TRIBHUVAN UNIVERSITY

2080 (New Course)

Bachelor / Education /3rd Semester — Full Marks: 60

ICT.Ed.438 21st Century Skills — Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" — 6 X 5 marks =30

1. Define 21st Century Skills. Describe the components of the 4C model of 21st CS.

OR

What are the benefits of 21st century skills to our learners? Explain.

2. What are deductive and non-deductive arguments? Explain with example.
3. What is critical thinking? Give an example of a good and bad argument.
4. Describe the different types of communication media.
5. What are the qualities of self-directed leadership? Describe.

OR

How do you become a 21st Century leader? Describe your characteristics.

6. How can you protect our privacy in the digital age? Describe the protection techniques.

Group "C" — 2 X 10 marks =20

7. How do you implement critical thinking in the classroom? Explain your major activities with examples.
8. As a student, how will you promote the concept of collaboration using social media in your classroom learning activities? Explain activities with examples.

OR

How do you ensure privacy and freedom of expression using social media and present as a digital citizen? Give examples.

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TRIBHUVAN UNIVERSITY

2080 (New/Old Course)

Bachelor / Education /3rd Semester — Full Marks: 40

ICT.Ed.435 Data Structures and Algorithms — Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" 6 X 5 marks =30

1. Explain about Abstract data types. Give a example of Big O notation.
2. Write a program to create stack with PUSH and POP Operation using array.
3. What is doubly link list? Explain with example.

OR

Compare the array and link list with their advantage and disadvantage.

4. Explain the merge sort algorithm with an example.
5. Write a program to print Fibonacci series using recursive function.

OR

. Write a program to implement linear search algorithm.

6. What is Minimum spanning tree? Explain Kruskal algorithm with example.

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TRIBHUVAN UNIVERSITY

2080 (New Course)

Bachelor / Education /3rd Semester — Full Marks: 40

ICT.Ed.439 Computer Architecture and Organization — Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" 6 X 5 marks =30

1. What is fixed-point and floating-point representation? How do you convert a fixed-point to a floating point? Discuss with example.
2. Describe the role of I/O modules in a computer system. Draw a block diagram representing the interaction between the CPU, I/O module, and memory during the I/O operation.

   OR

   Define addressing modes. Consider an instruction format with 8 bits for opcode and 16 bits for the memory address. Illustrate how these bits are allocated within the instruction format with diagram.
3. Discuss different types of pipelining. Formulate a six-segment instruction pipeline for a computer with specify the operations to be performed in each segment.
4. Explain the Flynn's classification of computer architecture with diagram.

   OR

   Apply the Arithmetic Logic Shift Unit to calculate the product of the binary numbers 1101 and 101 by showing steps.
5. Differentiate between interrupt driven I/O with programmed I/O. Explain with example how data transfer is performed in direct memory access.
6. Explain the concept of a multiprocessor system compared with a uniprocessor system. Provide an example of an application that can benefit from a multiprocessor architecture.

TRIBHUVAN UNIVERSITY

2080 (New Course)

Bachelor/ Education /3rd Semester — Full Marks: 60

Ed. 432 Learning Psychology — Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" — 6 X 5 marks =30

1. What is learning? How does it occur?
2. Explain the factors influencing learning.

OR

What are the principles of learning? Explain two of them.

3. Explain the experimental paradigm of classical conditioning learning.
4. State the features of operant conditioning learning.
5. What do you mean by motivation? Explain.

OR

What is the role of reinforcement in classroom teaching?

6. Differentiate between retention and memory.

Group "C" — 2 X 10 marks =20

7. Describe the theoretical causes of forgetting.
8. Explain the relationship between memory, forgetting and transfer of learning.

OR

Explain the Gagne's eight types of learning with suitable examples.

TRIBHUVAN UNIVERSITY

2080 (Old Course)

Bachelor/ Education /4th Semester — Full Marks: 60

Math. Ed. 445 Probability and Statistics — Time : 3 hrs

Candidates are required to give their answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" 6 X 5 marks =30

1. Define hypothesis. Explain the steps of hypothesis testing in brief.
2. Find the coefficient of correlation from the following data:

X	1	2	3	4	5
Y	4	2	8	6	10

OR

If $r = 0.25$, $\sum xy = 60$, $\sum x^2 = 45$, $\sigma_y = 4$, then find the number of items.

