KUMARAGURU
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B.E DEGREE EXAMINATIONS: NOV/DEC 2022

(Regulation 2018)

Seventh Semester

U18ECE0058: ADVANCED HMI

(Common to ECE/EIE/MCE)

COURSE OUTCOMES

CO1: **Summarize HMI architecture and its subcomponents**
CO2: **Develop real time automotive applications using tools such as Unity and Qt.**
CO3: **Develop simple HMI using Android and Web app development tools**
CO4: **Perform HMI testing and validation for the developed system**

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	List the human side components in human side of a human machine interface environment.	CO1	[K_1]
2.	Construct an HMI model based on the cognitive process and action of the user.	CO1	[K_3]
3.	Summarize the HMI design principles in two points.	CO1	[K_2]
4.	Justify the role of universal render pipeline in unity engine.	CO2	[K_5]
5.	What is QML?	CO2	[K_1]
6.	Compare HTML elements and tags.	CO3	[K_2]
7.	Examine the limitations of CSS.	CO3	[K_4]
8.	Relate conditional resource loading and progressive web apps.	CO3	[K_2]
9.	Why is it necessary to test and validate human machine interface?	CO4	[K_1]
10.	Infer few complexities encountered in HMI testing.	CO4	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Explain in detail the three different architecture for the design of an HMI system.	8	CO1 [K_2]
	b)	Identify the steps involved in the design of a typical human machine interface system.	8	CO1 [K_3]
12.	a)	Illustrate with neat diagram the SplitScreenSetup screen configuration process	8	CO2 [K_2]

and the camera viewpoint setup.

	b)	Create a C# script to receive input from the keyboard to jump only when the rigid body is the ground and move in all other direction along the ground.	8	CO2	[K$_6$]
13.	a)	Create a HTML and CSS framework for a resume.	8	CO3	[K$_6$]
	b)	Examine the mobile first approach in PWA with a simple example.	8	CO3	[K$_4$]
14.	a)	Analyze why HMI testing cannot be fully automated and summarize the limitations.	8	CO4	[K$_4$]
	b)	Explain in detail the future trends in HMI testing.	8	CO4	[K$_2$]
15.	a)	Illustrate the HMI software architecture and explain the software library modules.	8	CO1	[K$_2$]
	b)	Create a login form with dialog box in QT.	8	CO2	[K$_6$]
16.	a)	Explain in detail about UI layer architecture in android.	8	CO3	[K$_2$]
	b)	Analyze in detail the usability test for screen-based interaction.	8	CO4	[K$_4$]

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