Divya Gyan College

Putalisadak, Kathmandu
Mid-Term Examination -2076
BCA IIYear/ 2nd Semester

Subject Code: CACS201 **Subject: Data Structures and Algorithms** **Time: 2hr 40 mins.**

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

Group B

Attempt any SIX questions. **[6x5=30]**

2. What is a Data Structure? Show the status of stack converting following infix expression to post fix expression A + ((B – C * D) / E) + F – G / H. [1+4]
3. What is circular queue? Write a algorithm to insert into circular queue. [2+3]
4. What is dynamic data structure? How to insert a new element at required position of list? [2+3]
5. What is doubly linked list? Write an algorithm to insert at beginning and end of the doubly linked list. [1+4]
6. What is recursion? Write an algorithm to solve Tower of Hanoi problem. [2+3]
7. What is Asymptotic notation? Describe different type of Asymptotic notation. [1+4]
8. What is Enqueue operation? Write an Enqueue algorithm for linear queue implemented using Linked list. [1+4]

Group C

Attempt any TWO questions

9. What is a Stack? List the application of stack. Write an algorithm to perform PUSH and POP operation in stack. [1+2+7]
10. What is Circular Doubly Linked List? How is Circular Doubly Linked List represented in C programming? Write an algorithm to delete from end of the Circular Doubly Linked list [2+2+6]
11. What is Abstract Data Type (ADT)? Explain Stack and Queue as ADT. [2+4+4]

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Putalisadak, Kathmandu

Mid-Term Examination -2076

BCA II Year/ 3rd Semester

Subject Code: CAST202 | Subject: Probability and Statistics | Time: 2 hrs. 40 mins.

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. Describe scope and limitation of Statistics.

3. Determine average wages from following data:

Wages	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65-70
No. of Workers	10	13	18	21	24	28	20	11	8

4. Calculate Karl Pearson's correlation coefficient from the following data:

Sales	43	41	36	34	50
Expenses	10	22	13	19	17

5. Find the median value from the following information:

Marks in Statistics	No. of students
Above 0	150
Above 10	140
Above 20	120
Above 30	100
Above 40	60
Above 50	30
Above 60	15
Above 70	5

6. The following table provides information of average daily sales in "00" of three different cities;

a. Find the average sales per day of all cities.

b. Find the total sales per day at *city A*.

City	No. of shops	Avg. sales per day "00"
A	50	113
B	60	120
C	70	150

7. From the following data of income distribution.

Income (Rs) '000'	30-40	40-50	50-60	60-70	70-80	80-90
No of persons	16	20	40	24	12	8

The range of income of the middle 50 % workers

Highest income of lower 20 % workers

8. Suppose there are two types of electric bulb, type I electric bulb have a mean life of 600 hours with standard deviation 20 hours. The mean life of type II electric bulb is 800 hours with a standard deviation 40 hours. Which of the two types of bulbs you prefer to buy, and Why?

Group C

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

9. Student's age in the regular daytime BCA program and the morning time BCA program of a campus are described by two samples. If the homogeneity in age of the class is positive factor in learning make suggestion, with reason, which of two groups will be easier to teach?

Regular BCA program		Morning BCA program	
Age	No. of Students	Age	No. of Students
23	9	27	10
29	2	31	8
28	5	30	5
22	10	29	4
30	1	28	6
21	4	33	5
25	11	34	5
26	6	35	11
27	3	36	2
24	9	32	4
Total	60	Total	60

10. The following table gives the distribution of sales ("000") and profit ("000") of 100 days. Find the coefficient of correlation and its probable error. Also state whether correlation coefficient is significant or not.

Sales ('000')	Profit ('000')				
	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
350 - 450	-	-	-	-	5
450 - 550	-	-	1	10	9
550 - 650	-	4	12	25	3
650 - 750	4	16	2	2	-
750 - 850	2	5	-	-	-

11. A computer manager interested to know how efficiency of his/her new computer program which depends on the size of incoming data. Efficiency will be measure by the number of processed requests per hour. In general, larger data sets require more computer time and therefore, fewer requests are processed within in 1 hour. Applying the program to data sets of different sizes, the following data were gathered.

Data size(gigabytes)	6	7	7	8	10	10	15
Processed requests	40	55	50	41	17	26	16

a. Identify which one response variable and fit a sample regression line assuming that the relationship is linear.
b. Interpret the regression coefficient with reference to your problem.
c. Obtained the coefficient of determination and interpret the result.
d. Based on the fitted model predict the efficiency of new computer for data size 12 gigabytes.

