System Software

1. Which of the following is/are not assembler directive(s)?
   (a) START   (b) LOAD   (c) END   (d) BYTE

2. Which of the following remarks about the assembler are true?
   (a) It translates mnemonic instruction into machine code.
   (b) The instruction formats, addressing modes, etc., are of direct concern in assembler design.
   (c) Design of an assembler is independent of the source language.
   (d) Both (b) and (c) are correct.

*3. A programming language is to be designed to run on a machine that does not have a big memory. The language should
   (a) prefer a two-pass compiler to an one-pass compiler
   (b) prefer an one-pass compiler to a two-pass compiler
   (c) prefer an interpreter to a compiler
   (d) not support recursion

4. Which of the following about the loader is/are incorrect?
   (a) Loader brings object program into memory for execution.
   (b) Linkage editors perform linking after loading.
   (c) Dynamic linking schemes delay linking until execution time.
   (d) Absolute loader modifies the object program so that it can be loaded at any address location.

5. Two procedures both of which treat the other as a called procedure and itself the callee, are called as
   (a) master-slave routines   (b) sub-sub-routines
   (c) co-routines   (d) ambiguous master-slave routines

6. Choose the true statements about the linkage loaders.
    (a) The input to it consists of a set of object programs that are to be linked together.
    (b) The main data structure needed for linking is an external symbol table.
    (c) Pass 1 assigns addresses to all external symbols.
    (d) Pass 2 performs loading, relocating and linking.

7. Which of the following statements about the macro-processors are incorrect?
    (a) The general features such as macro expansion, use of keyword parameters are machine dependent.
    (b) Macro invocation includes the name of the macro being called and the arguments to be used.
    (c) Macro definition is also referred to as macro call.
    (d) Macros cannot be nested.

8. Transfer of information to and from the main memory takes place in terms of
    (a) bits   (b) bytes   (c) words   (d) nibbles

*9. The output of the lexical analyzer is
    (a) a set of regular expressions   (b) syntax tree
    (c) set of tokens   (d) string of characters

*10. An interpreter is preferred over a compiler
    (a) when efficient use of computer resources is the consideration
    (b) during program development phase
    (c) when storage space is to be minimized
    (d) all of the above

*11. A compiler-compiler is a/an
    (a) compiler which compiles a compiler program
    (b) software tool used in automatic generation of a compiler
    (c) compiler written in the same language it compiles
    (d) another name for cross-compiler

12. A compiler which allows only the modified section of the source code to be recompiled is called as
    (a) incremental compiler   (b) reconfigurable compiler
    (c) dynamic compiler   (d) selective compiler

13. Which of the following system software resides in main memory always?
    (a) Text editor   (b) Assembler   (c) Linker   (d) Loader

14. In a two-pass assembler the pseudo-code EQU is to be evaluated during
    (a) pass 1   (b) pass 2
    (c) not evaluated by the assembler   (d) none of the above

15. Effective address got by index mode will be the same as that of register indirect mode when the index register has the value
    (a) 0   (b) 1   (c) -1   (d) can never be the same

16. When exceptional situation occurs outside the CPU the H/W signal given is
    (a) `reset`   (b) `interrupt`   (c) `hold`   (d) `wait`

17. The root directory of a disk should be placed
    (a) at a fixed address in main memory   (b) at a fixed location on the disk
    (c) anywhere on the disk   (d) at a fixed location on the system disk

18. Efficient use of addressing modes
    (a) speeds up execution   (b) reduces the number of instructions
    (c) reduces the size of instructions   (d) none of the above

19. The correct sequence of time delays that happen during a data transfer from a disk to memory is
    (a) seek time, latency time and transfer time
    (b) seek time, access time and transfer time
    (c) latency time, seek time and transfer time
    (d) latency time, access time and transfer time

20. Writing a software in assembly language is preferred to writing in a high level language when
    (a) memory space is limited
    (b) optimal use of the hardware resources available is of primary concern
    (c) programmer's productivity is important
    (d) portability is important

21. Which of the following addressing modes support Indexing?
    (a) Relative   (b) Memory indirect   (c) Immediate   (d) Direct

22. Which of the following are the advantages of 2's complement over 1's complement?
    (a) Easy to implement using digital components
    (b) Subtraction can be done by a single addition
    (c) It has only one zero
    (d) All of the above

23. Pick the functions that are completely performed in pass 1.
    (a) Processing of DB pseudo-op   (b) Updating the location counter
    (c) Processing of EQU pseudo-op   (d) Processing of DS pseudo-op

24. Pick the functions that are performed in pass 2.
    (a) Creating the proper address mode using the base table.
    (b) Updating the location counter
    (c) Processing of `EQU` pseudo-op
    (d) Generation of object code using machine operation table

25. Pick the correct statement(s) about LTORG.
    (a) It is a pseudo-op.
    (b) It is used to load the object program at some specified memory location that is given in the operand field.

