

The University of Fiji

**School of Science and Technology
Department of Information Technology and Computer Science**

ITC203

Systems and Software Architecture

Semester I, 2012

Final Examination

ID NO: _____

Weighting 50%

Time Allowed : 3 hours

Answer all Questions

Section A (30 marks)

True/False

Indicate whether the sentence or statement is true or false. (T/F)

- ☐ 1. The CPU may incur one or more wait states when it is idle pending the completion of an operation by another device within the computer system.
- ☐ 2. A transistor is an electrical circuit that implements a boolean or other primitive processing function on single bit inputs.
- ☐ 3. Dynamic RAM requires frequent refresh cycles to maintain its data content.
- ☐ 4. Under relative addressing, a program's memory reference is added to the content of an offset register to calculate the corresponding physical memory address.
- ☐ 5. Compared to magnetic hard disk drives, the read/write speed of most optical discs is approximately 100 times faster.
- ☐ 6. A phase change optical storage medium is manufactured blank and can be written to only once.
- ☐ 7. A pixel is one seventy second of an inch.
- ☐ 8. A network using a physical star topology connects all end nodes to a common (shared) transmission medium.
- ☐ 9. A network using a physical star topology connects each end node to two other end nodes.
- ☐ 10. Most fourth generation languages (4GLs) incorporate database and advanced user interface capabilities.

Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- ☐ 11. Where is most or all of a currently executing program's data held?
 - a. control unit
 - b. registers
 - c. primary storage
 - d. secondary storage
- ☐ 12. A(n) _____ is a microcomputer with minimal secondary storage capacity and little or no installed software.
 - a. supercomputer
 - b. mainframe
 - c. network computer
 - d. midrange computer
- ☐ 13. Which computer class is generally implemented with the latest and most expensive cutting-edge technology?
 - a. workstation
 - b. midrange computer
 - c. mainframe
 - d. supercomputer
- ☐ 14. _____ free programmers from the need to specify every CPU instruction individually.
 - a. Programming languages
 - b. Program editors
 - c. Debugging tools
 - d. System development tools
- ☐ 15. What name is used to describe the bit of lowest magnitude within a byte or bit string?
 - a. radix point
 - b. low order bit
 - c. high order bit
 - d. op code
- ☐ 16. A(n) _____ operation transforms a 0 bit value to 1 and a 1 bit value to 0.

- a. ADD
- b. AND
- c. OR
- d. NOT

17. What operation generates false when applied to the input values 1 and 1?

- a. AND
- b. exclusive OR
- c. inclusive OR
- d. NOT

18. In many CPUs, a register called the _____ stores condition codes, including those representing processing errors and the results of comparison operations.

- a. program status word
- b. instruction register
- c. instruction pointer
- d. general purpose register

19. Which of the following devices does not contain multiple transistors or gates in a single sealed package?

- a. Integrated circuit
- b. Microchip
- c. Microprocessor
- d. Semiconductor

20. As microprocessor circuit size is reduced, operating voltage should be _____.

- a. increased
- b. decreased
- c. unchanged
- d. constant

21. Tape drives are _____ access devices.

- a. direct
- b. serial
- c. random
- d. average

22. Which of the following storage device stores and retrieves data items in sequential order?

- a. Random
- b. Parallel
- c. Serial
- d. Linear

23. The _____ endian storage format places the least significant byte of a word in the lowest memory address.

- a. little
- b. big
- c. dynamic
- d. static

24. _____ is the least significant component of access time.

- a. Head-to-head switching time
- b. Data transfer rate
- c. Absolute addressing
- d. Magnetic decay

25. A(n) _____ utility reorganizes disk content so that all contents of an individual file are stored in sequential sectors, tracks, and platters.

- a. disk defragmentation
- b. helical scanning
- c. firmware
- d. absolute addressing

26. A(n) _____ display is similar in construction to other flat panel displays except that it employs gaseous elements for light generation.

- a. cathode ray
- b. plasma
- c. liquid crystal
- d. video display terminal

27. A central node connected to multiple networks or network segments maintains an internal _____ that tells it which network addresses correspond to which physical networks or network segments.

- a. logical topology
- b. transport layer
- c. routing table
- d. gateway

28. Binary CPU instructions, called _____, are the earliest programming languages.

- a. assembly languages
- b. 3GLs
- c. 4GLs
- d. machine languages

29. A(n) _____ is any instruction that updates or computes a data value.

- a. data declaration
- b. data operation
- c. control structure
- d. symbol table

30. A tool suite that primarily supports model development is sometimes called a(n) _____.

- a. front-end CASE tool
- c. class library

b. back-end CASE tool

d. symbolic debugger

Section B (Descriptive Questions – 70 marks).

1. What are some of the responsibilities of the chief information officer? (3 marks)
2. How does a supercomputer differ from a mainframe? (4 marks)
3. What is the difference between an application program and a systems program? (3 marks)
4. Why does the reliability of magnetic storage media generally decrease as recording density increases? (4 marks)
5. What factors contribute to the loss of data stored on tapes? (4 marks)
6. What are the advantages of optical data storage devices as compared to magnetic data storage devices? (2 marks)
7. Briefly describe the difference(s) between bar code scanners and mark sensors. (5 marks)
8. Why are point-to-point connections impractical for the majority of computer networks? (3 marks)
9. What is a token? How is it used to prevent collision? (2 marks)
10. What are the primary differences between machine language programs and assembly language programs? (2 marks)

11. Describe the difference between functional areas of operation and business processes. Give an example of a business process.(5 marks)
12. What are integrated information systems? (4 marks)
13. List the significance and benefits of ERP Software and Systems. List at least 4. (4 marks).
- 14, What Return Can a Company Expect from Its ERP Investment. (5 marks)
15. Why Do Some Companies Have More Success with ERP Than Others? (5 marks)
16. What is/are the difference(s) between a formulaic and algorithmic problem? (5 marks)
17. What are the advantage(s) of network computers as compared to 'ordinary' microcomputers for organizations with large numbers of desktop computers? (5marks)
- 18, What is the role of software in processing or manipulating data structures? (5 marks)

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