# Sanjay Ghodawat University, Kolhapur

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

2020-21

EXM/P/09/00

| | | |
|---|---|---|
| **Year and Program: TY, B.Tech** | **School of Technology** | **Department: Electronics** |
| **Course Code: ECE306** | **Course Title: Embedded Systems** | **Semester : VI** |
| **Day and Date:** | **End Semester Examination** | **Time:2 Hrs.**<br>**Max Marks:50** |

**Instructions**: 1) All Questions are compulsory 2) Draw diagrams wherever necessary

| **Q.1** | | **Answer the following (any Two)** | **Marks** | **Bloom's Level** | **CO** |
|---|---|---|---|---|---|
| | a) | Draw and Explain CPSR in ARM and discuss various modes. | 8 | L1 | CO1 |
| | b) | Write the features of Timer module in LPC2148. List of all SFR's required for configuration. | 8 | L2 | CO1 |
| | c) | Write an Embedded C program to sense a key connected to P0.3 of LPC2148. Turn on the LED connected to p0.4 when key is pressed. | 8 | L3 | CO2 |
| | | | | | |
| **Q.2** | | **Answer the following (any two)** | | | |
| | a) | Define Embedded System. With a neat diagram explain components of an Embedded System | 8 | L1 | CO1 |
| | b) | Design a subsystem to interface an analog input to LPC2148. The analog input is connected to P0.10(AD1.2) must be converted to its digital equivalent. Write an Embedded C program to turn on an indicator (LED) when analog input voltage level goes below 50%. | 8 | L5 | CO2 |
| | c) | Design an interface for 6-digit multiplexed 7-segment display withLPC2148. Write an Embedded C Program to display the following.<br>5 4 3 2 1 0 | 8 | L4 | CO2 |
| | | | | | |
| **Q.3** | | **Answer the following (any two)** | | | |
| | a) | Explain the working of I2C protocol. Compare I2C and SPI Protocols. | 9 | L2 | CO3 |
| | b) | With a Pseudo-code explain Function-Queue Scheduling. Compare it with other software architectures with following parameters.<br>a) Stability b) Worst case time response. | 9 | L3 | CO4 |
| | c) | Explain shared data problem with the help of pseudo code. Write about different ways to protect shared data. | 9 | L2 | CO4 |
| | | ***** | | | |