

Priyadarshini College of Engineering, Nagpur
Sessional Examination (2023-24) Odd Semester
B. Tech. Seventh Semester (Computer Technology) (C. B. C. S.)
Cryptography and Network Security

P. Pages: 2

Time: Three Hours

PCE/WS/23/BTCT701T

Max. Marks: 70

Notes:

- 1) All questions carry marks as indicated.
- 2) Solve Question 1 or Question 2
- 3) Solve Question 3 or Question 4
- 4) Solve Question 5 or Question 6
- 5) Solve Question 7 or Question 8
- 6) Solve Question 9 or Question 10
- 7) Due credit will be given to neatness and adequate dimensions.
- 8) Assume suitable data wherever necessary.
- 9) Illustrate your answers whenever necessary with the help of neat sketches.

Que. No.	Questions	CO	BL	Marks
1 a)	Explain the model for Network Security.	CO1	2	7
b)	Illustrate the encryption and decryption process using Hill Cipher for:	CO1	3	7

Plain Text : ATTACK
 Keyword : BCCF

OR

- 2 a) Apply Extended Euclid algorithm to compute GCD (99,78). Show all the computations. CO1 3 7

- b) State the different substitution encryption techniques. Encrypt the following plaintext using Playfair cipher: CO1 3 7

Plain Text : CHANDRAYAAN
 Keyword : MONARCHY

- 3 a) Differentiate between block cipher and stream cipher. CO2 2 5

- b) Explain Key Calculation Procedure in Simplified DES algorithm. Illustrate your answer by considering user input key as 00011 00111. CO2 3 9

OR

- 4) a) What are the block cipher modes of operation of DES? Explain in detail. CO2 2 5

- b) Explain in detail about DES encryption and decryption algorithm. CO2 2 9

- 5) Give the stepwise illustration of RSA algorithm to perform encryption and decryption procedure for following data: CO3 3 14

Plain Text : 10
Prime No. P : 11
Prime No. Q : 17
Parameter e : 7

OR

- 6 a) Explain in detail about the working of Diffie-Hellman key exchange algorithm. CO3 2 7

- b) Apply the Chinese Remainder Theorem to solve following congruent equations. CO3 3 7
 $X \equiv 2 \pmod{3}$
 $X \equiv 3 \pmod{5}$
 $X \equiv 2 \pmod{7}$

- 7 a) Explain in detail about X.509 directory authentication service. CO4 2 7

- b) Explain MD5 message digest algorithm with example. CO4 2 7

OR

- 8 a) Explain in detail about the hash functions and their security. CO4 2 7

- b) What is Kerberos? Explain briefly about it. CO4 2 7

- 9 a) What is firewall? What are its types? Explain in brief. CO5 2 7

- b) Explain in detail about SQL injection? CO5 2 7

OR

- 10 a) Discuss in detail about application gateway firewall. CO5 2 7

- b) Explain in detail about PGP. CO5 2 7
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Priyadarshini College of Engineering, Nagpur
 Sessional Examination (2023-24) Odd Semester
B. Tech. Seven Semester (Computer Technology) (C. B. C. S.)
DATA VISUALIZATION
 (Elective IV)

P. Pages: 2

Time: Three Hours

PCE/KW/23/BTCT702T-3

Max. Marks: 70

Notes:

- 1) All questions carry marks as indicated.
- 2) Solve Question 1 or Question 2 1a 1b
- 3) Solve Question 3 or Question 4 6a 6b
- 4) Solve Question 5 or Question 6 6a
- 5) Solve Question 7 or Question 8 7a
- 6) Solve Question 9 or Question 10 9a 9b i) ii)
- 7) Due credit will be given to neatness and adequate dimensions.
- 8) Assume suitable data wherever necessary.
- 9) Illustrate your answers whenever necessary with the help of neat sketches.

