goals.
16. What are the qualities of effective goals and discuss the steps toward setting effective goals?
17. Why do people fear setting goals?
18. Explain the reasons for not meeting goals.
19. What are SMART goals?
20. What is time management? Explain the significance of time in our life
21. What are the major time wasters in a student's life?
22. What are the strategies for effective time management?
23. What is procrastination? How does it affect time management?
24. What do you learn from the Pickle Jar Theory about Time Management?
25. What does the 80-20 Rule talk about managing time?

UNIT III
Soft Skills-II

Team Building and Team Dynamics

Team dynamics are a very important part of working life. They can have a big impact on:

- The profitability of an organization.
- Whether people enjoy their work.
- Staff retention rates.
- Team and individual performance.
- Company reputation.
- And many others.

However, team dynamics are often neglected or ignored. This can have a significant impact on the way a team works. In this article, we describe what team dynamics are, what causes problems in team dynamics, and how they can be improved.

Team dynamics are the unconscious, psychological forces that influence the direction of a team's behaviour and performance.

Team dynamics are created by the nature of the team's work, the personalities within the team, their working relationships with other people, and the environment in which the team works.

Team dynamics can be good - for example, when they improve overall team performance and/or get the best out of individual team members. They can also be bad - for example, when they cause unproductive conflict, demotivation, and prevent the team from achieving its goals.

How can you improve team dynamics?

To strengthen your team's dynamics, use the following strategies:

1. Know your team.
2. Tackle problems quickly with good feedback.
3. Define roles and responsibilities.
4. Break down barriers.
5. Focus on communication.
6. Pay attention.

Team dynamics are complex and multi-layered - being the result of the interaction of many factors (personalities, roles, structure, culture, etc.). To improve team dynamics there needs to be a diagnosis first, to identify the type of intervention that will have the right impact.

- A change of organizational structure, reassignment of personnel, or change of office layout.
- Team development workshops designed to address specific work or team performance issues.
- Personality workshops that increase awareness of interpersonal dynamics.
- Change workshops, aimed at addressing latent fears and resistance to the work of the team.

- Stakeholder workshops, to give the team a wider perspective or understand others' views of the team's performance.
- A cultural change programme to introduce new types of attitudes and behaviours to the organizational norms.
- New processes, tools, or technology, e.g. to facilitate better communication.

10 Team Dynamics of High-Performance Teams

Team dynamics defined as the motivating and driving forces that propel a team toward its goal and mission.

1. **Identify a Leader–** a common mistake is the failure to recognize that in any team endeavor a leader must either be identified or emerged. The leader is not there to tell people what to do. The leader is there to guide a process, ensure resources are supplied, coordinate efforts, assist in cross-functional-teamwork.
2. **Establish roles and responsibilities + discuss what each person 'brings to the table'** – Understanding the various functions and responsibilities of the team is critical to success. Taking time to know expertise plus special interests of team members will allow people to be matched to their capacity to complete the project tasks.
3. **Establish a set of goals and objectives** – in any team recognition and understanding of the goal is paramount. All organizations have long term goals, and project teams must set technical and process goals.
4. **Establish an agenda for managing time to complete the task/meeting** – Teams that do better at managing their time achieve better results.
5. **Develop a method to <u>determine how they will reach agreement</u>** – Everyday people make decisions quickly from what to wear to what to have for breakfast, individuals use rational and irrational methods to make a decision. However, when two or more people (any team, committee) attempt to make the simplest decision chaos results.
6. **Establish ground rules for their meetings** – "*An ounce of prevention is worth a pound of cure."* As it relates to teams, no truer words apply. When teams meet, there should be a set of standards that establish how team members will behave toward one another. This is not just a way to ensure courtesy to one another, but also that the team's time together ends up being used effectively and efficiently.
7. **Proper and timely use of <u>quality tools</u>** – Teams must have knowledge plus accessibility to utilize and comprehend the quality tools that teams need.
8. **Maladaptive behaviors are appropriately dealt with immediately and have consequences** – No matter how well a team prepares for maladaptive behavior and attempts to prevent it, such behavior will occur. This is particularly the case on teams! When these maladaptive behaviors are ignored, left to fester, they are like a dead body left to rot in the living room. It looks gross, it stinks, and no one wants to deal with it.

9. **Ability to get started on task/project quickly** – Teams waste a lot of time before the actual work gets done. Better results in project teams can come in the initial phase when the project teams have expertise in project management skills.
10. **Ability to state what is working and <u>how to improve</u> –** Teams need to understand that problems don't equal solutions; **Solutions = Solutions**. Teams must quickly acknowledge that a problem exists then work to determine what will take the place of the problem.

The difference between Team and Group Dynamics

Although team dynamics are very similar to group dynamics, and the terms are often used interchangeably, there is an essential difference.
Groups are a social community, consisting of two or more people who have something in common.
A team is a special instance of a group in which the commonality is a shared goal. This fact, itself, creates a dynamic between team members because they are dependent on each other for success. For example, a sports team wins or loses as a whole.
The word "team" is sometimes used, incorrectly, to refer to a group. For example, many sales "teams" are groups - because the sales people get incentives individually. A sales person wins commission based on his/her own sales, and is not affected by the performance
of other sales people.

Twelve Cs for Team Building

Successful team building, that creates effective, focused work teams, requires attention to each of the following.

- **Clear Expectations:** Has executive leadership clearly communicated its expectations for the team's performance and expected outcomes? Do team members understand why the team was created? Is the organization demonstrating constancy of purpose in supporting the team with resources of people, time and money? Does the work of the team receive sufficient emphasis as a priority in terms of the time, discussion, attention and interest directed its way by executive leaders?
- **Context:** Do team members understand why they are participating on the team? Do they understand how the strategy of using teams will help the organisation attain its communicated business goals? Can team members define their team's importance to the accomplishment of corporate goals? Does the team understand where its work fits in the total context of the organisation's goals, principles, vision and values?
- **Commitment:** Do team members want to participate on the team? Do team members feel the team mission is important? Are members committed to accomplishing the team

mission and expected outcomes? Do team members perceive their service as valuable to the organisation and to their own careers? Do team members anticipate recognition for their contributions? Do team members expect their skills to grow and develop on the team? Are team members excited and challenged by the team opportunity?

- **Competence:** Does the team feel that it has the appropriate people participating? (As an example, in a process improvement, is each step of the process represented on the team?) Does the team feel that its members have the knowledge, skill and capability to address the issues for which the team was formed? If not, does the team have access to the help it needs? Does the team feel it has the resources, strategies and support needed to accomplish its mission?
- **Charter:** Has the team taken its assigned area of responsibility and designed its own mission, vision and strategies to accomplish the mission. Has the team defined and communicated its goals; its anticipated outcomes and contributions; its timelines; and how it will measure both the outcomes of its work and the process the team followed to accomplish their task? Does the leadership team or other coordinating group support what the team has designed?
- **Control:** Does the team have enough freedom and empowerment to feel the ownership necessary to accomplish its charter? At the same time, do team members clearly understand their boundaries? How far may members go in pursuit of solutions? Are limitations (i.e. monetary and time resources) defined at the beginning of the project before the team experiences barriers and rework? Is the team's reporting relationship and accountability understood by all members of the organisation? Has the organisation defined the team's authority? To make recommendations? To implement its plan? Is there a defined review process so both the team and the organisation are consistently aligned in direction and purpose? Do team members hold each other accountable for project timelines, commitments and results?
- **Collaboration:** Does the team understand team and group process? Do members understand the stages of group development? Are team members working together effectively interpersonally? Do all team members understand the roles and responsibilities of team members? Team leaders? Can the team approach problem solving, process improvement, goal setting and measurement jointly? Do team members cooperate to

accomplish the team charter? Has the team established group norms or rules of conduct in areas such as conflict resolution, consensus decision making and meeting management? Is the team using an appropriate strategy to accomplish its action plan?

- **Communication:** Are team members clear about the priority of their tasks? Is there an established method for the teams to give feedback and receive honest performance feedback? Does the organization provide important business information regularly? Do the teams understand the complete context for their existence? Do team members communicate clearly and honestly with each other? Do team members bring diverse opinions to the table? Are necessary conflicts raised and addressed?
- **Creative Innovation:** Is the organisation really interested in change? Does it value creative thinking, unique solutions, and new ideas? Does it reward people who take reasonable risks to make improvements? Or does it reward the people who fit in and maintain the status quo? Does it provide the training, education, access to books and films, and field trips necessary to stimulate new thinking?
- **Consequences:** Do team members feel responsible and accountable for team achievements? Are rewards and recognition supplied when teams are successful? Is reasonable risk respected and encouraged in the organisation? Do team members fear reprisal? Do team members spend their time finger pointing rather than resolving problems? Is the organisation designing reward systems that recognize both team and individual performance? Is the organisation planning to share gains and increased profitability with team and individual contributors? Can contributors see their impact on increased organization success?
- **Coordination:** Are teams coordinated by a central leadership team that assists the groups to obtain what they need for success? Have priorities and resource allocation been planned across departments? Do teams understand the concept of the internal customer—the next process, anyone to whom they provide a product or a service? Are cross-functional and multi-department teams common and working together effectively? Is the organisation developing a customer-focused process-focused orientation and moving away from traditional departmental thinking?

Cultural Change: Does the organisation recognize that the team-based, collaborative, empowering, enabling organisational culture of the future is different than the traditional, hierarchical organization it may currently be? Is the organisation planning to or in the process of

changing how it rewards, recognizes, appraises, hires, develops, plans with, motivates and manages the people it employs? Does the organisation plan to use failures for learning and support reasonable risk? Does the organisation recognize that the more it can change its climate to support teams, the more it will receive in pay back from the work of the teams?

