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Daffodil International University

Department of Computing and Information System (CIS)
Final Examination: Spring Semester-2025
Program: B.Sc. in CIS
Course Code: CIS 311
Course Title: Network Security and Cryptography

Total Time: 2 hours **Total Marks: 40**

(Answer all the following questions)

[The figures in the right margin indicate full marks for the respective questions]

			Marks	
1.	**BRAC Bank PLC** is a private commercial bank in Bangladesh, founded in 2001. The bank has a network of over 190 branch, 74 sub branch, 457 SME unit offices, and over 329 ATMs, 10 CDMs, 68 RCDMs across the country. In addition to traditional banking services such as deposits, loans, and card, BRAC Bank also offers digital banking, including online banking, mobile banking, and e-wallet services. The head office situated at Dhaka and all the 190 branches are connected with head office network located around the country. Besides, they need to maintain a country wide ATM network therefore all the sensitive customer data are stored permanently in head office server. In May, 2019, BRAC bank was hacked and lost 11 corer taka. Now days cyber-attack become increasing than any time therefore it has bring attention to the authority. Realizing the reality, the authority is taking several initiatives to increase the overall security of the bank.			
	(a)	Draw a network diagram that shows the main components of the network along with security device of the network.	[4] 4	CLO-3
	(b)	The authority of the bank is very much concern about security of the data. Now you are asked to deploy the **server** of "BRAC Bank PLC" duel firewall architecture. Select one suitable technology and also justify your answer with relevant example.	[6] 6	CLO-4

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2.	(a)	How would you setup a secure head office and branch office network of "BRAC Bank PLC" and also ensure the secure connection between the local and head office networks? Justify your answer with mentioning the protocols and technology has been used there.	Marks [6] 6	CLO-1 and CLO-4
	(b)	You are asked to conduct a vulnerability assessment for "BRAC Bank PLC" where you need to mention the parameters of the assessment. Justify the reasons why you have chosen these parameters.	[4] 3	CLO-4

3.	(a)	Describe the working steps of AES algorithm assuming the key length of 192 and how AES algorithm is used in the technology selected for "BRAC Bank PLC" network.	Marks [5+2] 2	CLO-1 and CLO-4
	(b)	What is the difference between Symmetric Encryption and Asymmetric Encryption? Provide some practical application of the both technology.	[3] 3	CLO-1

4.	(a)	Implement an access control list for "BRAC bank PLC" where **only network administrator** will have access to configure the firewall and router. You may consider the ip address of the server is 203.190.9.82. You are asked to write down the configuration of the access control list.	Marks [4] 4	CLO-2
	(b)	Discuss the handshake process in SSL/TLS (Transport Layer Security) and its significance in establishing a real world secure connection between a client and a server.	[3] 1	CLO-4
	(c)	Do you think is it required to use VPN in BRAC Bank PLC network? If so mention the protocols used in the VPN technology.	[3] 3	CLO-4