# Tribhuvan University
## Faculty of Humanities & Social Sciences
## OFFICE OF THE DEAN
## 2020



**Bachelor in Computer Applications**
**Course Title: Probability and Statistics**
**Code No: CAST 202**
**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. Write down the process of collecting primary data.
3. Determine First Quartile ($Q_1$) 7th Decile ($D_7$) and 80th Percentile ($P_{80}$) from the following data:

| Age in year | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 |
|---|---|---|---|---|---|---|---|---|---|
| No. of people | 7 | 11 | 24 | 35 | 27 | 17 | 11 | 8 | 5 |

4. Calculate correlation coefficient between income and expenditure in foods of certain families of Kathmandu Metropolitan from the following information:

| Income (000Rs) | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|
| Expenditure in foods (000Rs) | 9 | 8 | 9 | 12 | 11 |

5. A box contains 50 items of which 20 are defectives. If one item is selected randomly from the box, what is the probability that it is a non-defective item?
6. What is sampling? The standard deviation of marks in an entrance exam of BCA students is 0.5. How large a sample must be taken in order to be 95% confidence that the error of his/her estimate will not exceed 0.01.
7. Calculate the median and mode from following distribution:

| Expenditure(000Rs) | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 |
|---|---|---|---|---|---|---|
| Number of families | 7 | 12 | 15 | 13 | 8 | 5 |

8. A test was given to three candidates taken at random from three provinces of Nepal. The scores of candidates are given below:

| Gandaki | 9 | 7 | 6 |
|---|---|---|---|
| Lumbini | 7 | 4 | 5 |
| Bagmati | 6 | 5 | 6 |

Carry out one-way ANOVA.

### Group C

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

9. From the following data, determine average marks of student, standard deviation and coefficient variation.

| Marks | 0-10 | 10-20 | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---|---|---|---|---|---|---|---|---|---|
| No. of people | 54 | 90 | 86 | 58 | 62 | 82 | 78 | 66 | 70 |

10. In a normal distribution with mean =200 and standard deviation= 20, find the probability that

a) P(X>180) b) P(X<220) c)P(160<X<240) d) P(X>220)

e) 10% values are less than what values of X?

11. Describe simple random sampling with a suitable example.

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## 2020

**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**



**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 system? What are the phases of SDLC? Explain briefly. [1+4]
3. What do you mean by planning? Write the process of planning for Information System Development Project. [1+4]
4. Define process modeling. Explain DFD with example. [1+4]
5. List and explain the skills and responsibilities of project manager. [2.5+2.5]
6. Explain the guidelines to design in an interface and dialogue box for e-commerce system. [5]
7. Differentiate between system and user documentation with their applications. [5]
8. Define software testing. Explain software quality assurance activities. [1+4]

### Group C

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

9. What are the major differences between Agile methodologies and waterfall model? Why should you use agile methodologies? Explain. [5+5]
10. How can you transform ER Diagram into relation? Explain with your own suitable example. [10]
11. Why is the project management important? Describe the concept of integrated CASE tools with its applications. [3+7]

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## 2020

**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 HTML5? Explain characteristics of HTML5. [5]
3. Write HTML tag to generate the following table. [5]

| | Average | | Red |
|---|---|---|---|
| | Height | Weight | Eyes |
| Males | 1.5 | 0.004 | 45% |
| Females | 1.4 | 0.006 | 47% |

4. Design the following website's Menu with use of HTML list and appropriate CSS. [5]

Home | News | Contact | About

5. Compare and contrast between a block-level element and an inline element in HTML? [5]
6. What is CSS Selector? Explain different types of selector with suitable example. [1+4]
7. Why session is required in web development? Explain how you set and remove values stored in Session with suitable example? [1+4]
8. Critically analysis the pitfall of the 3-tier technology in comparison with n-tier technology.