PROBLEM SOLVING

Everybody can benefit from having good problem-solving skills as we all encounter problems on a daily basis. Some of these problems are obviously more severe or complex than others.
It would be wonderful to have the ability to solve all problems efficiently and in a timely fashion without difficulty, unfortunately though there is no one way in which all problems can be solved.
You will discover, as you read through our pages on problem solving, that the subject is complex.
However well prepared we are for problem solving, there is always an element of the unknown. Although planning and structuring will help make the problem-solving process more likely to be successful, good judgement and an element of good luck will ultimately determine whether problem solving was a success.
Interpersonal relationships fail and businesses fail because of poor problem solving.
This is often due to either problems not being recognized or being recognized but not being dealt with appropriately.
Problem solving skills are highly sought after by employers as many companies rely on their employees to identify and solve problems.
A lot of the work in problem solving involves understanding what the underlying issues of the problem really are - not the symptoms. Dealing with a customer complaint may be seen as a problem that needs to be solved, and it's almost certainly a good idea to do so. The employee dealing with the complaint should be asking what has caused the customer to complain in the first place, if the cause of the complaint can be eliminated then the problem is solved.
In order to be effective at problem solving you are likely to need some other key skills, which include:

Creativity. Problems are usually solved either intuitively or systematically. Intuition is used when no new knowledge is needed - you know enough to be able to make a quick decision and solve the problem, or you use common sense or experience to solve the problem. More complex problems or problems that you have not experienced before will likely require a more systematic and logical approach to solve, and for these you will need to use creative thinking.

Researching Skills. Defining and solving problems often requires you to do some research: this may be a simple Google search or a more rigorous research project.

Team Working. Many problems are best defined and solved with the input of other people. Team working may sound like a 'work thing' but it is just as important at home and school as well as in the workplace.

Emotional Intelligence. It is worth considering the impact that a problem and/or its solution has on you and other people. Emotional intelligence, the ability to recognize the emotions of yourself and others, will help guide you to an appropriate solution.

Risk Management. Solving a problem involves a certain amount of risk - this risk needs to be weighed up against not solving the problem.

Decision Making. Problem solving and decision making are closely related skills, and making a decision is an important part of the problem-solving process as you will often be faced with various options and alternatives.

The measure of success is not whether you have a tough problem to deal with, but whether it is the same problem you had last year.

What is a Problem?

“A doubtful or difficult matter requiring a solution” and “Something hard to understand or accomplish or deal with.”

It is worth also considering our own view of what a problem is.

We are constantly exposed to opportunities in life, at work, at school and at home. However, many opportunities are missed or not taken full advantage of. Often, we are unsure how to take advantage of an opportunity and create barriers - reasons why we can't take advantage. These barriers can turn a potentially positive situation into a negative one, a problem.

Are we missing the 'big problem'? It is human nature to notice and focus on small, easy to solve problems but much harder to work on the big problems that may be causing some of the smaller ones.

It's useful to consider the following questions when faced with a problem.

Is the problem real or perceived?

Is this problem really an opportunity?

Does the problem need solving?

All problems have two features in common: goals and barriers.

Problems involve setting out to achieve some objective or desired state of affairs and can include avoiding a situation or event.

Goals can be anything that you wish to achieve, or where you want to be. If you are hungry then your goal is probably to eat something. If you are the head of an organization (CEO), then your main goal may be to maximize profits and this main goal may need to be split into numerous sub-goals in order to fulfil the ultimate aim of increasing profits.

Barriers: If there were no barriers in the way of achieving a goal, then there would be no problem. Problem solving involves overcoming the barriers or obstacles that prevent the immediate achievement of goals.

The approach referred to is generally designed for problem solving in an organization or group context, but can also be easily adapted to work at an individual level at home or in education.

Trying to solve a complex problem alone however can be a mistake. The old adage "A problem shared is a problem halved" is a sound advice.

Talking to others about problems is not only therapeutic but can help you see things from a different point of view, opening up more potential solutions.

Stages of Problem Solving

Effective problem solving usually involves working through a number of steps or stages, such as those outlined below.

Problem Identification:

This stage involves: detecting and recognizing that there is a problem; identifying the nature of the problem; defining the problem.

The first phase of problem solving may sound obvious but often requires more thought and analysis. Identifying a problem can be a difficult task in itself. Is there a problem at all? What is the nature of the problem, are there in fact numerous problems? How can the problem be best defined? By spending some time defining the problem you will not only understand it more clearly yourself but be able to communicate its nature to others, which leads to the second phase.

Structuring the Problem:
This stage involves: a period of observation, careful inspection, fact-finding and developing a clear picture of the problem.
Following on from problem identification, structuring the problem is all about gaining more information about the problem and increasing understanding. This phase is all about fact finding and analysis, building a more comprehensive picture of both the goal(s) and the barrier(s). This stage may not be necessary for very simple problems but is essential for problems of a more complex nature.

Looking for Possible Solutions:
During this stage you will generate a range of possible courses of action, but with little attempt to evaluate them at this stage.
From the information gathered in the first two phases of the problem solving framework it is now time to start thinking about possible solutions to the identified problem. In a group situation this stage is often carried out as a brain-storming session, letting each person in the group express their views on possible solutions (or part solutions). In organizations different people will have different expertise in different areas and it is useful, therefore, to hear the views of each concerned party.

Making a Decision:
This stage involves careful analysis of the different possible courses of action and then selecting the best solution for implementation.
This is perhaps the most complex part of the problem-solving process. Following on from the previous step it is now time to look at each potential solution and carefully analyze it. Some solutions may not be possible, due to other problems like time constraints or budgets. It is important at this stage to also consider what might happen if nothing was done to solve the problem - sometimes trying to solve a problem that leads to many more problems requires some very creative thinking and innovative ideas.
Finally, make a decision on which course of action to take - decision making is an important skill in itself and we recommend that you see our pages on decision making.

Implementation:
This stage involves accepting and carrying out the chosen course of action.
Implementation means acting on the chosen solution. During implementation more problems may arise especially if identification or structuring of the original problem was not carried out fully.

Monitoring/Seeking Feedback:
The last stage is about reviewing the outcomes of problem solving over a period of time, including seeking feedback as to the success of the outcomes of the chosen solution.

The final stage of problem solving is concerned with checking that the process was successful. This can be achieved by monitoring and gaining feedback from people affected by any changes that occurred. It is good practice to keep a record of outcomes and any additional problems that occurred.

Decision Making:

There is a tremendous need for good decision makers in today's world. People who have the ability to make decisions quickly and responsibly are needed. This is why it is so important for you to teach good decision-making skills to your students. In order to do this, your students must understand the importance of decision making.

While everyone has to make decisions, it is amazing how little is known about how to make a good decision. Most decisions are made without any idea of the decision-making principles covered in this unit. It is estimated that about one-half of the decisions made in business are incorrect. With better decision-making skills, the percentage of correct decisions would undoubtedly rise.

Here are the five topics we will cover in this section to teach the importance of good decisions:

1. Problem solving vs. decision making
2. Characteristics of good decision makers
3. The three most important criteria for good decision making
4. Brings value
5. Move forward without worry

Problem solving vs. decision making

First, you should understand that problem solving and decision making are two separate things. Problem solving is being forced to make a decision because of conditions beyond your control. Decision making means choosing to make a decision because you wish for something to occur that is not occurring at the present time. Decision making occurs because you want something to happen, while problem solving occurs when a problem arises.

Characteristics of good decision makers

The best decision makers are people who can combine logic, problem analysis, and intuition to come up with the correct decision. These are the additional characteristics that most good decision makers have in common:

- *Being a good listener.* Good decision makers must be able to hear and take into account other people's opinions when making decisions.
- *Having a clear set of priorities.* As we will discuss later on in this unit, decision makers must know their priorities or values in order to choose a good or "correct" path.
- *Having an open mind.* Good decision makers are open to other people's views and ways of thinking rather than being stuck in one way of doing things.
- *Being flexible and willing to change.* A good decision maker is open to new or alternative ways of doing things that may work out better in the end.
- *Being realistic.* Good decision makers understand the realistic outcomes to which different paths will lead.

The three most important criteria for good decision making

The three most important criteria for good decision making are values, experience and common sense:

1. **Values**-What your students value determines their behavior. Their beliefs produce attitudes, attitudes produce feelings and feelings lead to behavior.

2. **Experience**– We all learn to make decisions through experience. Time will tell if a decision is good or bad.

3. **Common sense-** Common sense, or what you know, is a key component in choosing one path versus another. Use what you know to help you make the best decision.

Brings value

Good decision making is an essential skill. There is a tremendous need for good decision makers in today's world. When your students improve their decision-making skills, they will increase their value in their future jobs, families and communities.

Move forward without worry

Decision making involves making choices. Many people are afraid to make decisions because they may make a wrong one. Good decision making does not depend on educational background as much as common sense. Teach your students that common sense, general knowledge, and their value systems are the most important criteria for good decision making.

Unit III Questions

1. What is a team? Describe the skills needed to form a good team.
2. Explain the difference between Team and Group.
3. What are the characteristics of an effective team?
4. What is Team building? Explain the factors influencing the performance of teams.
5. Describe the role played by a team leader and team members in a team.
6. Explain the success factors of good teams.
7. What are the 12 C's of team building?
8. What do you mean by problem solving skills? Explain the need and importance.
9. What is decision making? Give the process of good decision making.
10. What do you mean by rational decisions? Give examples.

UNIT-IV

TECHNICAL COMMUNICATION

Nature of Technical Communication

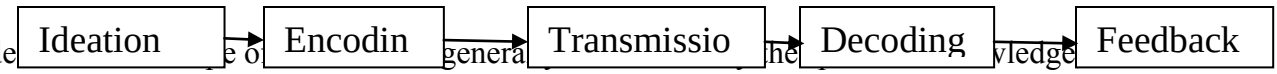
The word Communication is derived from the Latin word 'Communicare' or 'communicus' both mean 'to share'. It is not merely transmission of information of meaning but also enables the people to acquire knowledge, exchange ideas, views, retrieve and process information. Thus, it may be described as a social affair and defined in many ways. Some of them are:

Communication means-

- Transfer of information from sender to receiver.
- Passing information.
- Message conveying.
- Means by which organizational information is unified.
- Sharing or exchange of ideas, views, opinions, understandings and attitudes.
- It is also a means for the achievement of goals of the organization.

If any of these is not achieved, then miscommunication takes place. Communication follows a process.

The Process of Communication



Ide e o genera he wledge experience and abilities and the purpose of communication and context of the communicative situation.

