6. a) Explain Network threats and host threats. Also write down some countermeasures for both of them. 7

b) Define Authentication and Authorization? Explain different threads and countermeasures you need to take care about any web application. 8

7. Write short notes on: (Any two) 2×5

a) GET and POST

b) Write about Java Framework

c) Foundation of security

d) mail() function

Nepal College of Information Technology
Assessment
Spring_2025

Program : BCA
Semester : (VI)
Subject : Applied Economics

Time : 3 hrs.
FM : 100
PM : 45

Candidates are required to give their answers in their own words as far as practicable. Attempt all the questions.

a) Distinguish between microeconomics and macroeconomics. 7

b) Explainthe price effect through the Indifference curve in the case of normal goods. 8

2. a) Derive Total Revenue, Average Revenue, and Marginal Revenue under a Monopoly market. Write the relationship between Average and Marginal Revenue. 7

b) Define Implicit and Explicit cost. If the total cost function of Sigma Pvt. Ltd. is: $C = 200 + q - 0.03q^2 + 0.0007q^3$. Find the TFC, TVC, TC, ATC, AFC, AVC, and MC if the firm produces 100 units of output. Is it the optimum level of output? If not find it. 8

3. a) Define production function. Explain the properties of the Cobb-Douglas production function. 7

b) How does a monopolist determine price and output in the short run? Explain. 8

4. a) Explain and illustrate the producer's equilibrium in two different approaches. 7

b) Give a reason why the demand for a factor is not direct demand. Explain the modern theory of factor pricing. 8

5. a) How is the Net National Product at factor cost calculated? Explain how national income is calculated using the expenditure method in a closed economy. 7

b) Define the Consumption and Saving function. Explain their various technical attributes. 8

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6. a) Suppose you are the Managing Director of Joshi Herbs Pvt. Ltd. What strategies or proposals would you present to the government to encourage Foreign Direct Investment (FDI), and how would this contribute to the economic development of the country? 7

OR,

Explain the concept of privatization, Liberalization, and globalization in the context of developing countries like Nepal. 8

b) Define various exchange rate systems adopted by Nepal. Explain how the foreign exchange rate is determined.

7. Write a short note on: (Any two) 5+5
   a) Principle of effective demand
   b) Business Cycle
   c) Instruments of monetary policy

Dark through.

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NEPAL COLLEGE OF INFORMATION TECHNOLOGY

ASSESSMENT EXAMINATION

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BCA | Full Marks: 100
Course: Organization Management | Pass Marks: 45
Time: 3 hrs.

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

Attempt all the questions.

1. a) What is the concept of management? Discuss its relevance and necessity in organizations driven by modern technology. 7
   b) How would you define an organization? If a company seeks to be agile, which organizational structure should it adopt and why? 8
2. a) Compare and contrast between Maslow's Need Hierarchy Theory and Herzberg's two-factor theory of motivation. 8
   b) Identify current motivational issues facing Nepalese organizations describe with appropriate examples. 7
3. a) In the context of a fast-evolving business environment, which leadership style would yield better results and why? Justify with examples. 8
   a) Define Management by Exception (MBE). Why this method considered as best fit in changing scenario? 7
4. a) Explain the key objectives of industrial relations and discuss their importance in fostering workplace harmony. 7
   b) Why are employee health and safety initiatives crucial for sustaining positive industrial relations? Illustrate your answer with practical examples. 8
5. a) Why is training and development critical for employee growth and organizational success? Provide relevant examples.
   b) Discuss the ethical issues associated with corporate social responsibility (CSR).
6. a)Analyze the impact of globalization on labor standards and working conditions in developing countries
   b)Consider a scenario where an organization is facing frequent conflicts among teams. As an HR manager, what systematic steps would you implement to promote effective conflict resolution and build a collaborative culture?
7. Write short notes on: **(Any two)**
   a) Informal Organization
   b) MBO
   c) On the Job Training (OJT)

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Nepal College of Information Technology
Balkumari, Lalitpur
Assessment
Spring_2025

