Tribhuvan University
Faculty of Humanities & Social Sciences
OFFICE OF THE DEAN
2023

Bachelor in Computer Applications
Course Title: System Analysis and Design
Code No: CACS 203
Semester: III

Full Marks: 60
Pass Marks: 24
Time: 3 hours
Batch: 2021

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. [6×5=30]

2. Define information system. Explain different types of information system. [2+3]
3. What is meant by baseline project plan? Explain major parts of baseline project plan. [1+4]
4. Explain various interactive methods with example of each. [5]
5. Define system testing. Write and explain types of system tests. [1+4]
6. "Documentation play vital role in system development and review" Justify this statement. [5]
7. Why system maintenance is important? Explain different types of maintenance. [2+3]
8. What is normalization? Explain the major objectives of database design. [2+3]

Group C

Attempt any TWO questions. [2×10= 20]

9. Define DFD. Write rules to draw a DFD. Draw a DFD upto level 1 for library management system. [3+3+4]
10. a) Write guidelines to design a forms and reports. [5]
    b) Explain types of system implementation. [5]
11. What is system requirement analysis? Write and explain different types for determining system requirements. [3+7]

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2023

Bachelor in Computer Applications
Course Title: Web Technology
Code No: CACS 205
Semester: III

Full Marks: 60
Pass Marks: 24
Time: 3 hours

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. [6×5 = 30]

2. What is an image map? Describe the key steps involved in creating a client image map in HTML using necessary tags and attributes. [1+4]
3. What is session? Explain how session works with proper example. [1+4]
4. What is CSS? Explain CSS Box model along with its related properties and example. [1+4]
5. What is tier Architecture? Differentiate two-tier technology with three-tier technology. [1+4]
6. What is web server? Explain different functions of web server. [1+4]
7. What is well formed XML? Explain different ways of DTD implementation for XML documents. [1+4]
8. Define XPath? Explain different elements required to create XSLT document. [1+4]

Group C

Attempt any TWO questions. [2×10=20]

9. Design form to accept name, email, phone, gender, country and validate them using server side script with following rules and store them into database called "store" and table "information". [3+4+3]
   - All fields are required.
   - Phone number must contain 10 digit
   - Email must be valid format
10. Write HTML and CSS code to design following layout.

Phone:01-545454545 Address: Kirtipur, Kathmandu	Social Media List (Link)
Logo[Image] Website Name[h1]	
Menu	
Recent Posts • Post1 title • Post2 title • Post3 title • Post4 title • Post5 title	[Image] Description.....(paragraph)
Copyright © Your site name	

11. Write a valid and well-formed xml to store details of visitor list of ABC College with following details and validate record with following information. [4+3+3]
    - Record must include details of name, mobile, department, related contact person, date, entry time, exit time and visitor number as attribute.
    - Mobile must be 10 digit.
    - Visitor may not have any contact person.
    - Record must belongs to Admin, IT, Account and Exam Department.

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2023

Bachelor in Computer Applications
Course Title: Probability and Statistics
Code No: CAST202
Semester: III

Full Marks: 60
Pass Marks: 24
Time: 3 hours
Batch: 2021

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. **[6×5=30]**

2. Discus the role of statistics in computer application.
3. Define Statistics? The following of telephone calls received at an exchange for 200 successive one-minute intervals are given below.

No. of calls	0	1	2	3	4	5	6
Frequency	15	22	28	35	42	34	24

Compute the mean, median and mode..

4. Define correlation. Calculate and analyze the correlation coefficient between the number of study hours and the number of sleeping hours of different students.

Number of Study Hours	2	4	6	8	10
Number of Sleeping Hours	10	9	8	7	6

Also find coefficient of determination and interpret it.

5. Define regression. The following table gives information on ages and cholesterol levels for a random sample of 10 men.

Age	58	69	43	39	63	52	47	31	74	36
Cholesterol level	189	235	193	177	154	191	213	165	198	181

a) Construct regression equation of cholesterol level on age.
b) Estimate the value of cholesterol level when age is 60 years.
c) Interpret the regression coefficient.

6. Define binomial distribution. During one stage in the manufacture of integrated circuit chips, a coating must be applied. If 70% of chips received a thick enough coating, find the probability that among 15 chips
(i) at least 12 will have thick enough coatings.
(ii) exactly 10 will have thick enough coatings

7. In measuring reaction time, a psychologist estimates that the standard deviation is 0.95 sec, how large a sample of measurements must be taken in order to be 95% confident that the error his estimate of mean will not exceed 0.01 second?

8. Define sampling. A population consists of the four numbers 1, 3, 4, 8. (i) Write down all possible sample size of two without replacement. (ii) Show that sample mean is an unbiased estimate of population mean.

Group C

Attempt any TWO questions. **[2×10= 20]**

9. An analysis of monthly wages paid to workers in two firms A and B belonging to the same industry gives the following results:

	Firm A	Firm B
No. of workers	500	600
Average monthly wage	186	175
Variance of distribution of wages	81	100

(i) Which firm A or B, has a larger wage bill?

(ii) In which firm, is there greater variability in individual wage?