(c) It is used to place the literals definition in a specified memory location that is given in the operand field.

(d) It creates a literal pool that contains all the literal operands used since the previous LTORG.

26. Pick the machine independent phase(s) of the compiler.

    (a) Syntax analysis   (b) Code generation

    (c) Lexical analysis   (d) Intermediate code generation

27. Which of the following statement(s) about loading is/are true?

    (a) Modification records are used for specifying program relocation in relative addressing mode instructions.

    (b) Modification records are best suited for specifying program relocation in direct addressing and fixed instruction format.

    (c) Text record uses a relocation bit associated with each word of the object code in direct addressing and fixed instruction format.

    (d) Modification records are best suited for relative addressing mode

28. Pick the machine dependent operating system features.

    (a) Interrupt processing   (b) File processing

    (c) Process scheduling   (d) Job scheduling

29. Pick the machine independent operating system features.

    (a) I/O supervision   (b) file processing

    (c) Management of real memory   (d) Job scheduling

30. Pick the machine independent step(s) that can be used to optimize the memory requirement of a program.

    (a) Eliminating loop invariant computations

    (b) Code hoisting

    (c) Elimination of common sub-expressions

    (d) Register allocation strategies

31. What interrupt is generated when an attempt to divide by zero is made?

    (a) Supervisor call interrupt (SVC)   (b) Program interrupt

    (c) I/O interrupt   (d) Timer interrupt

32. Pick the class of interrupt with highest priority.

    (a) Supervisor call interrupt (SVC)   (b) Program interrupt

    (c) I/O interrupt   (d) Timer interrupt

33. Pick the class of interrupt with lowest priority.

    (a) Supervisor call interrupt (SVC)   (b) Program interrupt

    (c) I/O interrupt   (d) Timer interrupt

34. The delay between job submission and job completion is called

    (a) turnaround time   (b) in-process time

    (c) response time   (d) waiting time

35. Which of the following techniques is preferable for transferring large amount of data to and from a memory in a short time?

(a) Programmed I/O   (b) Interrupt-driven I/O

(c) DMA   (d) None of the above

36. Privileged instructions can be executed

(a) only in monitor mode   (b) only in user mode

(c) both in user and monitor mode   (d) none of the above

37. The first pass of a simple two-pass assembler

(a) allocates spaces for the literals

(b) computes the total length of the program

(c) builds the symbol table for the symbols and their values

(d) generates code for all the load and register instructions

38. The ideal choice for interrupt oriented applications is

(a) Z-80   (b) Motorola-6800   (c) 8085   (d) 8008

*39. Choose the correct statement.

(a) Any software can be simulated by hardware.

(b) Any hardware can be simulated by software.

(c) Firmware is nothing but hardware implementation of software.

(d) Firmware is nothing but software implementation of hardware.

40. Which of the following is always true?

(a) A compiled program uses more memory than an interpreted program.

(b) A compiler converts a program to a lower level language for execution.

(c) A compiler takes less memory than an interpreter.

(d) Compiled programs take more time for execution than interpreted programs.

41. In a two-pass assembler the object code generation is done during the

(a) second pass   (b) first pass

(c) zeroeth pass   (d) none of these

42. In a two-pass assembler, adding literals to literal table and address resolution of local symbols are done during

(a) first pass and second pass respectively   (b) second pass

(c) second pass and first pass respectively   (d) first pass

43. The data transfer rate of a double density floppy disk system is about

(a) 5 Kbits/sec   (b) 50 Kbits/sec   (c) 500 Kbits/sec   (d) 5000 Kbits/sec

44. A linker is given object modules for a set of programs that were compiled separately. What information need not be included in an object module?

(a) Object code

(b) Relocation bits

(c) Names and locations of all external symbols defined in the object module

(d) Absolute addresses of internal symbols