Program : BCA
Semester : (VI)
Subject : Web Technologies II

Time : 3 hrs.
FM : 100
PM : 45

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

1.
a. What are the basic protocols used on the Internet. Differentiate between client-side and server-side scripting with examples. 7
b. Write an example in PHP to illustrate the working of a session. How does the session differ from cookies? 8

2.
a. Why databases are important in dynamic programming? Write a PHP code to read id, name, mobile, and status from a database table and display them in a tabular format in a webpage. 7
b. Write a PHP code to validate a form having controls Email, Password, and Retype Password. Also, insert this data into a table in a database. 8

3.
a. How do you declare and initialize an array in PHP? Explain the types of arrays in PHP with examples. 7
b. Compare Servlet and JSP. Explain the life cycle of JSP. 8

4.
a. Explain the concept of cookies in servlets. Write a code to implement cookies using a servlet. 7
b. Design a web page that takes two numbers as input using JSP. When a user clicks on the Calculate, Button the POST method of Servlet will calculate the sum and display it on the Servlet Page. 8

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NEPAL COLLEGE OF INFORMATION TECHNOLOGY

ASSESSMENT EXAMINATION

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BCA | Full Marks: 100
Course: Organization Management | Pass Marks: 45
Time: 3 hrs.

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

ttempt all the questions.

a) What is the concept of manage... ...nizations dri...

5. a. List out 2 Java and 2 PHP frameworks and their use cases. 8
   b. What is CMS? List out two popular CMS. Explain the advantages of using CMS. 7

6. a. Explain host, application, and Network threats, also explain itheircountermeasures. 8
   b. Design guidelines for secure web applications. 7

7. Write Short notes on: (Any two) 2*10
   a. URL rewriting (session management)
   b. Cryptography
   c. SOAP

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Nepal College of Information Technology
Balkumari, Lalitpur
Assessment
Spring_2025

Program : BCA | Time : 3 hrs.
Semester : (VI) | FM : 100
Subject : Data Communication & Computer | PM : 45

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

Attempt all the questions.

1. a) Define Data Communication. What are the essential components of a data communication system? [7]
   b) Differentiate between analog and digital transmission with examples. Mention one advantage of each. [8]
2. a) What is Frequency Division Multiplexing (FDM)? Compare FDM and TDM with suitable use cases. [7]
   b) Explain the layers of the OSI reference model. Highlight the responsibilities of any three specific layers. [8]
3. a) Define transmission media. Compare and contrast twisted pair cable, coaxial cable, and fiber optic cable. [7]
   b) If the generator polynomial is **1011** and the data to be transmitted is **1101011011**, compute the **CRC code**. Also, show how the receiver checks for errors assuming the transmission is error-free. [8]
4. a) Define ARQ. Describe the working mechanism of Stop-and-Wait and Go-Back-N ARQ protocols. [7]
   b) Suppose your organization is assigned a block of IP addresses: **192.168.20.0/24**. Subnet the block into four subnets for departments needing 100, 50, 30, and 20 hosts. Show calculations and ranges. [8]
5. a) Define IP Addressing. Discuss any four classes of IPv4 addressing and their default subnet masks.
   b) What is network congestion? How does the **leaky bucket algorithm** manage congestion control?
6. a) What is routing? Compare **link state routing** and **distance vector routing** in terms of performance and convergence

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b) Define **symmetric encryption** and **asymmetric encryption**. Illustrate how each is used in securing communication. [8]

7. Write short notes on **any two** of the following: [2×5=10]

a) Firewall and its role in network security

b) DNS and its working mechanism

c) Advantages and disadvantages of SMTP

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Nepal College of Information Technology

Level: Bachelor | Semester: Spring | Year: 2025
Programme: BCA (VI Sem) | **Assessment Examination** | Full Marks: 100
Course: Fundamentals of Probability and Statistics | Pass Marks: 45
Time: 3 hours

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

Attempts all the questions:

1. (a) To continually increase the speed of computers, engineers are working on ever – decreasing scales. The size of devices currently undergoing development is measured in nanometres (nm). Engineers fabricating a new transmission type electron multiplier created an array of silicon nano pillars on a flat silicon membrane. Subsequently, they measured the diameters (nm) of 50 pillars: 7

62	68	69	80	68	79	83	70	74	73
74	75	80	77	80	83	73	79	100	93
92	101	87	96	99	94	102	95	90	98
86	93	91	90	95	97	87	89	100	93
92	98	101	97	102	91	87	110	106	118

Using these data construct a frequency distribution with suitable number of equal classes. Draw a histogram and frequency polygon. Also find the mode.

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

	Firm A	Firm B
Number of workers	500	600
Average monthly wages (Rs.)	186	175
Variance of distribution of wages (Rs.)	81	100

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

ii. In which firm, A or B, is there greater variability individual wages?

iii. Calculate average monthly wages and the variance distribution of wages, of all the workers in the f

B taken together.

2. (a) The following are the incomes (in thousands of rupees) for a sample of 12 households. 7

23	17	32	60	22	52	29	38	42	92	27	46

Construct a box-and-whisker plot for these data. And describe the information obtained.

(b) There are three machines A, B and C producing 1000, 2000 and 3000 articles per hour respectively. These machines are known to be producing 1%, 2% and 3% defectives respectively. One article is selected at random from an hour production of the three machines and found to be defective. 8

What is the probability that the article is produced from

i. Machine A
ii. Machine B
iii. Machine C

3. (a) A hospital switch board receives telephone call at the rate of 3 calls per minute on an average. What is the probability of receiving 7

i. No call in a minute interval.
ii. At least 3 calls in a minute interval.

b) If the mean scores in an examination are 64 with standard deviation 9. If top 10% students will be awarded grade A, then what minimum scores should a student achieve so that he earns grade A? 8

4. a) Let X be a discrete random variable with the following probability distribution 7

X = x	0	1	2	3	4	5	6	7	8
P(X = x)	K	3K	5K	7K	9K	11K	13K	15K	17K

i. Determine the value of K

ii. Find the distribution function of random variable X?

iii. Find E(X) and V(X).

b) Let X and Y be two continuous random variables with joint probability density function 8

$$f(x,y) = Axy; \quad 0 < x < 1 \text{ and } 0 < y < x$$

i. Find the constant A.

ii. Find the marginal density functions of X and Y.

iii. Find the conditional density function of Y given X = x.

iv. Check the independency of X and Y.

5. a) A random sample of 10 students had the following I.Q's: 70, 120, 110, 101, 83, 88, 95, 98, 107, and 100. Find the 95% confidence interval for the mean I.Q values lie. 7

b) Define level of significance. A manufacturer of transistors claims that the defective pieces cannot be 10% in any lot. A sample of 60 transistors was drawn randomly. On testing it was found that 7 transistors were out of order. Test whether the manufacturer's claim is correct. Use $\alpha = 0.01$ 8

6. a) An experiment was run to determine the effectiveness of a new type of drug on blood pressure. Ten persons have their blood pressure measured before and after the drug is given. The result of the experiment are as follows: 7

Before	116	118	120	124	128	130	131	134	136	137
After	119	124	126	128	121	135	137	138	139	135

Test the hypothesis that new drug raises the blood pressure at $\alpha = 0.05$.

b) Given the following data of CPU time required (Y) and the number of disk Input – Output operations (X). 8

Time in sec. (Y)	40	38	42	50	60	30	20	25	40	39
Number (X)	398	390	410	502	590	305	210	252	398	392

i. Compute the simple correlation coefficient between X and Y.

ii. Estimate the CPU time requirement for 600 disk input – output operations.

iii. Calculate the coefficient of determination and interpret it.

7. Write short notes on any **TWO**: $2 \times 5 = 10$

a) Errors in hypothesis testing.

b) Different approaches of probability.

c) Characteristics of Normal distribution

Best Wishes!!!

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