3. A sample of 49 observations form a population yielded the sample values: $\bar{x} = 172$ and $S = 17.29$. Find the 99% confidence interval for the population mean μ.
4. Make a list of any five properties of the normal distribution.
5. Find the regression equation of x on y from the following data:

$\bar{x} = 12, \quad \bar{y} = 20, \quad \sigma_x = 2, \quad \sigma_y = 3 \quad and \quad r = 0.6$

OR

Find the regression equation of y on x from the following data:

X	2	4	6	8	10
Y	8	4	16	12	20

6. A sample of 27 pairs of observations from normal sample came from a population coefficient of 0.4. Is the sample came from a population with zero correlation? Use $\propto = 0.05$.

Group "C" 2 X 10 marks =20

7. A pair of fair dice is thrown. What is the probability that
   (i) the sum of numbers appearing on the top is seven
   (ii) the sum of numbers appearing on the top is 10 or more.

OR

State and prove Chebyshev's inequality.

8. A study of the number of business launches that executives in the insurance and banking industries claim as deductible expenses per month was based on random samples and yielded the following results:

$n_1 = 40 \quad \bar{x}_1 = 9.1 \quad s_1 = 1.9$

$n_2 = 50 \quad \bar{x}_2 = 8.0 \quad s_2 = 2.1$

Use the 0.01 level of significance to test the null hypothesis: the two population means are equal against the alternative hypothesis they are not equal.

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TRIBHUVAN UNIVERSITY
Faculty of Education
2080 (Old Course)

Bachelor /4th Semester **Symbol No.:** .....
Math. Ed. 445 Probability and Statistics

Group "A" 10 X 1 mark =10

Attempt all questions Tick (√) the best answers

1. The value of correlation coefficient is
   a. $-1 < r < 1$ b. $-1 \leq r < 1$
   c. $-1 < r \leq 1$ d. $-1 \leq r \leq 1$
2. If one of the regression coefficients is positive, then the other must be
   a. positive b. negative
   c. positive or negative d. all of the above
3. If a card is drawn from an ordinary pack of 52 cards, what is the probability of a red card?
   a. $\frac{1}{4}$ b. $\frac{1}{2}$
   c. $\frac{1}{13}$ d. $\frac{2}{13}$
4. If x denotes the outcomes of occurrence of number of heads when a fair coin is tossed once, then what is the value of $E(x)$?
   a. 0 b. 0.5
   c. 0.75 d. 1.0
5. Which one of the following is not a sample statistics?
   a. s^2 b. $\bar{x}$
   c. r d. ρ
6. The area under the normal curve between $\mu \pm 2\sigma$ is
   a. 68.26% b. 99.73%
   c. 95.45% d. 96.58%
7. If we accept the null hypothesis, when it is true and should be accepted, then it is called
   a. Type I error b. Type II error
   c. Statistical error d. Chance error
8. Which is not the property of a good estimator?
   a. Unbiasedness b. Consistency
   c. Accuracy d. Sufficiency
9. For a random variable X with $E(x) = \mu$, which of the following holds:
   a. $var(x) = E(x^2) - [E(x)]^2$
   b. $var(x) = E(x^2) + [E(x)]^2$
   c. $var(x) = [E(x)]^2 - E(x^2)$
   d. none of the above
10. What is the standard error of mean of a sampling distribution?
    a. $\frac{\sigma}{\sqrt{2n}}$ b. $\frac{\sigma}{\sqrt{n}}$
    c. $\frac{\sigma}{n}$ d. $\frac{\sigma}{2n}$

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TRIBHUVAN UNIVERSITY

2080 (New Course)

Bachelor / Education /3rd Semester — Full Marks: 60

Math.Ed.436 Probability and Statistics — Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" — 6 X 5 marks =30

1. Calculate the Karl Pearson's correlation coefficient for the following data and interpret the result.

X	6	2	10	4	8
Y	9	11	5	8	7

2. From the following data obtain the regression equation of Y on X. Estimate the value of Y if X = 4.

X	2	3	5	6	8
Y	10	8	7	3	1

OR

Define and differentiate between correlation and regression.