Encoding: It is a process of changing information /thoughts into some form of logical and coded message which involves

- selecting a language
- selecting of medium of expression i.e. verbal or non-verbal
- selecting appropriate communication form

Transmission: It refers to the flow of message over the chosen channel. It involves choosing when to communicate (right time), where to communicate (right place), and how to communicate (right way)

Decoding: It involves the process of interpretation and an analysis of a message. Effective decoding is very important for successful communication. Otherwise misinterpretation of a message leads to communication break down and creates confusion and misunderstanding.

Feedback/Response: It is the last stage of communication process. It reflects the receiver's understanding and interpretation of the message whether clearly or not by his/her responses/doubts. Thus, response is the key to communication as the effectiveness of

communication depends on how congruent (matching/similar) a receiver's response is with the meaning intended by the sender.
Communication (formal) generally takes place in a well-defined set-up. This is called *communication environment*.
There are different forms of communication, verbal non-verbal and in verbal again oral and Written communication.
Levels of Communication
Human communication takes place at various levels:
Intrapersonal Communication
Interpersonal Communication
Extra personal Communication
Organizational Communication
Channels of Communication

Type of communication	**Function/purpose/objective**	**Examples**
Downward Communication	• Direction and control from the higher level of managerial hierarchy to the lower ones • Communication from the decision maker to employees/workers • Seniors to subordinate employees	• Annual confidential reports • Performance appraisals • Notices • Project feedback • Announcement of company policies • Official instructions
Upward Communication	• To provide feedback on several issues, transfer of information, request for improving relations. • Communication from employees to management • Subordinate employees to seniors • Facilitates employee involvement in decision making process	• To share their views and ideas • Business reports from branch manager to the managing director • Business proposals • Suggestion box • Exit interviews • Grievance committees

Horizontal Communication	• To develop team work • To promote group coordination within the organization • Less formal and less structured than downward communication upward Communication • Communication among workers at the same level • Seniors to seniors • Employees to employees	• Informal discussions • Management gossip • Telephone calls • Teleconferencing • Videoconferencing • Memos • Routine meetings
Diagonal Communication	• It is the product of modern changes in information technology and management • It reflects the growing realization of fraternity and equality in the corporate sector • Communication flows in all directions • People don't follow rigid norms of communication protocol	• A sales manager communicating directly with the Vice–President (Production) who is not only a different section but also at a higher level of hierarchy • Managing Director calling a supervisor and give instructions
Grapevine Communication	• communication in an informal network. • very active in nature	• they are 4 types viz., *Strand*- the message is passed from one person to another along a single strand. *Gossip*-one person passes information to all the others. *Probability*-each person tells others at random. *Cluster*-some people tell a selected few of the others, for example a message that sparks the interest of an employee may stimulate him or her to tell

		someone.

What is Technical Communication?

Communication that conveys complex information in an easy to understand manner to inexperienced users. It is designed to achieve specific tasks or to help solve problems, such as:

- Informing users about an update in computer software.
- Instructing assembly line workers to produce a new product.
- Warning customers about unsafe ways to operate a machine.
- Instructing buyers how to assemble a bicycle.
- Repairing a photo copying machine

How is Technical Communication Different from Other Communication?

- It differs from other types of communication in its emphasis on clarity, accuracy, conciseness, consistency, readability, and usability.
- The purpose of communication is to instruct, not showcase the beauty of language or impress with extensive vocabulary.
- Technical communication explains how to accomplish a variety of tasks; some, extremely dangerous with grave consequences for mistakes.
- Technical communication represents a company's image, brand, practices, and goals

What is Technical Writing?

Technical writing conveys specific information about a technical subject to a specific audience for a specific purpose. The words and graphics of technical writing are meant to be practical..that is, to communicate a body of factual information that will help an audience understand a subject or carry out a task.

Technical communication may be defined as a transmission of scientific and technical information from one individual or a group to another. Taking complicated subject matter and transforming it into easy-to-understand information for the reader.

Importance and Need for Technical Communication

- Success in today's highly competitive environment will depend not just on one's professional knowledge and skills but on the ability to analyze, organize and present information effectively.
- The importance of technical communication continues to rise as the professional world becomes more diverse, competitive, and result-oriented

- Knowledge of highly sophisticated skills is useless if one does not know how to communicate the insights that result from the application of these professional skills

As technical communication skills may be oral or written, it may involve all the language skills

- listening
- speaking
- reading and
- writing

Characteristics of Technical Writing:

- Clear, Concise and Coherent.
- Repetitive in nature.
- Highly defined structure/format.

Examples:

- lab reports, memos, business letters, technical reports, and proposals
- simple definition of tools
- complex descriptions of machines and processes
- sophisticated explanation and interpretation of scientific principles

The three important aspects /requirements of technical communication:

Subject Competence: Ideation depends on the sender's knowledge, experience and abilities. An inadequate background in the subject or lack of information might lead to incomplete and ineffective communication.

Linguistic Competence: It is the possession of language skills to present scientific facts or information clearly and objectively. As technical communication involves technical presentation of data in reports, proposals, research papers, technical bulletins, manuals and handbooks, linguistic competence includes several functional skills. Lack of these skills may lead to ineffective communication.

Organizational Competence: It is organizing of information in a logical and structured way. It includes several skills such as the ability to sequence thoughts in a sentence, organize a paragraph according to the needs of the reader and the topic, use appropriate logical ordering and provide thematic coherence to expression.

Difference between General Communication and Technical Communication

General Communication	Technical Communication
• General content	• Technical content
• General vocabulary	• Specialized vocabulary
• No formal elements	• Formal elements
• Both formal and informal in style	• Always formal in style
• May not be factual	• Always factual
• Both objective and subjective	• Objective
• Not always structured	• Logically organized and structured
• No specific exposition techniques	• Complex and important exposition techniques
• No specific audience	• specific audience
• May or may not involve graphics	• Usually involves graphics

Barriers to Effective Communication

- Improper Encoding: It is a recurrent barrier in the process of communication. If the receiver does not understand and able to follow the language and dialect of the sender. It leads to confusion misunderstanding.

- Bypassing: It refers to misunderstanding resulting from missed meanings because of the abstract words and phrases on which both senders as well as the receivers don't agree. Words mean different things to different people. Age, education and cultural background are three variables that influence the language a person uses.

- Frame of Reference: It is viewing others within your frame of reference which leads to confusion misunderstanding. you interpret others from your angle and allow your pre-conceived notions and prejudices. It is based on your experience education, exposure and personality.

- Physical Distractions: Physical distractions such as temperature in a classroom, noise, beside the classroom can easily disrupt communication.

- Psychological and Emotional Interface: Psychological and emotional turbulence or disturbance due feelings of sadness, anger, fear, anxiety and jubilation affect the reception and hinder effective communication

- Intercultural Differences: As stated earlier due to interpretation from one' frame of reference and improper encoding leads to confusion misunderstanding which may create misunderstandings during intercultural communication as sender and receiver belong to different cultures.

Unit IV Questions

1. What is Communication? Explain need for effective technical communication.
2. Explain the process of communication?
3. Discuss the channels of communication.
4. What is the difference between oral and written communication?
5. State the purpose and importance of Technical Communication.
7. How is technical communication different from general communication?
8. What are the three important requirements of technical communication?
9. Explain the importance of technical communication.
10. Define technical writing.
11. What are the five types of technical writing?
12. List three reasons why technical writing is important.

UNIT -V

ETIQUETTE AND STRESS MANAGEMENT

One definition of the French word *étiquette* is "ticket" or "label attached to something for identification." French speakers of the time attributed "proper behavior" to "étiquette". Etiquette is a code of conduct that governs the expectations of social behaviour within a society, social class or group, which is usually unwritten. It usually reflects formulae of conduct in which society or tradition has its base. In the middle of the 18th century English speakers finally adopted both the word and the meaning from the French.

Etiquette in simpler words is defined as good behaviour which distinguishes human beings from animals.

Human Being is a social animal and it is really important for him to behave in an appropriate way. Etiquette refers to behaving in a socially responsible way. It is essential for an individual to behave in a responsible manner acceptable to the society. People around us must not feel embarrassed by our behaviour. One should not behave irrationally or illogically in public.

Etiquette fundamentally prescribes and restricts the ways in which people interact with each other and show their respect for other people by confirming to the norms of society.

Etiquette has to do with good manners. It's not so much our own good manners, but making other people comfortable by the way we behave . So it is more or less thinking of others and how others perceive us, so that everyone knows the rules for doing things and everyone is in a very comfortable position in the society.

A gentleman is someone who never insults someone else intentionally. ... George Bernard shaw

Etiquette

- Differentiates you from others
- Enables you to be confident
- Modifies distracting behaviours
- Leads to quality and excellence
- Gives credibility to corporate brand
- Enhances the status of the company
- Makes you feel valued
- Develops your personal brand

Need for Etiquette

- Etiquette makes you a cultured individual who leaves his mark wherever he goes.
- Etiquette teaches you the way to talk, walk and most importantly behave in the society.
- Etiquette is essential for an everlasting first impression. The way you interact with your superiors, parents, fellow workers, friends speak a lot about your personality and up-bringing.
- Etiquette enables the individuals to earn respect and appreciation in the society. No one would feel like talking to a person who does not know how to speak or behave in the society. Etiquette inculcates a feeling of trust and loyalty in the individuals. One becomes more responsible and mature. Etiquette helps individuals to value relationships.

Types of Etiquette

1. **Social Etiquette-** Social etiquette is important for an individual as it teaches him how to behave in the society.
2. **Corporate Etiquette-** Corporate Etiquette refers to how an individual should behave while he is at work. Each one needs to maintain the decorum of the organization. Don't loiter around unnecessarily.
3. **Cubical etiquette:** Avoid making and receiving personal calls, respect others' privacy, don't look into others cubicles, avoid looking at others computers
4. **Professional Etiquette:** Keep your cell phone switched off during meetings and presentations, do not interrupt the speaker when you don't agree with his points, keep your voice low while talking over the phone, be neatly and formally dressed, don't wear tight and revealing clothes at the work place, avoid using strong perfumes, keep yourself well groomed and presentable .
5. **Meeting Etiquette-** Meeting Etiquette refers to styles one need to adopt when he is attending any meeting, seminar, presentation and so on. Listen to what the other person has to say. Never enter meeting room without a notepad and pen. It is important to jot down important points for future reference.
6. **Telephone Etiquette-** It is essential to learn how one should interact with the other person over the phone. Telephone etiquette refers to the way an individual should speak on the phone. Never put the other person on long holds. Make sure you greet the other person. Take care of your pitch and tone.

