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**B.M.S. College of Engineering, Bengaluru-560019**

**Autonomous Institute Affiliated to VTU**

**July / August 2019 Supplementary Examinations**

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| **Programme: B.E.** | **Semester : III** |
| **Branch : INFORMATION SCIENCE AND ENGINEERING** | **Duration: 3 hrs.** |
| **Course Code: 15IS3DCCOE** | **Max Marks: 100** |
| **Course Title: Computer Organization And Embedded Systems** | **Date: 27.07.2019** |

**Instructions**: 1. Answer any FIVE full questions, choosing one full question from each unit.

2. Missing data, if any may suitably assumed.

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| **Important Note:** Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice. |  |  | **UNIT - I** |  |
| 1 | a) | Describe indirect addressing with an example. | **04** |
|  | b) | Assess the two methods of parameter passing with examples. | **08** |
|  | c) | Elucidate stack frame. Write routines for push and pop operations. | **08** |
|  |  | **UNIT - II** |  |
| 2 | a) | Explicate the datapath in a processor with block diagram. | **06** |
|  | b) | Write sequence of actions using fetch and execute instructions for Load R5, X (R7) and Store R6, X (R8). | **08** |
|  | c) | With a neat block diagram, explain hardwired control unit. | **06** |
|  |  | **UNIT - III** |  |
| 3 | a) | Define interrupt. Provide explanation on handling an interrupt request from a single device. | **08** |
|  | b) | Evaluate the handshake control of data transfer during input and output operations in asynchronous bus. Write timing diagrams for the same. | **12** |
|  |  | **OR** |  |
| 4 | a) | Explain the methods for handling interrupts from multiple devices. | **10** |
|  | b) | Describe how to translate virtual address into physical address with neat diagram. | **10** |
|  |  | **UNIT - IV** |  |
| 5 | a) | Convert the following pairs of decimal numbers to 5-bit signed 2’s complement binary numbers and add them.  (i) -5 & 7 (ii) -3 & -8 (iii) -10 & -13 (iv) -14 & 11 | **12** |
|  | b) | In carry 4-bit lookahead addition, explain generate Gi and propagate Pi functions with the help of Boolean expression for Gi and Pi | **08** |
|  |  | **UNIT - V** |  |
| 6 | a) | Demonstrate the working of Digital Camera with neat diagram. | **10** |
|  | b) | Describe following with respect to microcontroller   1. Parallel I/O Ports (ii) Serial I/O Interface | **10** |
|  |  | **OR** |  |
| 7 | a) | Provide details on the microwave oven design specifications with neat diagram. | **10** |
|  | b) | Explain sensors and actuators with examples. | **10** |

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