Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S2 (R,S) Examinations April 2026 (2024 Scheme)

Course Code: GXEST203
Course Name: FOUNDATIONS OF COMPUTING: FROM HARDWARE ESSENTIALS TO WEB DESIGN

Max. Marks: 60 Duration: 2 hours 30 minutes

PART A

(Answer all questions. Each question carries 3 marks)

		CO	Marks
1	Define and explain the following time-related factors in the context of hard disk drives: seek time, rotational latency time (or rotational delay), and transfer time.	CO1	(3)
2	What are interface cards in computers? Explain the different types of interface cards.	CO1	(3)
3	What are the roles of the Program Counter (PC) and Instruction Register (IR) in a CPU? Explain their functions in the execution of instructions.	CO2	(3)
4	What are privileged instructions in a CPU?	CO2	(3)
5	What is scheduling and dispatching in an operating system? Explain their roles in process management.	CO3	(3)
6	What is shell scripting? What is the importance of the shebang in a shell script?	CO3	(3)
7	Write an HTML code to create a basic web page with a title, a small heading, and a paragraph.	CO4	(3)
8	What is the use of JavaScript in an HTML web page? Explain its importance in web development.	CO4	(3)

PART B

(Answer any one full question from each module, each question carries 9 marks)

Module -1

			CO	Marks
9	a)	What is memory hierarchy in a computer system? Explain the different levels of the memory hierarchy with examples, and describe why the memory hierarchy is important for system performance.	CO1	(5)

	b)	What are input devices in a computer system? List any four input devices and explain any two of them in detail with their working principles.	CO1	(4)
10	a)	Explain the working principle and structure of an LCD (Liquid Crystal Display). Draw a neat labelled diagram to support your explanation.	CO1	(3)
	b)	What is firmware in a computer system? Explain the characteristics of firmware and describe any two types of firmware with examples.	CO1	(3)
	c)	Explain the booting process of a computer starting from power-on. Describe the major steps performed by the BIOS during booting.	CO1	(3)

Module -2

11	a)	Explain how fractional numbers are represented inside the CPU by describing the role of mantissa, base, and exponent, and illustrate your answer by showing how the number -5/16 would be represented internally.	CO2	(5)
	b)	What are the different categories of instructions in a CPU? Explain any three types of instructions in detail with suitable examples.	CO2	(4)
12	a)	How is sound data represented inside a computer? Explain the concepts of analog to digital conversion using sampling, and describe how sampling rate and bit depth affect the quality of digitized sound.	CO2	(5)
	b)	Explain the role of pixels, the use of grayscale and RGB color models, and describe how colour palettes help in reducing storage size for images.	CO2	(4)

Module -3

13	a)	Write a shell script to read the lines of a text file one by one and display them on the terminal.	CO3	(3)
	b)	Write a shell script that prompts the user to enter a colour (red, green, or blue). Based on the colour entered, the script should display a message indicating the colour choice. Use a case statement to handle the input.	CO3	(3)
	c)	Explain the usage of functions in shell scripting. Write a simple shell script that defines a function to calculate the square of a number. The script should take a number as input from the user, call the function, and then display the square of the number.	CO2	(3)
14	a)	Imagine a situation where a small group of students in a hostel wants to share files, notes, and projects directly between their laptops without using a central server.	CO3	(6)

Based on this situation:

1. Identify which type of network computing is suitable.
2. Explain the need for this type of computing in such a situation.
3. List the features and limitations of this computing model.
4. Draw a simple diagram to represent the connection between the devices.

b) Explain any three types of network topologies with neat diagrams and mention one advantage and one disadvantage of each. CO3 (3)

Module -4

15 a) Explain the web content delivery process. Describe the steps that happen when you load a website like google.com in your browser. CO4 (5)

b) Why is it important to test a web page in different browsers? Explain the potential issues that might arise if testing is not done across multiple browsers. CO4 (4)

16 a) Write an HTML and JavaScript code to design a web page that displays the current date and time on the screen using the Date () function. CO4 (5)

b) Write an HTML page with three paragraphs. Each paragraph should have a heading of a different size and a different paragraph colour. Use external CSS to set the heading sizes and paragraph colours. CO4 (4)

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