7. **Business Etiquette-** Business Etiquette includes ways to conduct a certain business. Don't ever cheat customers. It is simply unethical. For business meetings Reach the venue well in advance, carry everything that you need for the meeting, have a conversation with the partner before the official meeting , dress appropriately, may be a little better than how you got work.

   Work Etiquette: Be timely, be pleasant, be flexible, be courteous, be polite, be aware of office policies, be aware of office politics

8. **Eating Etiquette-** Individuals must follow certain decorum while eating in public. Don't make noise while eating. One should not leave the table unless and until everyone has finished eating. Used utensils like knife, fork and spoons should be placed on the plates and saucer respectively, sit up straight, do not hunch over your plate, do not stretch your legs out, always say thanks when served something, relax and dine slowly, after eating put your napkin on the table next to your plate, remember to thank the host and the server
9. **Restroom Etiquette-** Restroom etiquette refers to the set of rules which an individual needs to follow while using public restrooms or office toilets. Make sure you leave the restroom clean and tidy for the other person.

   Taboo Topics : Personal remarks on appearance and dress sense, a person's age, salary, designation or a job profile in detail, promotion and intra office matters, marital issues, terminal illness, financial crunches, personal and family related details that are meant to be confidential, official contracts and confidential matters

   i. Secrets: Do not share somebody's secret(s) with everybody.
   ii. Body language: Sighing and rolling eyes suggest disinterested.
   iii. Making eye contact and nodding suggest that you are paying attention
   iv. Standing or sitting up straight, appearing confident, looking at people in the eye, and having a smile or pleasant expression gives people the impression that you are polite, confident and pleasant.
   v. Scowling, crossing your arms, slouching, or staring off into the distance may make people think that you are angry, unapproachable, or disinterested.

<u>Additional Inputs on Corporate Etiquette:</u>

Corporate Etiquette is implied as a set of rules an employee or for that matter an individual should follow to please his work environment and the people around him. It is also used to maintain the decorum and ambience of the work place. It refers to behaving sensibly and suitably at the work place to create an eternal impression on the seniors and management for better prospects.

<u>Dos and Donts:</u>

- Never adopt a casual attitude at work.
- Don't peep into other's cubicles and workstations
- Put your hand phone in the silent or vibrating mode at the work place.

- Don’t open anyone else’s notepads, registers or files without permission
- It is bad manners to sneeze or cough in public without covering your mouth
- Popping chewing gums in front of co workers is simply not expected out of a professional
- Stay away from nasty politics
- Keep your workstation clean and tidy
- Take care of your pitch and tone at the work place
- Never attend meetings or seminars without a notepad and pen
- Pass on information to all related recipients in the desired form
- Reach office in or on time.
- No organization likes to have a shabbily dressed employee
- Never wear revealing clothes to work
- Don’t pass lewd comments to any of your fellow workers.
- While having lunch together, do not start till the others have received their food
- Respect your fellow workers and help them whenever required.
- It is unethical to share confidential data with external parties and any other individual who is not related to the organization. Data in any form must not be passed to anyone outside the organization.
- Office stationary is meant to be used only at work. Taking any office property back home is equivalent to stealing.
- Make sure you turn off the monitor while you go out for lunch or tea breaks.
- Don’t bring your personal work to office. Avoid taking kids to office unless and until there is an emergency.
- Park your car at the space allocated to you.
- Never ever drink while you are at work. Smoke only at smoking zones.
- Do not leave the restroom with taps on
- Female employees should stick to minimal make up.

Job Interview Etiquette

1. Greet your interviewers as Ms or Mr. Most people prefer you call them by their first name. when was the last time someone instructed you to call them by their last name?
2. Make sure your cell phone is off….. not on vibrate, please
3. Look people in the eye… and smile, of course
4. Firm handshake is the top most priority. This is a non verbal way to connect with people. Especially, if a man is hand shaking with a woman, it should never be too firm.
5. Let the company take the lead during your interview. Some times when your interviewer is soft spoken or laid back you may feel the urge to keep things moving; to dominate. Don’t do that at all. That may be a trap and you may be taken as an embarrassing rogue.
6. Don’t stop on the last 3 words of someone’s conversation. This is noticed many times during conversations. Has this ever happened to you? Annoying and frustrating, isn’t it?
7. Sit up straight and lean slightly forward. Your sitting position matters a lot. Sit erect and lean a bit forward; right posture. There are many incidents when a candidate was rejected because the candidate is too much leaning backward or forward.

8. Take notes during your interview. Carry a good professional looking binder with you so you can jot down a few notes during your interview. This conveys a sincere interest in what your interviewers have to say, an gives you a chance to jot down a question to ask at the appropriate time.
9. Pursue the job even if your interview is going badly. You might be guessing that the job is slipped away out of your hands, but still be patient till the end of the interview. Don't show that you got an idea that you are kicked off. Give answers patiently till the end. This is a fatal mistake because you cannot prejudge your performance. May be they are acting that they are not interested in you and you are actually selected??!!
10. Your interview is not over until you drive down the road. Yes, true. It is not just coming out of the interview room. They observe you at all times till you are on the road.

    Yes, in a few cases, I have known hiring managers to watch candidates from their office window as they exit the building and get into their car. People can do some pretty outrageous things like spitting, lighting up a cigarette, arranging themselves, tapping on their cell phones for 20 minutes while leaning on their car, chewing down on a sandwich in their car, and other things you would not believe. So, stay in professional mode until your tail lights are out of sight. Also, you may also be observed arriving for your interview.

11. Arrive 15 minutes early …. But no sooner…. Arriving too early could be annoying to employers. They may not accommodate you as there may be other candidates who were given appointment.
12. Promptly send a thank you note after your interview. This is a MUST on your job interview etiquette list. Not only is this a common courtesy, but it also keeps your name in front of those who interviewed you.

To conclude, etiquette transforms a man into a gentleman.

Etiquette: Comprehension questions

1. What is etiquette? How are etiquette and manners related?
2. What are the benefits of practicing etiquette?
3. Briefly discuss the classification of etiquette?
4. What is the need for practicing good manners?
5. Etiquette and Manners: "Stop advising and start pursuing". Explain.
6. Describe the different types of etiquettes?
7. What is Telephoning Etiquette?
8. What is Professional Etiquette?
9. What is Business Meeting Etiquette?
10. What is Interview Etiquette?

Stress Management

What is Stress?

Stress is the "wear and tear" our bodies experience as we adjust to our continually changing environment; it has physical and emotional effects on us and can create positive or negative feelings. Positive stress is called Eustress that can help and compel us to action; it can result in a new awareness and an exciting new perspective. Negative stress is called Distress that can result in feelings of distrust, rejection, anger, and depression, which in turn can lead to health problems such as headaches, upset stomach, rashes, insomnia, ulcers, high blood pressure, heart disease, and stroke. With the death of a loved one, the birth of a child, a job promotion, or a new relationship, we experience stress as we readjust our lives. In so adjusting to different circumstances, stress will help or hinder us depending on how we react to it.

How can I eliminate stress from my life?

As we have seen, positive stress adds anticipation and excitement to life, and we all thrive under a certain amount of stress. Deadlines, competitions, confrontations, and even our frustrations and sorrows add depth and enrichment to our lives. Our goal is not to eliminate stress but to learn how to manage it and how to use it to help us. Insufficient stress acts as a depressant and may leave us feeling bored or dejected; on the other hand, excessive stress may leave us feeling "tied up in knots." What we need to do is find the optimal level of stress which will individually motivate but not overwhelm each of us.

How can I tell what is optimal stress for me?

There is no single level of stress that is optimal for all people. We are all individual creatures with unique requirements. As such, what is distressing to one may be a joy to another. And even when we agree that a particular event is distressing, we are likely to differ in our physiological and psychological responses to it.

The person who loves to arbitrate disputes and moves from job site to job site would be stressed in a job which was stable and routine, whereas the person who thrives under stable conditions would very likely be stressed on a job where duties were highly varied. Also, our personal stress requirements and the amount which we can tolerate before we become distressed changes with our ages.

It has been found that most illness is related to unrelieved stress. If you are experiencing stress symptoms, you have gone beyond your optimal stress level; you need to reduce the stress in your life and/or improve your ability to manage it.

How can I manage stress better?

Identifying unrelieved stress and being aware of its effect on our lives is not sufficient for reducing its harmful effects. Just as there are many sources of stress, there are many possibilities for its management. However, all require work toward change: changing the source of stress and/or changing your reaction to it. How do you proceed?

1. Become aware of your stressors and your emotional and physical reactions.
Notice your distress. Don't ignore it. Don't gloss over your problems. Determine what events distress you. What are you telling yourself about meaning of these events? Determine how your body responds to the stress. Do you become nervous or physically upset? If so, in what specific ways?

2. Recognize what you can change.
Can you change your stressors by avoiding or eliminating them completely? Can you reduce their intensity (manage them over a period of time instead of on a daily or weekly basis)?Can you shorten your exposure to stress (take a break, leave the physical premises)? Can you devote the time and energy necessary to making a change (goal setting, time management techniques, and delayed gratification strategies may be helpful here)?

3. Reduce the intensity of your emotional reactions to stress.
The stress reaction is triggered by your perception of danger...physical danger and/or emotional danger. Are you viewing your stressors in exaggerated terms and/or taking a difficult situation and making it a disaster? Are you expecting to please everyone? Are you overreacting and viewing things as absolutely critical and urgent? Do you feel you must always prevail in every situation? Work at adopting more moderate views; try to see the stress as something you can cope with rather than something that overpowers you. Try to temper your excess emotions. Put the situation in perspective. Do not labor on the negative aspects and the "what if's."

4. Learn to moderate your physical reactions to stress.
Slow, deep breathing will bring your heart rate and respiration back to normal. Relaxation techniques can reduce muscle tension. Electronic biofeedback can help you gain voluntary control over such things as muscle tension, heart rate, and blood pressure. Medications, when prescribed by a physician, can help in the short term in moderating your physical reactions. However, they alone are not the answer. Learning to moderate these reactions on your own is a preferable long-term solution.

