

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VI EXAMINATION – WINTER 2025

Subject Code: 3160311

Date: 19-11-2025

Subject Name: Embedded System for Medical Device

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

MARKS

Q.1	(a) Explain elements of Embedded system.	03
	(b) Enlist various characteristics of Embedded systems.	04
	(c) Classify embedded system based on its application, scale, size and manufacturing.	07
Q.2	(a) Explain file and IO management system.	03
	(b) Explain importance of Firmware for Embedded system.	04
	(c) Discuss layers of OS in detail.	07
	OR	
	(c) Explain requirement of RTOS. Also explain basic design consideration for it.	07
Q.3	(a) Explain difference between task and process.	03
	(b) Explain importance of semaphores with suitable example.	04
	(c) Discuss tasking and scheduling mechanism of OS.	07
	OR	
Q.3	(a) Enlist various application using Raspbrry pi.	03
	(b) Draw ARM cortex A53 Architecture.	04
	(c) Discuss board specifications of Raspberry pi in detail.	07
Q.4	(a) Briefly discuss Exceptional handling in python.	03
	(b) Discus data types used in python.	04
	(c) Explain function in Python with example.	07
	OR	
Q.4	(a) Write a python code to open text file and read it line by line and print it.	03
	(b) Write a python code to detect switch press and turn on led connected at digital pin of RPi.	04
	(c) Explain various control loops in Python.	07
Q.5	(a) Explain transition operation of image using OprnCV module.	03
	(b) Enlist various operations of OpenCV module and explain any one in detail.	04
	(c) Design an application with HC-SR04 to measure distance of obstacle and display it in Terminal.	07
	OR	
Q.5	(a) Write a python code to display image using matplotlib module.	03
	(b) Write a python code to Interface webcam with Rpi and record video with 640*480 resolution	04
	(c) Write a python code to Interface thermistor temperature sensor with RPi using MCP3008 and display temperature in terminal.	07
