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## ST. JOSEPH’S COLLEGE OF ENGINEERING AND TECHNOLOGY, PALAI.

*(An ISO 9001:2015 Certified College)*

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**B. TECH DEGREE FIRST INTERNAL TEST- APRIL 2021**

SEMESTER -8 Batch 2017-2021 A & B

## CS404 EMBEDDED SYSTEMS

Time: Hours Max. Marks: 50

**PART A**

*Answer all questions (20 marks)*

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| **Qn No.** | **Questions** | **Marks** | **K level** | **CO & KL** |
| 1 | Compare between Embedded Systems and general-purpose computers by mentioning any two situations where Embedded System and general-purpose computers are used. | 5 | K2 | CO1&K2 |
| 2 | For the question no. 6 draw the sequential process model. | 5 | K3 | CO2&K3 |
| 3 | Compare between super loop-based design approach and Embedded Operating System design approach? Write code for Temperature checking system of patients in hospitals using super loop-based approach. (No need for the detailed code, only functions need to specify) | 5 | K3 | CO3&K3 |
| 4 | List and explain the different UML components | 5 | K2 | CO2 & K3 |

**PART B**

*Answer all questions (30 marks)*

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| **Qn**  **No.** | **Questions** | **Marks** | **K level** | **CO & KL** |
| 5 | With a neat diagram, explain the major levels of Embedded system design process. | 10 | K2 | CO1&K2 |
| 6 | Design an Automated Irrigation System for agricultural fields based on FSM model for sensor and Motor for the following requirements.  For Sensor,   1. The sensor placed at the ground for checking is activated at every 10 minutes to check the dryness of the ground. 2. If the moisture content of the ground is below a threshold value, then the sensor will set to send message to motor switch. 3. The sensor will come back to idle stage if the moisture content is above the threshold. 4. After sending the message the sensor come back to idle stage.   For Motor   1. The motor in idle stage will move to on stage on receival of message from the sensor. 2. The motor works for 15 minutes and automatically turned off. 3. If the power failure occurs, the motor moves to OFF stage from ON stage. | 10 | K3 | CO2&K3 |
| 7 | In a weather forecasting system, a sensor is placed in a particular place to measure the atmospheric temperature at fixed period of time intervals. A software code has written in assembly language to manage this process. Write the steps to convert this assembly code to machine language. | 10 | K3 | CO3 & K3 |

**Question Paper Analysis (Sample)**

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| **Prepared by:**  Prof. Suma R & Prof. Ashly Thomas  Name & Signature  Faculty-in-charge | **Verified by:**  Prof. Mereen Thomas  Name & Signature  Course Coordinator | **Approved by:**  Name & Signature  HoD |