5. Build your physical reserves.
Exercise for cardiovascular fitness three to four times a week (moderate, prolonged rhythmic exercise is best, such as walking, swimming, cycling, or jogging). Eat well-balanced, nutritious meals. Maintain your ideal weight. Avoid nicotine, excessive caffeine, and other stimulants. Mix leisure with work. Take breaks and get away when you can. Get enough sleep. Be as consistent with your sleep schedule as possible.

6. Maintain your emotional reserves.
Develop some mutually supportive friendships/relationships. Pursue realistic goals which are meaningful to you, rather than goals others have for you that you do not share. Expect some frustrations, failures, and sorrows. Always be kind and gentle with yourself -- be a friend to yourself.

Strategies for Stress Management

Effective time management is just one of many ways to keep from succumbing to stress overload. Here is a list of some other methods of stress management that you might want to experiment with to see what works best for your particular situation.

1. Associate with people whom you enjoy and who support you.
2. Learn and practice relaxation or meditation skills.
3. Engage in a vigorous physical exercise that is convenient and pleasurable. Sometimes it helps to get a friend to exercise with you.
4. Don't let one thing dominate you, such as school work, relationships, jobs, sports, etc.
5. View life as challenges to seek, not obstacles to avoid.
6. Take responsibility for your life and your feelings, but never blame yourself.
7. Maintain a reasonable diet and sane sleep habits.
8. Avoid the use of sleeping pills, tranquilizers, and other drugs to control stress.
9. Protect your personal freedoms and space. Do what you want and feel, but respect the rights of others. Don't tell others what to do, but if they intrude, let them know.
10. Find a time and place each day where you can have complete privacy. Take time off from others and pressures. Short time-outs during the day can help improve efficient functioning the rest of the day.
11. Don't drift along in troublesome and stressful situations or relationships. Take action to change rather than trying to avoid the problem. Taking chances is the key to emotional well-being.
12. Surround yourself with cues from positive thoughts and relaxation.
13. Review your obligations from time to time and make sure they are still good for you. If they're not, let them go.
14. Open yourself to new experiences. Try new things, new foods, new places.
15. When worries start to build up, talk to someone.

Do you need stress in your life?

Stress adds flavor, challenge and opportunity to life. Without stress, life would be dull and unexciting. However, too much stress can seriously affect your physical and mental well-being. Recurrent physical and psychological stress can diminish self-esteem, decrease interpersonal and academic effectiveness and create a cycle of self-blame and self-doubt. It is important for your health that you find the optimal level of stress that you can learn to manage effectively.

Stress is unique and personal to each of us. What is relaxing to one person may be stressful to another. One person may find “taking it easy” at the beach relaxing while another may find it boring. The key to stress reduction is identifying strategies that fit you as an individual.

Signs of Stress

The best way to cope with unhealthy stress is to recognize when your stress levels are building. While we often think of stress as the result of external events, the events themselves are not necessarily stressful. It is the way in which each individual interprets and reacts to an event that

produces stress. People vary significantly in the type of events they experience as stressful and the way that they respond to these events. Public speaking is a good example: while some people see it as routine, others experience it as highly stressful.

Stress Signals
Stress "signals" fall into four categories: thoughts, feelings, behavior and physical symptoms. When you are under stress you may experience:

Feelings	Thoughts	Behavioral	Physical
Anxiety, irritability, fear, moodiness, embarassment	Self-criticism, difficulty concentrating or making decisions, forgetfulness or mental disorganization, preoccupation with the future, repetitive thoughts, fear of failure.	Stuttering or other speech difficulties, crying, acting impulsively, nervous laughter, "snapping": at friends, teeth grinding or jaw clenching, increased smoking, alcohol or other drug use, being prone to more accidents, increased or decreased appetite.	Tight muscles, cold or sweaty hands, headaches, back or neck problems, sleep disturbances, stomach distress, more colds and infections, fatigue, rapid breathing or pounding heart, trembling, dry mouth.

Sources of Stress

Stress is a part of every student's daily life. Your personal stress requirements and the amount which you can tolerate before you become distressed varies with your life situation and your age. As a college student, the greatest sources of events you experience as stressful are likely to be relationships, academic and social situations, environment and lifestyle.

Leaving home or commuting daily, managing finances, living with roommates and juggling a job, classes, and relationships all contribute to the normal stress of being at the University. It is also not uncommon for students to feel overwhelmed and anxious about wasting time, meeting high standards or being lonely.

In addition, stress can also come from exciting or positive events. Falling in love, preparing to study abroad, or buying a new car can be just as stressful as less happy events. It is crucial to recognize stressful situations, address them, and develop strategies to manage your stress.

Student Stress Checklist

Both positive and negative events can be stressful.

Make a note of any items that you have experienced in the past six months or are likely to experience in the next six months.

1. Death of a loved one. 2. Relocating to Austin. 3. Divorce of parents. 4. Encounter with the legal system. 5. Transfer to a new school. 6. Marriage. 7. Lost job. 8. Elected to leadership position. 9. New romantic relationship. 10. Serious argument with close friend. 11. Increase in course load or difficulty. 12. Change in health of family member. 13. First semester in college. 14. Failed important course. 15. Major personal injury or illness. 16. Change in living conditions. 17. Argument with instructor. 18. Outstanding achievement. 19. Change in social life.	20. Change in sleeping habits. 21. Lower grades than expected. 22. Breakup of relationship. 23. New job. 24. Financial problems. 25. Change in eating habits. 26. Chronic car trouble. 27. Pregnancy. 28. Too many missed classes. 29. Long commute to work/school. 30. Working more than one job. 31. Impending graduation. 32. Argument with family member. 33. Sexual concerns. 34. Changes in alcohol and/or drug use. 35. Roommate problems. 36. Raising children.

Tips for Stress Management

There are many ways to manage unhealthy stress in your life. As you begin to understand more about how stress affects you as an individual, you will develop your own ideas to help relieve tension.

Remember, some of these stress management strategies will be new skills and require practice to be effective. Think about learning to ride a bicycle. There was a time when this was a new skill and felt very unnatural and awkward. You probably needed help at first. With some coaching and practice, stress management, like bicycling or any other skill, becomes easier.

1. Take a deep breath

2. Manage time

3. Connect with others

4. Talk it out

5. Take a “Minute” vacation

6. Monitor your physical comfort

7. Do physical activity

8. Take care of your body

9. Laugh

10. Know your limits

11. Avoid self medication

12. Avail help for managing stress

Stress need not be a negative factor in your life. An increase in stress increases the adrenalin and energy in your body. Use this energy to make changes, overcome challenges and put Stress to work for you.

UNIT-VI
RESUME WRITING AND INTERVIEW SKILLS

Resume Writing

A resume is your sales tool, 1st example of your communication skills and your ticket to the interview. A resume is a window. It's a brochure about you.

Most of the Companies and HR agencies are now looking for the best, potential, result oriented and articulate-personnel/candidates who can deliver values to the organization. Hence you need to prepare a well-structured bio-data/curriculum vitae/ resume in order to get a call letter for an interview.

Meaning of -

Bio-data: Bio-data is the short form for Biographical data, in which the emphasis is more on the personal particulars like date of birth, nativity, gender, religion, nationality, physical fitness, marital status and basic educational qualifications.

Resume: Resume is a French word meaning "summary.".it is a compressed format for presenting the details of a person i.e about the personal particulars such as academic qualifications, technical capabilities/certification and other skills set.

Curriculum Vitae (CV): Curriculum Vitae is a Latin word which means "course of one's life."It gives the details of a person including about the education, technical and work experience besides other note-worthy points highlighting about the self.

In contrast, both CV and resume

- Are tailored for the specific job/company you are applying to
- Should represent you as the best qualified candidate
- Are used to get you an interview

If you are applying for both academic as well as industry (private or public sector) positions, you will need to prepare both a resume and a CV.

Curriculum Vitae vs. Resume: Format and Content

The CV presents a full history of your academic credentials, so the length of the document is variable. In contrast, a resume presents a concise picture of your skills and qualifications for a specific position, so length tends to be shorter and dictated by years of experience (generally 1-2 pages).

CVs are used by individuals seeking fellowships, grants, postdoctoral positions, and teaching/research positions in post / secondary institutions or high-level research positions in industry. Graduate school applications typically request a CV, but in general are looking for a resume that includes any publications and descriptions of research projects.

Resume	Vs	CV
Emphasizes skills		Emphasizes academic accomplishments
Used when applying for a position in industry, non-profit, and public sector		Used when applying for positions in academia, fellowships and grants
Is no longer than 2 pages, with an additional page for publications and/or poster presentations if highly relevant to the job		Length depends upon experience and includes a complete list of publications, posters, and presentations

After 1 year of industry experience, lead with work experience and place education section at or near the end, depending upon qualifications		Always begins with education and can include name of advisor and dissertation title or summary (see examples). Also used for merit/ tenure review and sabbatical leave

Types of Resume

Chronological Resume

A chronological resume starts by listing out your work history, beginning with your most recent position first and continuing in reverse chronological order. To supplement each position listed, key accomplishments and qualifications are included to give potential employers a sense of the kind of work you have done in the past and what you are capable of doing. An Education section follows, including the schools you attended and when, degree(s) earned, your major(s)/minor(s), and any honors or awards received. For new graduates list Education first, then Experience. In addition, you will typically also include a Skills section which will include computer skills, laboratory skills or languages spoken, etc.

Employers typically prefer this type of resume because they can easily scan which jobs you have held, when you held them, and what you accomplished there. Chronological resumes benefit job seekers with a strong work history/experience.

Functional Resume

A functional resume focuses more on the skills you have acquired rather than a listing of positions you have held. Functional resumes usually highlight a few key areas of experience and list responsibilities and accomplishments for each experience area. These skill clusters should be specific and filled with lots of context, as well as targeted to the jobs you are applying for.

You may want to consider a functional resume if you are a new graduate without much professional experience or if you have noticeable gaps in your work history. In addition, a functional resume can benefit those job seekers who are changing careers to a field very different from their previous experience.

