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| Reg. Number: |  |



**Re-CAT – II**

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| Programme | | | : | **B. Tech. (ECE/ECM)** | Semester | : | **FS 2024-25** | |
| Course Code &  Course Title | | | : | **BECE320E Embedded C Programming** | Class Number | : | **CH2024250102674** | |
| Faculty | | | : | **Prof. Srinivasan R** | Slot | : | **E1** | |
| Duration | | | : | **90 Minutes** | Max. Marks | : | **50** | |
| **General Instructions:**   * Write only your registration number on the question paper in the box provided, and do not write other information. * Only a non-programmable calculator without storage is permitted. | | | | | | | | |
| **Answer all questions.** | | | | | | | | |
| Q. No | Sub Sec. | Description | | | | | Marks | Blooms Taxonomy Level |
| 1. |  | Mention the 8051 pins used for  (i) Counting of external events  (ii) Interfacing external clock  (iii) Serial communication  (iv) Flash programming | | | | | 4 | L1 |
| 2. |  | Briefly explain the special function registers of 8051 involved in  (i) External data memory access  (ii) Power consumption  (iii) Register bank selection | | | | | 6 | L2 |
| 3. |  | Find the values to be filled into the appropriate special function registers of 8051 for the following tasks.  (i) Generation of 2 kHz clock signal using timer 1 in mode 1. Assume the crystal frequency as 12 MHz.  (ii) Serial port communication with receiving enabled in mode 2 at a baud rate of 4800. Assume the crystal frequency as 11.0592 MHz.  (iii) Enabling serial, timer 0, and EXT 1 interrupts and assigning high priority to timer 0 interrupt. | | | | | 10 | L3 |
| 4. |  | Due to requirement of storage of additional data, there is a need to expand memory. In this case, sketch the interface between 8051 and the 16 kB external memory. | | | | | 6 | L1 |
| 5. |  | Write a C program to send out the value 65h serially one bit at a time via P1.2. The MSB should go out first. | | | | | 5 | L4 |
| 6. |  | Write an 8051 C program to control a motor based on the water level. Assume the water level data is available in port 2. If the level goes below 0x50, the motor should be turned on, otherwise it should be turned off. A stabilization time of 2 minutes and 5 minutes generated using nested loops must be allowed after the motor is switched on and off, respectively. Assume XTAL=11.0592 MHz. | | | | | 10 | L3 |
| 7. |  | Write an 8051 embedded C program to generate a clock of 1200 Hz frequency on pin P2.3. Use timer 0 in mode 2. Assume crystal frequency as 12 MHz. | | | | | 9 | L3 |
| \*\*\*\*\*\*\*\*\*\*All the best \*\*\*\*\*\*\*\*\*\*\*\*\* | | | | | | | | |