



# GOVERNMENT COLLEGE OF ENGINEERING, JALGAON

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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **ET403C - (Elective I)-Embedded Systems**

Generated At : **18-04-2022 16:35:33**

Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

- 1) Attempt any three questions.
  - a) i. Define embedded system with its characteristics. [3]
  - ii. Explain in detail the hardware units of embedded system in detail. [3]
  - b) Explain in detail the serial bus protocol Inter Integrated Circuit (I2C). [6]
  - c) Write a program to display "ENGINEERING" on LCD using LPC2148 ARM processor. Also draw interfacing diagram. [6]
  - d) Draw the block diagram of ARM-7 processor LPC2148. [6]
- 2) Attempt any three questions.
  - a) Compare RISC and CISC. [6]
  - b) Write short note on programming of on-chip peripherals, the timers of ARM-7 processor LPC2148. [6]
  - c) Explain the need of RTOS in embedded system software. [6]
  - d) Explain Controller Area Network (CAN) in brief. [6]
- 3) Attempt any three questions.
  - a) Write brief note on semaphores. [6]
  - b) Explain automatic chocolate vending machine using  $\mu$ C/OS RTOS, a case study. [6]
  - c) Write short note on on-chip Analog to Digital Converter (ADC) of ARM-7 processor LPC2148.. [6]
  - d) Compare ZigBee and RF modules. [6]
- 4) a) Write short note on Real Time Clock (RTC) modules. [6]

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