Q. No.	Questions	CO	BL	Marks
1	a) What is data visualization? Differentiate between Descriptive and Inferential Statistics. b) Explain data types of the R-object with example.	CO1	2 2	6 8
	OR			
2	a) Explain the statement of Hypothesis in detail. b) Explain in short the following term i) Random Variables ii) Normal Probability Distribution	CO1	2 2	7 7
3	a) Explain Scatter Plot ? Also explain the advantage and limitation of scatter plot. b) What is data frame and how it is created in R ? Explain with suitable example.	CO2	2 2	7 7
	OR			
4	a) Explain Bar plot? Write a code in R to plot bar plot by taking suitable parameters. b) Explain Box and Histogram plot with advantage and limitation.	CO2	2 2	8 6
5	a) What is Conditional Statements? Explain with example. b) Write a code in python with numpy module to create an array and find sum of all element.	CO3	2 3	8 6
	OR			
6	a) What is dictionary? Explain the methods available in dictionary. b) Write a code in python to read the csv file using pandas module.	CO3	2 3	8 6
7	a) Explain Matplotlib in details with suitable example. b) Write a python code to generate a Line Plot with matplotlib.	CO4	2 3	8 6
	OR			
8	a) List out all Specialized Visualization Tools using Matplotlib? Explain any one in detail. b) Explain the following term i) Bubble Plots ii) Waffle Chart	CO4	2 2	8 6
9	a) Explain seaborn with functionalities and usage. b) Describe in details the following term i) Matrix Plots ii) Regression plot	COS	2 1	7 7

	OR			
10	<p>a) Explain Spatial Visualizations and Analysis in Python with Folium?</p> <p>b) An e-commerce company ‘ wants to get into logistics “Deliver4U” . It wants to know the pattern for maximum pickup calls from different areas of the city throughout the day. This will result in:</p> <p>i) Build optimum number of stations where its pickup delivery personnel will be located.</p> <p>ii) Ensure pickup personnel reaches the pickup location at the earliest possible time. For this the company uses its existing customer data in Delhi to find the highest density of probable pickup locations in the future.</p>	CO5	2 3	4 10

Priyadarshini College of Engineering, Nagpur
Sessional Examination (2023-24) Odd Semester
B.E. Seventh Semester (Computer Technology) (C.B.C.S.)
Human Computer Interface

P. Pages : 2

PCE/KW/23/BTCT703T

Time : Three Hours

Max. Marks : 70

Notes: 1. All questions carry marks as indicated.

2. Solve Question 1 or Question 2.
3. Solve Question 3 or Question 4.
4. Solve Question 5 or Question 6.
5. Solve Question 7 or Question 8.
6. Solve Question 9 or Question 10.
7. Due credit will be given to neatness and adequate dimensions.
8. Assume suitable data wherever necessary.
9. Illustrate your answers whenever necessary with the help of neat sketches.

Q. No.	Question	CO	BT	Marks
1. a)	Explain in detail about human input and output channels	1	2	7
1. b)	What are the different types of memory in human brain?	1	1	7
OR				
2. a)	Define Problem Solving & list the theories involved in problem solving.	1	2	7
2. b)	Explain in detail about models of interaction.	1	2	7
3. a)	Explain the software life cycle model in HCI software process.	2	2	7
b)	Explain in detail the interaction design process.	2	2	7
OR				
4. a)	Enumerate Norman's seven principles for transferring difficult task to simple one in design?	2	2	7
b)	Explain about the various factors distinguishing evaluation techniques.	2	2	7
5. a)	Explain in detail about cognitive model and its techniques	3	2	7
b)	Explain in detail about the various socio-technical models?	3	2	7
OR				
6. a)	Explain in detail about communication and collaboration models	3	2	8
b)	Discuss about Linguistic Models.	3	2	6
7. a)	With neat diagram of mobile ecosystem, discuss its platforms and application frameworks.	4	2	7
b)	Describe the following a. Mobile EcoSystem b. Platforms	4	2	7

