**CS 404 PRINCIPLES & APPLICATIONS OF EMBEDDED SYSTEMS**

**STUDENT MANUAL-OSMANIA UNIVERSITY**

**UNIT –1**

**Syllabus**

Embedded Computing: Introduction, Complex Systems and Microprocessor; Embedded

System Design Process, Formalisms for System Design, Design Examples. Instruction Set: Preliminaries, ARM Processor

**Text Book:** Computers as Components Principles of Embedded Computing System Design-Wayne Wolf

Part-A(University Questions)

1. Difference between Von Neumann and Harvard Architectures.**Nov-2013, dec2015**
2. Write the characteristics of an instruction set.**Nov-2013**
3. Write the H/W architecture of typical computing platform.**Nov-2013**
4. What is the difference between Big-endian and little –endian portability? **Jul-2014**
5. Distinguish between Microprocessors and Microcontrollers .**July-2014, June 2016**
6. Write any three differences between embedded system and a personal computer.**Dec-2014**
7. What is a Load Store Architecture .why ARM processor follows this architecture.**Dec-2014**
8. What is the purpose and format of CPSR in ARM Processor **July-2015/Dec2015**
9. Define Trap, Supervisor mode. **July-2015, Dec2015**
10. Write the stages in ARM 7 Pipeline.**July-2015**
11. List the differences between CISC and RISC architecture. **July-2015,** .**June2016**
12. What is Trap and common use of Trap. **Dec2015**
13. What is Branch Penalty **Dec2015**
14. Define Embedded system? List down applications of it? **Dec 2016**
15. Use ARM instructions to write a programs for Y=m\*x+c. **Dec 2016**
16. Write a sample requirement form for Model train control system. **June2016**
17. Explain the basic ARM programming model.**June2016**

Part-B(University Questions)

1. What are the characteristics of embedded system applications? Explain.

**Nov-2013,July-2014,Dec-2015,June-2016,Dec-2016**

1. Explain Top-down and bottom up approach of an embedded system design process with example **Nov-2013**
2. Explain the details for requirements and specifications of model train controller.**July-2014**
3. Explain various phases of the embedded system design process with dynamic traffic controller example. **Dec-2014**
4. Explain various challenges of embedded computing system design.**Dec-2014,July-2015**
5. Explain the details for requirements, specification and design process of GPS moving map **July-2015,Dec-2016**
6. Explain the design process of Embedded system design, with suitable example.**Dec-2015**
7. Explain about the formalisms for system design.**June-2016**

**Unit 2 Syllabus**

CPU's:Programming Input and output.Supervisor mode, exceptions, traps,Co-processors, Memory system Mechanisms, CPU Performance, CPU Power Consumption Computing Platforms:Basic Computing Platforms,the CPU bus,memory device and system,consumer electronics architecture,platform level performance analysis ,design example.

**Text Book:** Computers as Components Principles of Embedded Computing System Design-Wayne Wolf