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MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL TEST
MARCH 2026 SEMESTER

COURSE CODE : IKB10504

COURSE NAME : COMPUTER NETWORK TECHNOLOGY AND SERVICES

PROGRAMME NAME : BACHELOR OF INFORMATION TECHNOLOGY
(FOR MPU: PROGRAMME LEVEL) (HONS) IN COMPUTER SYSTEM SECURITY

DATE : 29 JUNE 2026

TIME : 09.00 AM – 11.00 AM

DURATION : 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.
 2. This question paper has information printed on both sides of the paper.
 3. This question paper consists of TWO (2) sections; Section A and Section B.
 4. Answer ALL questions.
 5. Please write your answers in the answer booklet provided.
 6. Answer all questions in English ONLY.
 7. The use of calculators is not allowed.
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THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 50 marks)**INSTRUCTION: Answer ALL questions.****Please use the answer booklet provided.****Question 1**

Answer ALL questions. The questions are related to Subnetting Theory and Basic IPv4 Subnetting:

- (a) Explain at least TWO (2) importances of subnetting in IPv4 network designs. All answers should be briefly justified.

(4 marks)

- (b) Define the following terms. Provide an example based on one /25 network.

- i. Network address
- ii. First usable host address
- iii. Last usable host address
- iv. Broadcast address

(8 marks)

- (c) Given the network 192.168.20.0/24, divide the network into FOUR (4) equal-sized subnets using Fixed Length Subnet Masking. State the following:

- i. Number of borrowed bit(s)
- ii. New prefix length
- iii. New subnet mask
- iv. Block (subnet) size
- v. Number of usable host addresses per subnet

(5 marks)

- (d) Based on the network created in Question 1(c), complete the subnetting table for the FOUR (4) subnets.

Subnet	Network Address	First Usable IP Address	Last Usable IP Address	Broadcast Address
1				
2				
3				
4				

(8 marks)

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Question 2

Answer ALL questions. The questions are about the comparison between Fixed Length Subnet Mask (FLSM) and Variable Length Subnet Mask (VLSM) application.

(a) Compare FLSM and VLSM based on the following aspects:

- i. Subnet size
- ii. Subnet mask
- iii. IP address efficiency
- iv. Suitability for different host requirements

(8 marks)

(b) A college is given the network 10.10.10.0/24. It has FOUR (4) labs, and each lab requires approximately 50 hosts. Use FLSM to divide the network into suitable subnets. State:

- i. New prefix length
- ii. Subnet mask
- iii. Subnet details for all FOUR labs, which include the Network Address, First Usable Host Address, Last Usable Host Address and Broadcast Address

(9 marks)

(c) The same college later changed its requirement as follows:

Area	Required Hosts
Lab A	50
Lab B	25
Lab C	12
Lab D	6

Using VLSM, assign suitable subnets for the new requirement. Provide a table of subnet details for all FOUR labs, which includes the Network Address and prefix, First Usable Host Address, Last Usable Host Address and Broadcast Address.

(8 marks)

SECTION B (Total: 50 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided. Use the scoring rubrics shown in Table 1 to guide the construction of answers.

Table 1 Scoring Rubrics

	5 (Excellent – Full Achievement)	4 (Good – Minor Gaps)	3 (Satisfactory – Basic Understanding)	2 (Weak – Limited Ethical Value)	1 (Very Weak)	0 (No Credit)
Ethical Judgement	Demonstrates clear and strong ethical values	Shows good ethical awareness	Shows some ethical awareness	Focus on "what" but weak on "why ethically"	Shows little or no ethical awareness	No answer OR promotes clearly unethical/unsafe behaviour
Decision Quality	Decision is fully appropriate, responsible, and professional	Decision is mostly correct and responsible	Decision is partially correct but not fully justified	Missing professional perspective in the decision	Decision is mostly incorrect or inappropriate	Answer is completely irrelevant
Justification	Provides well-explained justification with logical reasoning Clearly discusses consequences and responsibilities	Justification is clear but slightly lacking depth Mentions consequences, but not fully elaborated	Justification is basic and somewhat descriptive Limited discussion of consequences	Justification is basic No discussion of consequences	Justification is very minimal or irrelevant	No justification provided

Question 1

An employee frequently connects to unsecured public Wi-Fi to access company emails.

Answer the following questions with reference to the scoring rubric provided.

- (a) Explain TWO (2) security risks involved.
(4 marks)
- (b) Describe the employee's responsibility.
(2 marks)
- (c) Discuss how the organisations can encourage safer behaviour.
(4 marks)
- (d) Based on your answers in the above subquestions, you will be assessed using the provided rubric.
(Note: For this subquestion, no answer is expected from students)
(15 marks)

Question 2

You are hired as an IT assistant in a small company. You observe the following:

- Employees share passwords openly
- No firewall is configured
- Remote access is allowed without VPN
- No physical access controls to server room

When you suggest improvements, the manager replies, "Security is too expensive and unnecessary for our business."

Answer the following questions with reference to the scoring rubric provided.

- (a) Explain ONE (1) risk for EACH of the observed security non-practices mentioned above. (4 marks)
- (b) Plan your ethical and professional response to the manager. (2 marks)
- (c) Describe TWO (2) importance of upholding security values even if management resists. (4 marks)
- (d) Based on your answers in the above subquestions, you will be assessed using the provided rubric.

(Note: For this subquestion, no answer is expected from students)

(15 marks)

END OF TEST PAPER