(iii) Calculate combined mean and combined variance of the wage of firm A and B.

10. The length of human pregnancies from conception to birth approximates a normal distribution with a mean of 266 days and a standard deviation of 16 days. (i) What probability of all pregnancies will last between 240 and 270 days? (ii) What probability of all pregnancies will last more than 275 days? (iii) What probability of all pregnancies will last less than 272 days?

11. Define ANOVA. Given data, using one-way ANOVA test the hypothesis that means of three samples are equal.

Sample-I	4	5	6	5
Sample-II	7	5	6	5
Sample-III	4	8	9	2

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Bachelor in Computer Applications
Course Title: Data Structure and Algorithms
Code No: CACS 201
Semester: III

Full Marks: 60
Pass Marks: 24
Time: 3 hours
Batch: 2021

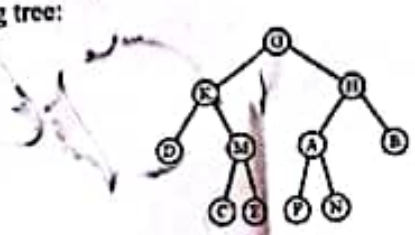
Candidates are required to answer the questions in their own words as far as possible.

Group B

[6×5 = 30]

Attempt any SIX questions.

2. Define stack. Why stack is considered as an ADT? List any four applications of stack. [1+2+2]
3. Evaluate the following postfix expression using the stack: 4 5 + 7 3 - 2 + * [5]
4. What is tower of Hanoi problem? How recursion can be used to solve tower of Hanoi problem? [2+3]
5. Define hashing. Explain how to resolve collisions during hashing using open addressing. [1+4]
6. What is binary search? Trace the algorithm of binary search to search a key 12 in the data: 11, 19, 5, 2, 7, 21, 8, 21, 12 [1+4]
7. What is big-oh notation? Explain about divide and conquer strategy with example. [2+3]
8. What are the depth and degree of a node in a tree? Perform pre-order, in-order and post-order traversal of the following tree: [2+3]



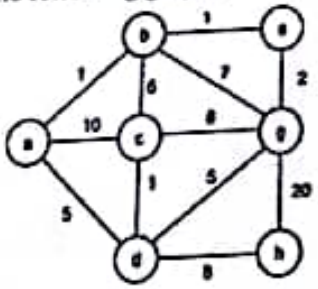
goes each

Group C

[2×10 = 20]

Attempt any TWO questions.

9. How dynamic implementation of the queue can be done? Explain with algorithm. Also explain how insertion and deletion of a node can be done at the end of a singly linked list with algorithm. [5+5]
10. Define complete binary tree and skewed tree. Write a function to implement heap sort and sort the following data using heap sort: 12, 9, 1, 13, 16, 2, 4, 21, 5 [2+4+4]
11. How breadth first traversal and depth first traversal can be used for traversing a graph? Explain with example. Use Dijkstra's algorithm to find the shortest path from node A to all other nodes for the following graph. [5+5]



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2023

Bachelor in Computer Applications
Course Title: OOP in Java
Code No: CACS 204
Semester: III

Full Marks: 60
Pass Marks: 24
Time: 3 hours
Batch: 2021

Candidates are required to answer the questions in their own words as far as possible.

Group B

Attempt any SIX questions. [6×5 = 30]

2. What are java Buzzwords? Write a java program to find simple interest. Use command line argument to take input. [1+4]
3. What are use of super keyword? Write a java program to create base class **Fruit** which has **name, taste** and **size** as its attributes and method called **eat()** which describe name and its taste. Inherit the same in two other class **Apple** and **Orange** and override the **eat()** method to represent each fruit taste. [1+4]
4. What is difference between String and StringBuffer class? Write a java program to identify the input string is palindrome or not? [2+3]
5. Why we need file handling in java? Write java program to read file into a variable and then write a variable's content into another file. [1+4]
6. What is the purpose of **valueOf()** method in Wrapper classes? Write a java program to generate random integer, double and bytes. [1+4]
7. What is internal frames? Write a java program that display two internal frame within some parent frame. [1+4]
8. What is JDBC? Write java program to connect database **College** and display all student information (Roll, Name, Address and Program) from **Student** table. [1+4]

Group C

Attempt any TWO questions. [2×10 = 20]

9. What is Constructor overloading? Write a class **Distance** containing private variables feet of type int and inches of type int, suitable constructors, and three methods **addDistance**. **subtractDistance** and **displayDistance** for adding ,subtracting and display distance objects. Write a separate class **MyDistance** containing main method to create, add, subtract and display distance objects [2+8]
10. a) What is difference between checked and unchecked exception? Write a java program that will read college name from keyboard and display it on screen. The program should throw an exception when length of college name is more than 50. [1+4]

    b) What are methods used for inter-thread communication? Write a java program to create two threads so that one thread prints even number and other thread prints odd number between 100 and 200. [1+4]
11. What is MVC design pattern? Write a GUI program using swing components to calculate sum and difference of two numbers. Use two text fields for input and pre-built dialog box for output. Your program should display sum if Add button and difference if subtract button is clicked. [2+8]

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