OR

- | | | | | |
|-----------|---|---|---|---|
| 8. | a) Explain the various mobile information architecture. | 4 | 2 | 7 |
| | b) List and explain the elements of mobile design. | 4 | 2 | 7 |
| 9. | a) Discuss in detail the purpose of drag and drop. | 5 | 2 | 7 |
| | b) Explain the steps involved in designing a web interface. | 5 | 2 | 7 |
| OR | | | | |
| 10. | a) Discuss in detail the various types of selection patterns. | 5 | 2 | 7 |
| | b) Explain in detail the various ways to reveal contextual tools. | 5 | 2 | 7 |

- b)** Create the following NumPy arrays:
- 1-D array called zeros having 10 elements and all the elements are set to zero.
 - 1-D array called vowels having the elements ‘a’, ‘e’, ‘i’, ‘o’ and ‘u’.
 - 2-D array called ones having 2 rows and 5 columns and all the elements are set to 1 and dtype as int.

CO3 3 9

OR

- Q6 a)** Write difference between Pandas series and NumPy arrays CO3 1 3
- b)** Explain any 5 attributes of data frames in pandas CO3 2 5
- c)** Create the following Data Frame Sales containing year wise sales figures for five sales persons in INR. Use the years as column labels, and sales personnames as row labels.

	2014	2015	2016	2017
Ankit	100.5	1200	2000	4000
Nazneen	150.6	1800	5000	5500
Sumit	200.9	2200	4000	6500
Akshada	3000	5000	7000	8000
Shruti	5000	6000	8000	10000

CO3 3 6

- Q7 a)** Write the installation process of flask setup and discuss the advantages of Flask Framework CO4 1 8
- b)** Explain the following commands
- app.run(host, port, debug, options)
 - @app.route('/home')

CO4 2 6

OR

- Q8 a)** Explain the following Flask HTTP methods
- | | | |
|---------|-----------|-----------|
| i. GET | ii. HEAD | iii. POST |
| iv. PUT | v. DELETE | |

CO4 2 6

- b)** Design a code to print the table of 10 by Embedding Python statements in HTML

CO4 3 8

- Q9 a)** Explain any one regression algorithm
- Simple Linear Regression
 - Multiple Linear Regression
 - Support Vector Regression
 - Random Forest Regression

CO5 2 6

- b)** Differentiate between Supervised and Unsupervised learning

CO5 2 8

OR

- Q10 a)** Explain Naïve Bayes Algorithm along with the example CO5 2 7
- b)** Differentiate between regression and classification algorithms.

CO5 2 7

Priyadarshini College of Engineering, Nagpur
Sessional Examination (2022-23) Odd Semester
B.Tech. Seventh Semester (Computer Technology) (C.B.C.S.)
Research Methodology

P. Pages: 2

PCE/KW/22/BTCT706T

Time: Three Hours

Max. Marks: 35

Notes:

1. All questions carry marks as indicated.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers whenever necessary with the help of neat sketches.

Q. No.	Question		CO	BT	Marks
1 a	The first step of research is: a. Selecting a problem b. Searching a problem	c. Identifying a problem d. solving a problem	CO1	I	1
b	What is the name of the conceptual framework in which the research is carried out? a. Research hypothesis b. Research paradigm	c. Synopsis of Research d. Research design	CO1	I	1
c	What is the main role of research in education? a. To upsurge one's social status. b. To augment one's personal growth.	c. To increase one's job prospects. d. To help an applicant in becoming a renowned educationalist.	CO1	I	1
d	Which of the following options are the main tasks of research in modern society? a. To learn new things b. To systematically examine and critically analyze the investigations/sources with the objective	c. To keep pace with the advancement in knowledge d. All of the above	CO1	I	1
e	How is random sampling helpful? a. Reasonably accurate b. Free from personal biases	c. An economical method of data collection d. All of the above	CO1	I	1
f	Which of the following features are considered as critical in qualitative research? a. Collecting data with the help of standardized research tools. b. Design sampling with probability sample techniques. c. Collecting data with bottom-up empirical evidence. d. Gathering data with top-down schematic evidence.		CO2	I	1
g	How to judge the depth of any research? a. By research title b. By research objectives	c. By research duration d. By total expenditure on research	CO2	I	1