Unlike chronological resumes that focus on education and work experience, functional resumes highlight accomplishments and emphasize skills. Some employers are more interested in the applicant's ability to handle the position they are applying for, and they would prefer a functional resume rather than a chronological one. A functional resume provides examples of experiences that demonstrate the skills needed for the targeted position.

Combination Resume

A combination resume is a hybrid of chronological and functional resumes. Skill clusters with accomplishments are listed first, followed by a work history section in reverse-chronological order. The work history section need only be your job titles held, name and location of the companies, and your dates of employment. You do not need to list what you did at each job because that information is already included in your professional skills section.

Combination Resume As the name suggests, a combination resume follows a mixed style, drawing on the best characteristics of the chronological and functional resumes. It highlight skills but includes detailed information about the candidate's education and work experience.

Tips to prepare your resume

- Before you write, take time to do a self-assessment on paper.
- Outline your skills and abilities as well as your work experience and extracurricular activities.
- This will make it easier to prepare a thorough resume.

Structure of the Resume

1. Heading - Preferably at the top in the center or right side
Name, address , phone number and Email accessible after graduation, professional address such as if it is permanent write in the following manner

Ajay Devagani
Plot No45, Deepak enclave
Kushaiguda, ECIL
Hyderabad-24
Phone no.9867523410
email:adeva345@yahoo.com

If you have addresses of two locations write in the following manner

Ajay Devagani
Phone no.9867523410
email:adeva345@yahoo.com

Permanent Address	**Current Address**
Plot No45,Deepak enclave	Flat no.302,
Kushaiguda,	Ushodaya Apartments
ECIL	T.Nagar
Hyderabad-24	Chennai-10

2. Objective- Always include an objective, apply to a specific position if possible work on the job required skills highlighting them giving an impression that your interest is similar and express the same in concise statement.(1 -2 lines)

- *To obtain a co-op or internship in the mechanical engineering field*

3. Educational Qualifications-
Stating the Institution of study(s),Degree (s) and specializations and achievements co-curricular and extra-curricular like paper presentations, poster presentations, mini projects.

4. Experience (if any)
Give detailed work experience internship including accomplishments besides responsibilities held -reverse chronological order
Job title – bold, dates and locations of employment, Job descriptions use Action Verbs, positive adjectives and adverbs for a greater impact.

Experience

XXX Company	Jan – Aug 2006
Sales Associate	XXXX

• Provided customer service
• Budgeted cash register each evening

Related skills -
Highlight and maximize this field and include relevant courses.
List out computer skills such as Programming, Designing, Applications, Languages, Operating Systems

Computer Skills- MS Office, AutoCAD, Mat lab, HTML, Fortran ,Visio ,Quattro Pro, Windows XP

6. Achievements -
List them all having a balance of student/professional organizations, leadership positions in organizing events ,scholarships and Hobbies.

7. References-
Keep it to three Variety of references (One personal, scholastic and professional)
Be sure they're still there and reachable and also make it a point to consider if they are a good reference. Keep them informed .Use resume heading

8 Style-

- Free of Grammatical and Spelling Errors
- Easy to read font 12 or 14 pt.
- Margins size (.5 – 1")
- Categorize information
- Read down
- One page for a Bachelor's and fresher/entry level

10. Dos and don'ts

Dos	Don'ts
• Be Concise • Use action words • Give authentic, reliable ,truthful and relevant details • Take care of formatting, fonts, length, paper quality • Show results *use bold letters for* • Name • Degree • Minor • Emphasis • Job Titles • Leadership Roles	• Avoid common mistakes • Spelling and grammatical errors. • Avoid Personal Pronouns • should not lie /give fake/false information . • should not be too lengthy. • Give a declaration at the end (date and signature)

How to write a Cover letter

Any resume without a cover letter does not serve the purpose. Here are a few tips to follow while writing a cover letter.

1. Even when an employer does not directly ask for one, be sure always to send a cover letter. The only time you do not want to send a letter is when the job list explicitly says- not to send one. Be sure to follow all directions on the job list.

2. Customize each letter. It might seem tedious, be it is important to customize each letter to fit the specific job you for which you are applying. It will make your letter stand out.

3. Highlight relevant qualifications. In your cover letter, address one or two skills or qualifications you have that match the job description.

4. Provide a specific example of a time you demonstrated each of these qualifications.

5. Explain anything. You can use your cover letter to go into detail about something in your resume that needs explaining. For example, a cover letter is a great place to talk about a career shift or to explain an extended gap in employment.

6. Read samples and templates. For help writing your cover letter, read samples like the one below, as well as cover letter templates. Remember to tailor any example or template to fit your own experiences and the job for which you are applying.

7. Edit, edit, edit. Be sure to thoroughly proofread each cover letter before sending it, looking for grammar and spelling errors. Consider asking a friend or family member, or even a career counselor, to read over your cover letter.

Sample Resume

Bheema Lakshmi Pradeep

Address
10-5-76/25
Tukaram Gate
North Lalaguda
Secunderabad

Contact No.: 7702288557
Email: bheema.pradeep7@gmail.com

Career Objective

To meet the challenges in the ever changing environment with perfection and effectiveness, being dynamic and focused, and to attain a unique position in the industry with my talent, skills and work for organizational as well as personal growth.

Educational Qualification:

- Pursuing IV year B Tech (ECE) at Sreenidhi Institute of Science and Technology (JNTUH 2014-2018) with an aggregate at 77.82 % (till date).
- Intermediate from Sarath Junior College (2012-2014) with a percentage of 93.5%.
- SSC from Takshasila public School (2011-2012) with GPA of 9.4.

Technical Skills:
Programming languages: C; C^{++}; Embedded C; CORE JAVA;basics of MALAB; Arduino Programming.
Software known: Atmel studio; AVR studio; MATLAB; Arduino; TINA software; PROTEUS; MASM.

Workshops Attended:
- Attended a workshop on "*Biomedical Imaging and Informaics*" organised by TEQIP in IIT- Hyderabad from 25th to 29th March, 2017
- Attended a workshop on "*Recent Trends in DSP and DSP Processors*" organised by TEQIP in SNIST from 15th to 17th Dec, 2016

Achievements:
- Quarter finalist in prestigious "*Texas Instruments – India Innovation Challenge Design Contest*" for project on "*Pot Hole Detection System*".
- Won 1st Prize in *Science Fair* for three consecutive years in schooling.

Projects: Hobby / self-interest based projects**:**

Extra-curricular Activities: (mention any)

Personal Traits:
- Hard Working
- Dedicated towards my work
- Quick learner
- Friendly
- Dynamic
- Smart during my work

How to write a cover letter

Any resume without a cover letter does not serve the purpose. Here are a few tips to follow while writing a cover letter.

1. Even when an employer does not directly ask for one, be sure always to send a cover letter. The only time, you do not want to send a letter is when the job listing explicitly says not to send one. Be sure to follow all directions on the job listing.

2. Customize each letter. It might seem tedious, be it is important to customize each letter to fit the specific job you for which you are applying. It will make your letter stand out.

3. Highlight relevant qualifications. In your cover letter, address one or two skills or qualifications you have that match the job description.

4. Provide a specific example of a time you demonstrated each of these qualifications.

5. Explain anything. You can use your cover letter to go into detail about something in your resume that needs explaining. For example, a cover letter is a great place to talk about a career shift or to explain an extended gap in employment.

6. Read samples and templates. For help writing your cover letter, read samples like the one below, as well as cover letter templates. Remember to tailor any example or template to fit your own experiences and the job for which you are applying.

7. Edit, edit, edit. Be sure to thoroughly proof read each cover letter before sending it, looking for grammar and spelling errors. Consider asking a friend or family member, or even a career counselor, to read over your cover letter.

Sample Cover Letter

Your Name
Your Address
Your City, State, PIN CODE
Your Phone Number
Your Email

Date

Name
Title
Organization
Address
City, State, PIN CODE

Dear Mr./Ms. Last Name:

I am interested in the author's assistant position at ABC Company, as advertised in XXX. I am currently employed as legislative director for Assemblywoman XXXX, Chairperson of the NYS Assembly. I believe that the skills and experiences I have gained at this position make me an ideal candidate for the job of author's assistant.

As legislative director, I have developed strong writing and editing skills. For example, one of my main duties is to prepare Assemblywoman XXXX's personal legislation, which deals with issues related to her position as Senior Member of the NYS Assembly Standing Committee.

I have also gained extensive experience in legal and policy research – fields that you state the author's assistant must be familiar with. My experience in the NYS Assembly has afforded

me the opportunity to become familiar with the consolidated and unconsolidated laws of the State of New York. In particular, through my work with Assemblywoman XXXX, I have become heavily involved in the current welfare and Medicaid reform movement. I am always eager to learn more about state legislation, reading up on these topics on my own time to become more knowledgeable. I would love to bring this passion for policy and law to your company.

I am confident that my experience in the Legislature and my research and writing skills qualify me for consideration. If you would like, I can provide you with current samples of my work. I have also enclosed my resume. I look forward to meeting with you and discussing my qualifications in more detail.

Sincerely,

Signature (hard copy letter)

Your company has advertised the position of Chief Manager (Sales)in the April 24th issue of *The Times of India*. There are several skills that you are looking for in this position. These skills include motivating and leading a dynamic sales team, planning and implementing sales promotion activities and achieving targets.

Prepare your resume matching your credentials to employer needs as a strategy to get the attention of the employer.

Interview Skills

An interview is a conversation between two people (the interviewer and the interviewee) where questions are asked by the interviewer to obtain information from the interviewee.

Meaning of interview: The word interview comes from Latin and middle French words meaning to "see between" or "see each other". Generally, interview means a private meeting between people when questions are asked and answered. The person who answers the questions of an interview is called in interviewer. The person who asks the questions of our interview is called an interviewer. It suggests a meeting between two persons for the purpose of getting a view of each other or for knowing each other. When we normally think of an interview, we think a setting in which an employer tries to size up an applicant for a job.

Types of Interviews: There are many types of interviews that an organization can arrange. It depends on the objectives of taking the interview. Some important types of interviews are stated below

- The Face-to-Face Interview. ...
- The Panel Interview. ...

- The Group Interview. ...
- The Telephone Interview.
- The Sequential Interview. ...
- The Lunch / Dinner Interview. ...
- Competency Based Interviews. ...
- Formal / Informal Interviews.

