

**UNIT I EMBEDDED COMPUTING 9**

Challenges of Embedded Systems – Embedded system design process. Embedded processors – ARM processor – Architecture, ARM and Thumb Instruction sets

**UNIT II EMBEDDED C PROGRAMMING 9**

C-looping structures – Register allocation – Function calls – Pointer aliasing – structure arrangement – bit fields – unaligned data and endianness – inline functions and inline assembly – portability issues.

**UNIT III OPTIMIZING ASSEMBLY CODE 9**

Profiling and cycle counting – instruction scheduling – Register allocation – conditional execution – looping constructs – bit manipulation – efficient switches – optimized primitives.

**UNIT IV PROCESSES AND OPERATING SYSTEMS 9**

Multiple tasks and processes – Context switching – Scheduling policies – Interprocess communication mechanisms – Exception and interrupt handling - Performance issues.

**UNIT V EMBEDDED SYSTEM DEVELOPMENT 9**

Meeting real time constraints – Multi-state systems and function sequences. Embedded software development tools – Emulators and debuggers. Design methodologies – Case studies – Complete design of example embedded systems.

**Total = 45**

**REFERENCES**

1. Andrew N Sloss, D. Symes, C. Wright, " ARM System Developers Guide", Morgan Kaufmann / Elsevier, 2006.
2. Michael J. Pont, "Embedded C", Pearson Education , 2007.
3. Wayne Wolf, "Computers as Components : Principles of Embedded Computer System Design", Morgan Kaufmann / Elsevier, 2<sup>nd</sup>. edition, 2008.
4. Steve Heath, "Embedded System Design" , Elsevier, 2<sup>nd</sup>. edition, 2003.