MODEL QUESTIONS ON

SYSTEM PROGRAMMING

(*Here are list of question that are possible question in the semester paper of system programming. Students are requested to practice the same so as to make themselves comfortable with the subject*)

Module-I

(Background of system programming: Machine structure, Machine language, and Assembly language)

1. What is the objective of studying system programming?
2. What do we mean by system programming?
3. What are system programs? State and discuss the hierarchy of system program?
4. Give the machine structure of a general machine?
5. What property differentiates between data and instruction?
6. Define assembler with the help of a block diagram.
7. Define loader with the help of a block diagram.
8. Define compiler with the help of block diagram.
9. Define formal systems.
10. State different types of multiprogramming.
11. Differentiate between multiprogramming and multiprocessing.
12. How paging and virtual memory concepts do helps in memory management system?
13. Discuss the features of an operating system?
14. State the Von Neumann architecture with a diagram.
15. What is the unit of memory in 360 machines?
16. What is a nibble?
17. Discuss the register organization in a 360 machine?
18. How does register help in accessing memory locations?
19. Explain different types of data in 360 machines?
20. Explain different types of instruction formats in 360 machines?
21. Illustrate an example to show address modification in machine language.
22. Illustrate an example to show the use of index register in machine language.
23. Illustrate an example to show the use of looping in machine language.
24. Which property of instruction is depicted in question no 20?
25. Discuss the hierarchy of programming language till date.
26. Explain with an example the features of assembly language?
27. What are literals and how they help in assembly language programming?

Module-II

(Assembler: Macro language and Macro processor: Loaders)

28. Discuss the general procedure for design of an assembler?
29. With an example explain how an assembler assembles a source code?
30. Discuss the pass 1 and pass 2 of an assembler in brief?
31. Discuss the data structures used in pass 1 and pass 2 of an assembler?
32. Discuss the formats of data bases used in pass 1 and pass 2 of an assembler?
33. With an example explain how the data bases are filled in pass 1 and pass 2 in an assembler?
34. Discuss pass 1 of an assembler with a data flow diagram?
35. Discuss pass 2 of an assembler with a data flow diagram?
36. What are the modules under which the functions of an assembler can be categorized in an assembler?
37. Discuss the significance of table processing in system programming?
38. Discuss the techniques that are basically used in table processing?
39. Discuss various search techniques used in table processing?
40. Discuss various sorting techniques used in table processing?
41. Differentiate between bucket and radix exchange sort?
42. Differentiate between shifting and shell sorting?
43. How in random entry search better than binary search?
44. Discuss the significance of macro processing in system programming?
45. What is a macro? Define the structure of a macro?
46. Discuss the feature of macro?
47. With an example discuss macro with arguments?
48. With an example discuss macro calls within macro?
49. With an example discuss macro with conditional statements?
50. With an example discuss macro defining macro?
51. Discuss the data structures and data base formats used macro processing?
52. Write an algorithm for a two pass macro processer?
53. Write an algorithm for a single pass macro processor?
54. Write an algorithm for implementing a macro call with a macro?
55. Write an algorithm for implementing a macro with an assembler?
56. What are loaders? State the functions and advantages of using loaders?
57. What are compile/assemble and go loader?
58. Discuss the general loader scheme?
59. What is an absolute loader?
60. How subroutine linkage is implemented in loader?
61. What are relocation loaders? Explain with an example.
62. What are direct linking loaders? Explain with an example.
63. What is direct linking and how it is implanted in a loader scheme?
64. Discuss the design of an absolute loader?
65. Discuss the algorithm of a direct linking loader?
66. Discuss the data structure and data base formats used in a direct linking loader?

Module-III

(Programming Languages: Formal Systems: Compilers)

67. What are the advantages associated with the use of high level language?
68. Briefly discuss the features of high level languages?
69. Discuss the various data types and data structures associated with high level language?
70. Discuss the storage allocation and scope of names used in high level language?
71. Discuss accessing flexibility of high level languages?
72. Discuss the functional modularity of high level languages?
73. Discuss asynchronous operations associated with high level languages?
74. Discuss the use of formal systems in programming languages?
75. Discuss the formal specification used in formal systems?
76. Discuss formal grammar or parse structured grammar? Explain with an example.
77. Define the following things w.r.t formal grammar.
    a. Production
    b. Derivation
    c. Left and right most derivations
    d. Sentence
    e. Sentential form
    f. Language
    g. State machines
78. Discuss the hierarchy of formal languages?
79. Discuss Backus Naur Form with an example? Also specify the significance of BNF in PL.
80. Discuss canonical forms with an example? Also specify the significance of CF in PL.
81. What are compilers and state their significance in PL?
82. Discuss the phases of a compiler?
83. What is lexical analysis? Explain with an example.
84. What is syntax analysis? Explain with an example.
85. What are intermediate forms in compiler? State different forms of intermediate forms used in CD?
86. What is storage allocation? State its significance in CD?
87. What is code generation? How it is implemented in CD?
88. What are different optimization techniques used in CD?
89. Discuss the importance of assembler in CD?
90. Discuss a general model of a compiler and the data structures used in CD?
91. Discuss the data structures and algorithm used in lexical analysis?
92. Discuss the data structures and algorithm used in syntax analysis?
93. Discuss the data structures and algorithm used in intermediate code generation?
94. Discuss the data structures and algorithm used in storage allocation?
95. Discuss the data structures and algorithm used in code optimization?
96. Explain that compiler is N pass algorithm over data structures?
97. Explain how data structures concepts are implemented in compilers?

BEST OF LUCK