Some Useful Questions and Answers

1. Tell me about yourself?

I am ..... (name), I'm from ..... (place), educational qualifications, important skills, family background.....

2. How has your experience prepared you for your career?

Coursework:

In addition to technical knowledge and skills I have gained communication skills, soft skills which contribute a lot for my career.

Work Experience:

Through internships, I have gained self-esteem, confidence, and problem-solving skills. I also refined my technical writing and learned to prepare professional documents for clients.

Student Organizations:

By working on multiple projects for different student organizations while keeping up my grades, I've built time management and efficiency skills. Additionally, I've developed leadership, communication, and teamwork abilities.

Life Experience:

In general, life has taught me determination and the importance of maintaining my ethical standards.

3. Describe the ideal job.

Ideally, I would like to work in a warm environment with individuals working independently towards team goals or individual goals. Most important to me is an atmosphere that fosters attention to quality, honesty, and integrity.

4. What type of supervisor have you found to be the best?

I have been fortunate enough to work under wonderful supervisors who have provided limited supervision and guidance while answering thoughtful questions. In my experience, the best supervisors give positive feedback and tactful criticism.

5. What do you plan to be doing in five years' time?

Taking an opportunity to serve in supervisory/leadership roles both at work and in professional/community organization(s).

6. What contributions could you make in this organization that would help you to stand out from other applicants?

In previous internships, my industriousness and ability to teach myself have been valuable assets to the company. My self-teaching abilities will minimize overhead costs, and my industriousness at targeting needs without prompting will set me apart from others. Additionally, one thing that has always set me apart from my scientific/engineering peers are my broad interests and strong writing abilities..

7. What sort of criteria are you using to decide the organization you will work for?

Most importantly, I am looking for a company that values quality, ethics, and teamwork. I would like to work for a company that hires overachievers.

8. What made you choose your major?

My academic interests are broad, so I sought civil engineering to achieve a great balance of mathematics, chemistry, biology, physics, and writing.

9. Have your university and major met your expectations?

The College of Engineering at ..... has exceeded my expectations by providing group activities, career resources, individual attention, and professors with genuine interest in teaching.

My major has met my expectations by about 90%. I would have enjoyed more choices in environmental courses, and would have preferred more calculus-based learning.

10. What made you choose this college?

I chose this college for the following reasons: the ..... web site impressed me, I saw active student groups, and the people were very friendly.

The Rationale

The company wants to project an image of transparency. The company wants you to know that it encourages two-way communication between the top management and the subordinates, an atmosphere where everyone can ask relevant questions and expect to get answers. In other words, the company respects the employee's need to know about matters that affect him, no matter where he is in the hierarchy. Next, and more important, this situation checks your presence of mind and ability to form intelligent questions. So far you have been simply answering questions asked of you. How do you behave when you are in a position to ask questions? What kind of questions do you ask? It also shows how serious you are about the company and the job.

Sample Questions

Before you set out to ask questions, keep the above reasons in mind. It would be good to sincerely thank the HR person for such an opportunity. You can start with something like "I have really enjoyed this opportunity to meet you and your team at .. (the company name). Yes, there are a few things I would like to know, thank you for asking" However it is not wise to ask the HR a volley of questions and turn it into a counter interview. Consider the questions below and choose one or two from them that you find the most useful to you.

- What do you personally find the most enjoyable part of working for this company?

- I would like to know about the work atmosphere here…
- Would you be able to tell me about this company's vision/philosophy?
- How would you evaluate this organization's strengths and weaknesses?
- I would like to know a little about my day-to-day responsibilities.
- Is this an immediate requirement? How soon would you be taking people on board for this position?
- I would like to know how my skills compare with the other people who have applied for this position.
- I am really interested in this opportunity and I feel I have the required skills for this position. What would I have to do next?
- Now that our interview is coming to close, is there anything you would like to know about my ability towards this job?
- Would you be able to tell me a little about what the company expects from its employees? What are the most important assets and skills for this company?
- Does the company follow a structured path in promoting the employees? How does it go?
- If the company finds me good at the job, how would it advance me? What would be the next step in my career growth?
- If I performed well in the current position, what are the additional likely opportunities for me within this company?
- Are there any special areas in this company that the top leaders emerge from?/ Are there special areas like say sales or engineering that have more prospects for growth within this company, or do the leaders come from a cross section of different areas?
- The company has decided to recruit for this position from outside. How does the company choose between recruiting from within or outside?
- How far does this particular position contribute to the bottom line?
- What advice would you give to someone selected for this position?
- What are the current challenges of this position/department within the company?
- Before I leave, can I have a formal/written description of the position? This would help me to review the activities and evaluate what is expected of me.
- Is this job likely to lead to other positions in the company? What is the usual route?
- Would you be able to tell me a little about the people I will be working with?

- Before I take your leave, let me check my understanding of the position. The designation is …., the responsibilities are …., it is in the ….. department, and I would be reporting to ……. Please correct me if I have got it wrong anywhere.
- How does this company promote equal opportunity and diversity?
- Would you be able to tell me who the company regards as its stars? What have been their most important contributions?
- How do the subordinates address their seniors in this company?
- Could you tell me about the management style of this company?
- If you selected me for this position, what assignment would I be starting on?
- Does this company have a formal mission statement? Am I allowed to know about it?
- What are the most important parameters along which this company evaluates an employee's contribution?

SIXTY QUESTIONS THAT NEED TO BE ANSWERED

1. Who are the people you surround yourself with?
2. Do you have a personal mission statement?
3. How do you express your gratitude for good things and people you have in your life?
4. What are you spending your money on?
5. Are you satisfied with your work?
6. If you had unlimited resources, how would you live your life?
7. Did you pause to celebrate the last time you accomplished a goal, big or small?
8. Do you consider yourself worthy of love and admiration?
9. How do you react when you encounter a homeless person?
10. Do you meditate daily for at least 5 minutes?
11. What story are you telling yourself about your life?
12. How do you deal with failure?
13. What is your favorite quote?
14. What do you want your life to look like in 5 years? Do you have a plan to get there?
15. What messages have you internalized?
16. What inspires you?
17. If you could only speak one word today, what would you say?
18. When was the last time you took some time to be alone?

19. If you could spend 15 minutes with anyone, living or dead, who would it be? Why?
20. Did you say “I love you” to the most important person in your life today?
21. What step can you take today in order to fulfill your deepest desire?
22. How have you educated yourself today?
23. What did failure to reach your goal teach you about yourself?
24. Did you read a positive or uplifting book today?
25. Are you holding on to any past mistakes?
26. What habits are holding you back from success?
27. Are you feeding your fears or your hopes and dreams?
28. What gives you peace?
29. How do you challenge your assumptions?
30. What is the biggest frustration you’re facing now?
31. Are your goals and dreams written down?
32. What is your relationship with money?
33. How do you keep a sense of perspective when life gets difficult?
34. Are you a good listener?
35. What gives you meaning?
36. How often do you keep in touch with family and friends?
37. What is the source of your procrastination?
38. How much time are you spending on social media?
39. Are you able to say no, even when it makes you unpopular?
40. Who are your professors in the school of life?
41. Do you bring your work home with you?
42. When was the last time you had an exciting idea that kept you awake most of the night? Are you pursuing that idea today?
43. What are the top 2 compliments you hear from people about yourself?
44. When someone sees your name on caller ID, what thoughts and feelings do you want them to have?
45. Have you ever invested in yourself financially? Why or why not?
46. If you were asked to describe yourself in one word, what would it be?
47. What books have influenced you the most?

48. Who are the people under your influence?
49. Do you trust your own instincts?
50. Do you choose happiness or leave it to chance?
51. Are you open to experiencing something outside your comfort zone everyday?
52. What small habit can you change today?
53. What's your favorite exercise routine?
54. Name one psychological barrier in your life? What is it holding you back from doing?
55. Do you fear rejection? What are you doing to overcome this fear?
56. Do you follow through on commitments?
57. How many times a day do you check your email?
58. Are you content? If not, what is the source of your lack of contentment?
59. If you could eliminate one thing from your life today, what would it be?
60. Who are you becoming?

1. What were you passionate about as a child?
What did you find emotionally fulfilling when you were younger? From writing to building figurines, children are actively encouraged to follow their passions. However, we often stop doing the things we were passionate about as a child. Often this is due to a lack of time, or pressure from society to pursue something that comes with a (often financial) reward. Consider your childhood passions. Do you still practice your childhood passions? If not, why? Would you still feel passionately about the same things now?

2. If you didn't have a job, how would you choose to fill those hours?
If you didn't have to work and you weren't allowed to stay in the house, how would you choose to spend that time? Where would you go? In the evenings, many people like to relax and unwind. However, unlimited free time often encourages people to fill the time in a productive manner. Write down a few ways you would spend your free time, and then try one out on your next day off.

3. What makes you forget about the world around you?
When you are working on your life purpose, you often completely lose track of time. Often people don't notice the hours passing by, and can even forget to eat or drink until they have finished. When is the last time you felt this way?

4. What issues do you hold close to your heart?
What topics do you like to read about? Think about what interests you most on the news, online, or in the area you love. From the environment to finding new recipes, many people have passions that even they were unaware of.

If you are unsure, don't feel disheartened – it can take a while for you to realize what you are passionate about, so spend some free time doing something that you find both enjoyable and productive, and eventually you will discover your life purpose.

5. What kind of conversations do you have with your closest friends?
Most of the time when you are with your loved ones, you only discuss subjects that you actually find interesting and fun. Are there any subjects that you repeatedly bring up to talk about? This is often a great indicator of your life purpose.
As well as the subjects you love to discuss, think about the times your friends have come to you for advice. This shows the areas in which your friends class you as a valuable source of knowledge – it could be something you didn't even realize you were good at!

6. What is on your bucket list?
What do you want to accomplish before you die? Creating a bucket list is a great way to discover your life purpose, as the list will show you the activities you believe to be important and emotionally fulfilling.

7. If you had a dream, could you make it happen?
Many people have dreams, but choose not to pursue them due to the financial risks or fear of failure. Start thinking about your dream in a more positive light, asking yourself 'How can I make this happen?' instead of telling yourself you won't succeed.
Try to let go of negative thoughts that could hold you back from achieving your life purpose. Instead, try and do something every week that helps you to make your dreams come true.