Divya Gyan College
Mid-Term Examination - 2076
BCA 2nd year 3rd Semester

Subject Code: CACS203
Subject: System Analysis and Design
Time: 2 hrs. 40 mins.

Full Marks: 60
Pass Marks: 24

Group B
Attempt any SIX questions. **[6 x 5 = 30]**

2. Why is project management important? Briefly explain the activities performed by the project manager during project execution.
3. When would you use agile methodologies? How is it different from waterfall approach to system development?
4. Why is project management important? Briefly explain the activities performed by the project manager during project execution.
5. Explain Rapid Application Development (RAD), prototyping, Joint Application Development (JAD).
6. List and Describe four types of information systems.
7. Describe the project identification and selection process.
8. Construct an E-R Diagram for football club that has a name and a ground and is made up for players. A player can play for only one club and a manager identified by his name manage a club. A footballer has a registration number, name and age. A club manager also buys players. Each club plays against other clubs in the league and matches have a date, venue and score.

Group C
Attempt any TWO questions. **[2 x 10 = 20]**

9. Describe the three classes of Internet electronic commerce applications: Internet, Intranets and Extranets. Explain advantages and pitfalls of observing workers and analyzing business documents to determine requirements.
10. Develop E-R Diagram for a Hospital Management Information System including major entities.
11. Define and explain key data modeling terms. Define four basic types of business rules in an E-R diagram.

Divya Gyan College

Mid Term Examination- 2076

BCA II Year/ 3rd Semester

Subject Title: OOP in Java **Full Marks: 60**

Subject Code: CACS204 **Pass Marks: 24**

Time: 2 hrs. 40 mins.

GROUP B

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

Attempt any six questions. **[6 x 5 = 30]**

1. Explain OOP. What are the features of java programming language? [1+4]
2. Define class in java. Explain members of a class. [1+4]
3. Explain different Access specifier used in java. [5]
4. Define for loop. Write a java program to display the multiplication table of a given integer. [1+4]
5. Explain the role of interface in object oriented programming language like java. How does it differ from class? [3+2]
6. Write a simple java program with non-static method to calculate area of an Ellipse using a formula Area = PI * a * b and display it. [5]
7. What is constructor? Explain its types with suitable example. [1+4]

GROUP C

Attempt any two questions. **[2 x 10 = 20]**

1. What is an operator? Classify different types of operators in java. Give an example or ternary operator. [2+4+4]
2. What is an array? Explain its benefits and limitations. Describe ways of array declaration and initialization. [2+4+4]
3. What is Inheritance? Explain its type with suitable example. [2+8]

Divya Gyan College

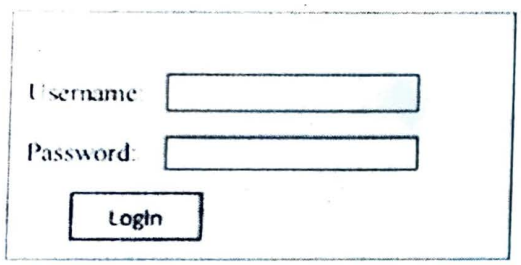
Putalisadak, Kathmandu
Mid-Term Examination -2076
BCA II Year/ 3rd Semester

Subject Code: CACS205 **Subject: Web Technology** **Time: 2hr 40 mins.**

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

Group B
Attempt any SIX questions **6x5=30**

1. Write an HTML code to display a simple form for user login.



2. List all child elements along with its description used in html table?
3. What are the various contents of an element in a DTD? Explain.
4. How is XML defined? What are the benefits of using XML namespace?
5. What are the benefits of N-tier architecture?
6. Write down the difference between XML and HTML.
7. What are DTD element operations? Write down the list of operators/syntax rules we can use when defining the child elements.
8. Write down different DTD attribute types along with its description

Group C
Attempt any TWO questions **2x10=20**

1. Discuss different types of software architecture with suitable diagrams and examples
2. Write down the rules to write good XML with suitable examples
3. Differentiate between tags and attributes. Write a XML code to store following information about student along with the tree structure.
    a. Each student has a name, address, phone and email element.
    b. Address might appear multiple times
    c. Address has attribute named "type" with value permanent and temporary
    d. Phone must be 10 digits.
    e. Email have 2 attributes with type of personal / work