

UNIT I	9
Preliminaries – System Software – Review of Computer Architecture – Machine Instructions and Programs – Assemblers – Basic Assembler Functions – Assembler Features – Assembler Design Options	
UNIT II	9
Macro processors – Absolute Loader – Bootstrap Loader – Relocation – Program Linking – Automatic Library Search – Linkage Editors – Dynamic Linking	
UNIT III	10
Basic Compiler Functions – Grammars – Lexical Analysis – Syntactic Analysis – Code Generation – Heap Management – Parameter Passing Methods – Semantics of Calls and Returns – Implementing Subprograms – Stack Dynamic Local Variables – Dynamic binding of method calls to methods – Review of Operating System Concepts – Overview of Memory Management, Virtual Memory, Process Creation – Overview of I/O Systems, Device Drivers, System Boot	
UNIT IV	8
Introduction to Virtual Machines (VM) – Pascal P-Code VM – Object-Oriented VMs – Java VM Architecture – Common Language Infrastructure – Dynamic Class Loading – Security – Garbage Collection – Optimization	
UNIT V	9
Emulation – Interpretation and Binary Translation – Instruction Set Issues – Process Virtual Machines – Profiling – Migration – Grids – Examples of real world implementations of system software	
TOTAL : 45	

TEXT BOOKS

1. Leland L. Beck, “System Software”, 3rd ed., Pearson Education, 1997.
2. James E Smith and Ravi Nair, “Virtual Machines”, Elsevier, 2005. (Units 4, 5) (Sections 1.0-1.6, 2.0-2.5, 2.8, 3.0-3.6, 4.2, 5.0-5.3, 5.5-5.6, 6.0-6.3, 6.5-6.6, 10.2, 10.3)
3. Robert W. Sebesta, “Concepts of Programming Languages”, 7th ed., Pearson Education, 2006. (Unit 3) (Sections 6.9, 9.3, 9.5, 10.1-10.3, 12.10.2)

REFERENCES

1. Alfred V Aho, Ravi Sethi, Jeffrey D Ullman, “Compilers”, Pearson Education, 1986.
2. Terrance W Pratt, Marvin V Zelkowitz, T V Gopal, “Programming Languages”, 4th ed., Pearson Education, 2006.
3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, “Computer Organization”, 5th ed., McGraw Hill, 2002.
4. Silberschatz, Galvin, Gagne, “Operating System Concepts”, 6th ed., Wiley, 2003.