3. Define mutually exclusive events. A jar contains 3 red, 4 white, and 3 blue marbles. If a marble is chosen at random, what is the probability that the marble is a red marble or a blue marble?
4. Define dependent and independent events. A coin is tossed three times, and the events E and F are defined as follows: E: The coin shows a head on the first toss; F: Heads appear in two successive tosses. Then find the probability of getting E and F.
5. Write properties of normal curve.
6. A random sample of size n = 20 from a normal population with variance $\sigma^2 = 225$ has the mean $\bar{x} = 64.3$. Construct a 95% confidence interval for population mean(μ). (Use $Z_{\alpha/2} = 1.96$)

OR

Define point and interval estimations with example. Write the confidential limits of population mean (μ) at α level of significance.

Group "C" — 2 X 10 marks =20

7. Define Type I and Type II error with examples. Also, write steps of testing hypothesis of difference of two samples (small sample cases).

OR

If the mean height of 60 students of grade XI is found to be 68.6 inches and the mean height of 50 grade XII students is found to be 69.51 inches. The standard deviation of height of both grade XI and XII is 2.48 inches. Would you conclude that Grade XII students are taller than the grade XI students? Use $\alpha = 0.05$.

8. A fair coin is tossed 90 times. Test the hypothesis that the die is fair, using significance level of 0.05.

Face	1	2	3	4	5	6
Observed	12	14	15	17	13	19
Expected	15	15	15	15	15	15

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TRIBHUVAN UNIVERSITY
Faculty of Education
2080 (New/Old Course)
Bachelor /3rd Semester **Symbol No.:** .....
ICT.Ed.437 Web Technology

Group "A" 10 X 1 mark =10

Attempt all questions Tick (√) the best answers

1. Who makes Web standards?
   a. The World Wide Web Consortium
   b. World Wide Web
   c. Internet Society
   d. Web Programmer
2. The text inside the <TEXTAREA> tag works like:
   a. <P> formatted text b. <T> formatted text
   c. <PRE> formatted text d. None of the above
3. Which tag do we use to define the options present in the drop-down selection lists?
   a. <list> b. <option>
   c. <dropdown> d. <select>
4. Which of the following is the correct syntax to link an external stylesheet in the HTML file?
   a. <link rel = "stylesheet" href = "style.css" />
   b. <link rel = "stylesheet" src = "style.css" />
   c. <style rel = "stylesheet" src = "style.css" />
   d. <style = "stylesheet" link = "style.css" />
5. Which is the correct way to write a JavaScript array?
   a. var city = new Array (1: "Kathmandu", 2: "Pokhara", 3: "Butwal");
   b. var city = new Array: 1= ("Kathmandu"), 2= ("Pokhara"), 3= ("Butwal");
   c. var city = new Array ("Kathmandu", "Pokhara", "Butwal");
   d. var city = new Array = "Kathmandu", "Pokhara", "Butwal";
6. Which function displays the information about PHP?
   a. sysinfo() b. phpinfo()
   c. info() d. php_info()
7. Which of the methods are used to manage result sets using both associative and indexed arrays?
   a. get_array() and get_row()
   b. get_array() and get_column()
   c. fetch_array() and fetch_row()
   d. mysqli_fetch_array() and mysqli_fetch_row()
8. Which of the following is the method that web servers use to host more than one domain name on the same computer and IP address?
   a. WebHost b. Domain Name
   c. Virtual hosting d. MultiHosting
9. What is the default value of *max_execution_time* directive? This directive specifies how many seconds a script can execute before being terminated.
   a. 10 b. 20
   c. 30 d. 40
10. Which command is used to change the definition of a table in SQL?
    a. CREATE b. UPDATE
    c. SELECT d. ALTER

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TRIBHUVAN UNIVERSITY

2080 (New/Old Course)

Bachelor / Education /3rd Semester — Full Marks: 40

ICT.Ed.437 Web Technology — Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all questions

Group "B" — 6 X 5 marks =30

1. Define HTML lists? Explain different types of lists with examples.
2. Define Cascading Style Sheet. What are the advantages of using CSS in web development?

   OR

   What do you mean by CSS layout? Explain different types of CSS layouts with examples.
3. What are the features of JavaScript? Write a JavaScript code to find factorial of a user input number.
4. What is string in PHP? Explain any five string functions with syntax and examples.

   OR

   Define session. Explain how to register, unregister and delete session Variable in PHP with example.
5. Explain the use of $_GET and $_POST methods in form submitting with proper example with their differences.
6. What is *mysql_fetch_array()* ? Explain how to retrieve data from the MySQL database using PHP.