Q. No.	Question	CO	BT
h	<p>What does a good thesis involve?</p> <p>a) Reducing punctuations as well as grammatical errors to minimalist b) Correct reference citations c) Consistency in the way of thesis writing d) Well defined abstract</p> <p>Select the answers from the codes given below:</p> <p>a. b), c) and d) c. a), b), c) and d) b. a), b) and c) d. a), b) and d)</p>	CO2	I
i	<p>Who can successfully conduct Research?</p> <p>a. Someone who is a hard worker b. Possesses post-graduation degree b. Has studied research methodology d. Possesses thinking and reasoning ability</p>	CO2	I
j	<p>Which of the following statement is not correct about a questionnaire?</p> <p>A) A technique for collecting data B) Large amounts of information can be collected C) Its quick and easy to collect results D) An expensive method to collect data</p>	CO2	I
k	<p>Circle graphs are used to show</p> <p>a. How is one part related to other parts? b. How various sections share in the whole? c. How is one whole related to another whole? d. How are various parts related to the whole?</p>	CO3	I
l	<p>Data Analysis is a process of?</p> <p>A. inspecting data C. cleaning data B. transforming data D. All of the above</p>	CO3	I
m	<p>Which technique is generally followed when the population is finite?</p> <p>a. Systematic Sampling Technique b. Purposive Sampling Technique c. Area Sampling Technique d. None of the above</p>	CO3	I
n	<p>A person is given a questionnaire for inquiring his health status, the data provided is</p> <p>-</p> <p>A) Primary B) Secondary C) Tertiary D) Indirect data E) Analytical data</p>	CO3	I
o	<p>Which of the following is true about regression analysis?</p> <p>A. answering yes/no questions about the data B. estimating numerical characteristics of the data C. modeling relationships within the data D. describing associations within the data</p>	CO3	I
p	<p>Which one among the following is the most comprehensive source of population data?</p> <p>a) Census c. National Sample Surveys</p>	CO4	I

No.	Question	CO	BT	Marks
b.	Demographic Health Surveys d. National Family Health Surveys			
q	What are the core elements of a dissertation? a. Introduction; Data Collection; Data Analysis; Conclusions and Recommendations b. Executive Summary; Literature Review; Data Gathered; Conclusions; Bibliography c. Research Plan; Research Data; Analysis; References d. Introduction; Literature Review; Research Methodology; Results; Discussions and Conclusions	CO4	I	1
r	SPSS software can also detect the magnitude of _____. A) Plagiarism B) Study design C) Research ethics D) Literature review	CO4	I	1
s	What would you expect to find in a methodology chapter in a piece of empirical research? a. Detail of the methodological approach taken b. Detail of the methods employed c. Detail of ethical considerations linked to the research project d. All of the above	CO4	I	1
t	Where is a literature review typically found in written-up research? a. Before the methodology chapter b. After the findings chapter c. In the appendices Integrated into the data analysis	CO4	I	1
2A	What are the different types of questions? What issues should be considered during the construction of a questionnaire ?	CO1	II	5
OR				
2B	What are the characteristics of a research? Explain how quantitative researches differ from qualitative research	CO2	III	5
3A	What do you mean by survey analysis ? What are the principles of survey research ?	CO3	II	5
OR				
3B	Differentiate Univariate and Bivariate analysis	CO3	III	5
4A	Write a short note on Paper writing and layout of research paper	CO4	III	5
OR				
4B	Discuss the ethical issues in plagiarism and self-plagiarism.	CO4	II	5