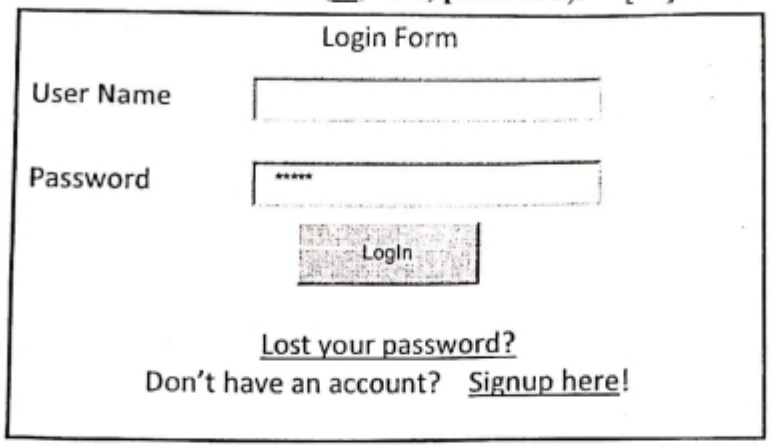
### Group C

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

9. Design the following layout of webpage with use of div and appropriate CSS. [10]

| | |
|---|---|
| Logo | |
| Navigation | |
| Header Banner | |
| Side Bar | Body Area |
| Footer | |

10. Write a server-site script for login process assume that user name and password have already exist on database **TU** under the **user** table (**id**, **user**, **password**). [10]




11. What are the rules for Well-formed xml document? Create a sample well-formed xml and validate it with DTD Schema. [5+5]

# Tribhuvan University

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## 2020

**Bachelor in Computer Applications**
**Course Title: Data Structures & Algorithms**
**Code No: CACS 201**
**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 data structure? Explain different operations to be performed on data structure. [1 + 4]
3. Define greedy algorithm and heuristic algorithm. Briefly explain Big-Oh notation. [3+2]
4. What is circular queue? Write an algorithm to insert an item in circular queue. [2 + 3]
5. How does AVL tree differ from BST? Construct an AVL tree from following data: 35, 56, 68, 65, 44, 41, 31, 49, 20. [1+4]
6. What is B-tree? Create a B- tree of order 4 using following data: 6, 4, 22, 10, 2, 14, 3, 8, 11, 13, 5, 9. [2 + 3]
7. What is binary search? Write an algorithm to search an item using binary search. [2+3]
8. What is graph? Explain Kruskal's algorithm to construct minimum spanning tree with example. [1 + 4]

### Group C

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

9. Define stack. List the applications of stack. Trace the algorithm to convert infix to postfix with following infix expression ((A+B)-C*D/E)*(H-I)*F+G and evaluate the obtained postfix expression with following values: A=4, B=2, C=4, D=3, E=8, F=2, G=3, H=5, I=1 [1 +1+4+ 4]
10. What is double linked list? How does it differ from circular linked list? Write an algorithm or function to add a node at the beginning and end of double linked list. [1 +1+4+ 4]
11. What is heap? Differentiate between min heap and max heap. Sort the following data in ascending order by heap sort method: 2, 9, 3, 12, 15, 8, 11. [2+2+6]

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## 2020

**Bachelor in Computer Applications**
**Course Title: Object Oriented Programming in Java**
**Code No: CACS 204**
**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. Define OOP. Write the characteristics of OOP Language. [1 + 4]
3. Explain the operators available in Java programming. [5]
4. Define loop. Write a java program to print first n prime numbers. [1 + 4]
5. Differentiate between abstract class and interface with suitable example. [5]
6. Define access modifier. Explain access modifiers in java with example. [1 + 4]
7. Define exception. Explain exception handling mechanism in java with example. [1+5]
8. Write short note on (Any Two): [2.5 + 2.5]
   a) final keyword b) Collection class c) JDBC

### Group C

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

9. a) Write a program to create and use java package. [5]
   b) Define thread. Explain the life cycle of thread. [1 + 4]
10. a) Write a program to sort name of any five cities in ascending order. [5]
    b) Define polymorphism. How do we achieve polymorphism in java explain with example? [1 + 5]
11. a) Differentiate between java AWT and java Swing. Explain the different types layout managers in java GUI programming. [2+3]
    b) Write a java GUI program to calculate square of entered number. [5]