Unit Comprehension Questions:

Resume Writing

1. What is a Resume?
2. Why should a resume be given?
3. What is the difference between a resume, curriculum vitae and bio-data?
4. Why should a resume be updated from time to time?
5. Mention the different types of Resume.
6. What is a cover letter? Why should a cover letter be sent along with the resume?

Interview Skills

1. What is an interview?
2. Why should there be an interview?
3. What are the different types of interviews?
4. Explain about pre-interview preparation?
5. What is the difference between formal and informal interviews?
6. What is to be done before an interview, during an interview and after an interview?

7. What is telephonic interview? State the differences between a face-to-face and a telephonic interview?
8. What is a good interview? What is a bad interview?
9. What is the role of body language in an interview?
10. How does one's attitude affect one's interview?
11. State the importance of communication skills in interview?
12. Explain the reasons why a candidate is selected/ or rejected in an interview.
13. What are the DOs and DON'Ts to be followed while attending an interview?
14. Describe the dress code for attending an interview.

Activities: Frequently asked questions

Mock Interviews

Proposed Activities:

- Stress Buster techniques (acceptable to the classroom environment)
- Conversations between two students or among three students giving corporate situations
- Mock interviews (students are candidates as well as panel members) Each mock interview should at least be 20 minutes long
- Personal grooming exhibition with at least one student in the group should come in proper dressing as if it is an interview
- Preparation of Subject Questions, HR Questions, Manager Questions
- Resume Preparation
- Preparation of Objective for inclusion in the resume
- Practicing answers for the SIXTY Thought provoking questions that are given in the syllabus
- Situations should be given to two students in which one has to convince the other students on a certain social cause

COURSE FILE
FOR
QUANTITATIVE APTITUDE

3RD YEAR I SEMESTER
COMMON TO ALL BRANCHES

DEPARTMENT
OF
SCIENCE & HUMANITIES

Syllabus for B. Tech. III Year I semester

QUANTITATIVE APTITUDE

L	T	P/D	C
-	-	2	2

UNIT I

Number System: Test for Divisibility, Test of prime number, Division and Remainder – HCF and LCM of Numbers - Fractions.

UNIT II

Average: Average of different groups, Replacement of some of the items - Percentage - Profit and Loss.

UNIT III

Ratio and Proportion: Properties of Ratio, Comparison of Ratios, Useful Simple Results on Proportion – Partnership and Share – Alligation or Mixtures.

UNIT IV

Simple Interest: Effect of change of P, R and T on Simple Interest - Compound Interest: Conversion Period, Difference between Compound Interest and Simple Interest – Time and Work –Pipes and Cisterns

UNIT V

Time and Distance-Boats and Streams-Problems on Trains.
Mensuration: Area of Plane Figures, Volume and Surface Area of Solid Figures.

UNIT VI

Data Interpretation: Tabulation, Bar Graphs, Pie Charts, Line Graphs.

TEXT BOOKS

1.Quantitative Aptitude by R.S.Agarwal
2.Quantitative Aptitude by Abhijit Guha

QUANTITATIVE APPTITUDE
COURSE FILE

UNIT-I

1. The units digit in the product 7^{71} X 6^{59} X 3^{65} is?
2. How many terms are there in 2, 4, 8…4096?
3. The digit in the units place of the number represented by (7^{95} -3^{58}) is?
4. Find the no. of zeros in 12 X 18 X 15 X 40 X 25 X 16 X 55 X 105?
5. What will be the remainder when $(29)^{75}$ is divided by 30?
6. Find the smallest fraction, which is divided by 6/7, 5/14, 10/21 exactly?
7. Find the greatest number that will divide 43, 91 and 183. So, as to leave the same remainder in each case?
8. In a school, 391 boys and 323 girls have been divided into the largest possible equal classes, So that each class of boys numbers same as each class of girls. What is the number of classes?
9. Find the greatest possible length which can be used to measure exactly the lengths 7m, 3m 85cm, 12m 95cm?
10. Find the least number which, when divided by 72, 80 and 88 leaves the remainder 52, 60 and 68 respectively?

UNIT-II

1. The average first 151 natural numbers is ?
2. The average of 17 consecutive odd numbers is 57 then find the last odd number?
3. The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one of them weighting 65 kg. what might be the weight of the new person?
4. The average of ten numbers is 7. If each number is multiplied by 12, then the average of the new set of numbers is
5. If on selling 12 notebooks, a seller makes a profit equal to the selling price of 4 notebooks, what is his percent profit?

6. Samant bought a microwave oven and paid 10 % less than the original price. He sold it with 30% Profit on the price he had paid. What percentage of profit did Samant earn on the original price?

7. The cost price of an article if 64 % of the marked price. Calculate the gain percentage after allowing a discount of 12%.

8. Peter bought an item at 20% discount on its original price. He sold it with 40% increase on the price he bought it. The new sale price is by what percent more than the original price?

9. What percent of a day is 3 hours?
10. If a number x is 10 % less than another number *y* and *y* is10 % more than 125, then x is equal to:

11. A batman scored 110 runs which included 3 boundaries and 8 sixes. What percent of his total
Score did he make by running between the wickets?

UNIT-III

1. If 2A = 3B and 4B = 5C, then A: C is :

2. 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?

3. In a mixture of 60 liters, the ratio of milk and water is 2:1. If this ratio is to be 1:2, then the
Quantity of water to be further added is :
4. The sides of a triangle are in the ratio $\frac{1}{2}:\frac{1}{3}:\frac{1}{4}$ and its perimeter is 104 cm. The length of the
Longest side is :

5. A certain amount was divided between A and B in the ratio 4:3. If B's share was `.4800, the total
Amount was:

6. Three persons are walking from a place A to another place B. Their speeds are in the ratio 4:3:5.
The time ratio to reach B by these persons will be :

7. The total population of a village is 5000. The number of males and females increases by 10% and 15% respectively and consequently the population of the village becomes5600. What was the number of males in the village?

UNIT-IV

1. An athlete runs 200 meters race in 24 seconds. His speed is:

2. A motor car starts with the speed of 70 km/hr with its speed increasing every two hours by 10
   kmph. In how many hours will it cover 345 kms?

3. A does a work in 10 days and B does the same work in 15 days. In how many days they together
   will do the same work?

4. A.B and C can complete a piece of work in 24,6 and 12 days respectively. Working together,
   they will complete the same work in:

5. P can complete a work in 12 days working 8 hours a day . Q can complete the same work in 8
   days working 10 hours a day. If both P and Q work together, working 8 hours a day, in how many days can they complete the work ?

6. A sum of money trebles itself in 20 yrs at SI. Find the rate of intrest.

7. A certain sum of money amounts to `.2613 in 6 yrs at 5% per annum. In how many years will it amount to `.3015 at the same rate?

8. Find the amount of `. 6400 in 1 year 6 months at 5 p.c. compound interest, interest being calculated half – yearly.

9. Find the compound interest on `.10000 in 9 months at 4 p.c., interest payable quarterly.

10. Find the difference between the simple and the compound interests on `.1250 for 2 years at 4 p.c. per annum.

UNIT-V

1. Find the volume of a cuboid whose areas of base and two adjacent faces are 180 sq.cm, 96 sq.cm and 120 sq.cm respectively.

2. A rectangular tank is 50 meters long and 29 m deep. If 1000 cubic metres of water be drawn off the tank, the level of the water cans the tank hold?

3. A cubic metre of copper weighing 9000 kilograms is rolled into a square bar 9 meters long. An exact cube is cut off from the bar. How much does it weigh?

4. Find the volume of a cylinder which has a height of 14 meters and a base of radius 3 meters. Also find the curved surface of the cylinder.

5. A copper sphere of diameter 18 cm. is drawn into a wire of diameter 4 mm. Find the length of the wire.

6. Find the number of lead balls of diameter 1 cm each that can be made from a sphere of diameter 16 cm.

7. Two circular cylinders of equal volume have their heights in the ratio of 1:2. Ratio of their radii is?

8. Each edge of a cube is increased by 50 %. What is the percentage increase in its volume? Also find the % increase in its surface area.

9. Each edge of a cube is decreased by 50%. Find the percentage decrease in its surface area and volume.

UNIT-VI

The following table gives the sales of batteries manufactured by a company over the years study the table and answers the questions that follow:

YEAR	TYPES OF BATTERIES					
	4AH	7AH	32AH	35AH	55AH	TOTAL
1992	75	144	114	102	108	543
1993	90	126	102	84	126	528
1994	96	114	75	105	135	525
1995	105	30	150	90	75	510
1996	90	75	135	75	90	465
1997	105	60	165	45	120	495
1998	115	85	160	100	145	605

1. The total sales of all the seven years is the maximum for which battery?
2. What is the difference in the number of 35 AH batteries sold in 1993 and 1997 ?
3. The percentage of 4 AH batteries sold to the total number of batteries sold was maximum in the year :
4. In the case of which battery there was a continuous decrease in sales from 1992 to 1997?
5. What was the approximate percentage increase in the sales of 55 AH batteries in 1998 compared to that in 1992?

ANSWER KEY

UNIT-I

1. 4
2. 12
3. 4
4. 6
5. 29
6. 30/7
7. 4
8. 17
9. 35 cm
10. 7900

UNIT-II

1. 76
2. 73
3. 85 Kgs
4. 84
5. 50 %
6. 17 %
7. 37.5 %
8. 12 %
9. 12 ½ %
10. 123.75
11. 45 5/11 %

UNIT-III

1. 15 :8
2. 23:33:60
3. 60 liters
4. 48 cm
5. `.11,200
6. 15:20:12
7. 3000

UNIT-IV

1. 30 km/hr
2. 4 ½ hrs
3. 6 days
4. 3 3/7 days
5. 5 5/11
6. 10 %
7. 10 years
8. `.6892
9. `.303
10. `.2

UNIT-V

1. 1440 cu.cm
2. 14500 cub.m
3. 333.3 kg
4. 264 sq. meters
5. 24300 cm
6. 4096
7. $\sqrt{2}:1$
8. 125 %
9. 87.5 %

UNIT-VI

1. 32 AH
2. 39000
3. 1997
4. 7 AH
5. 34