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BMS College of Engineering, Bangalore-560019

(Autonomous Institute, Affiliated to VTU, Belgaum)

December 2016 Semester End Main Examinations

Course: **Computer Organization and Embedded System**
Course Code: **15IS3DCCOE**

Duration: **3 hrs**
Max Marks: **100**
Date: 15.12.2016

Instructions: 1. Answer any five full questions choosing one from each unit.
2. Assume missing data (if any) suitably

UNIT 1

1. a) Explain the layout of an Stack frame with an example. **08**
- b) Develop a program to perform addition of N numbers by applying RISC – Style Indirect Addressing mode **06**
- c) Illustrate the following addressing modes with an example. **06**
 - i) Index Addressing mode
 - ii) Direct Addressing mode
 - iii) Immediate Addressing mode

UNIT 2

2. a) List and describe the sequence of actions need to fetch and execute the instruction add R3, R4, R5 using datapath with a neat diagram **12**
- b) Explain the two ways of realizing dual ported register file. **08**

UNIT 3

3. a) Explain the following at each level in the memory hierarchy **06**
 - i) Finding a block
 - ii) Write Policy
- b) Briefly illustrate any two cache mapping techniques. **06**
- c) With a neat diagram, explain the translation of a virtual address to a physical address. **08**

OR

4. a) Summarize the timing of Single-clock cycle data transfer over a bus by using Synchronous scheme **10**
- b) With a neat diagram, Interpret in detail the input interface circuit for an 8-bit port. **10**

UNIT 4

5. a) Perform signed multiplication of numbers (-12) and (-11) using Booth's Algorithm. **08**
- b) Given A= 10101 and B=00100 perform A / B using restoring division algorithm. **08**
- c) Design a logic circuit to perform addition/ subtraction of two 'n' bit numbers X and Y. **04**

UNIT 5

6. a) Illustrate digital camera with a neat diagram. **10**
- b) With a neat diagram, explain a simple microcontroller. **10**

OR

7.
 - a) Considering an example, explain the working of a Sensors and Actuators. **10**
 - b) Explain the parallel I/O interface of an simple microcontroller **10**

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