STIK 1013

CONFIDENTIAL

FINAL EXAM
FIRST SEMESTER SESSION 2011/2012

COURSE CODE / NAME : STIK 1013 / COMPUTER SYSTEM ORGANIZATION
DATE : 11 JAN 2012 (WEDNESDAY)
TIME : 8.30 – 11.00 A.M. (2 ½ HOURS)
VENUE : DSB K.T/WD

INSTRUCTION :

1. This book script contains SECTION A (15 questions), SECTION B (35 questions) and SECTION C (9 questions) in FIFTEEN (15) printed pages excluding the cover page.
2. Answer ALL the questions in SECTION A and SECTION B in the answer sheets provided and Answer ALL the questions in SECTION C in the spaces provided in this question sheet.

MATRIC NO : _____________________________

(with word)

IDENTIFICATION CARD NO. :

LECTURER :

GROUP :

TABLE NO. :

DO NOT OPEN THIS EXAMINATION PAPER UNTIL INSTRUCTED

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**SECTION A: TRUE/FALSE QUESTION (15 marks)**

**Instruction:** Please shade **A** for TRUE or **B** for FALSE on OMR answer sheet using ONLY 2B pencils.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Human use decimal (base 10) number system to count and perform arithmetic.</td>
<td>A</td>
</tr>
<tr>
<td>2.</td>
<td>Computer stores and manipulates the bits in group of 12 (byte), 14 (halfword), 28 (word) and 56 (double word).</td>
<td>A</td>
</tr>
<tr>
<td>3.</td>
<td>Normally, computer system uses EIGHT (8) bits to represent a character.</td>
<td>A</td>
</tr>
<tr>
<td>4.</td>
<td>The leftmost bit represents a sign bit where 0 represents (+ve) and 1 represents (-ve).</td>
<td>A</td>
</tr>
<tr>
<td>5.</td>
<td>Computer uses binary number system to represent data.</td>
<td>A</td>
</tr>
<tr>
<td>6.</td>
<td>American Short Class for Information Internet (ASCII).</td>
<td>A</td>
</tr>
<tr>
<td>7.</td>
<td>ASCII developed by American Standards Institute (ANSI).</td>
<td>A</td>
</tr>
<tr>
<td>9.</td>
<td>The Boolean expression for a three-input AND gate is X = A + B + C.</td>
<td>A</td>
</tr>
<tr>
<td>10.</td>
<td>There are FIVE (5) gates available in the expression Z = PQ' + (R+S).</td>
<td>A</td>
</tr>
<tr>
<td>11.</td>
<td>The gates with THREE(3) inputs will have about EIGHT (8) different combinations of 0 and 1 inputs and ONE (1) output.</td>
<td>A</td>
</tr>
<tr>
<td>12.</td>
<td>We can recognize computer by physical features and behaviors.</td>
<td>A</td>
</tr>
<tr>
<td>13.</td>
<td>&quot;Attributes of a system visible to a programmer which have direct impact on the logical execution of a program&quot;. This statement belong to Computer Architecture.</td>
<td>A</td>
</tr>
<tr>
<td>14.</td>
<td>Joseph Stephanie was one of a person invented the computer.</td>
<td>A</td>
</tr>
<tr>
<td>15.</td>
<td>&quot;The first large-scale, electronic, digital computer. Reprogrammed to solve a full range of computing problems. Designed by John Mauchly and J. Presper Eckert of the University of Pennsylvania in 1943&quot;. This statement of computer referring to Electronic Numerical Integrator And Computer (ENIAC).</td>
<td>A</td>
</tr>
</tbody>
</table>
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SECTION B: OBJECTIVE QUESTION (35 marks)

Instruction: Please shade the correct answer on OMR answer sheet using ONLY 2B pencils.

16. The following are specific applications EXCEPT:
   A. Payroll
   B. School Administration
   C. Stock control
   D. Database management

17. Which of the following BEST describe the software development today?
   A. Difficult to produce
   B. Developed automatically
   C. Must carefully engineered
   D. Requires programming skills

18. Which of the following is NOT a type of System Utilities?
   A. Backup
   B. Anti-Virus
   C. Disk viewer
   D. Compression

19. Which of the following is NOT the type generic software?
   A. Web browsing
   B. Spreadsheets
   C. Booking system
   D. Word processing

20. Which of the following statements is NOT the description of the systems software?
   A. Program which help user to do specific task.
   B. Control and coordinate computer operation.
   C. Intermediary between computer hardware and application programs.
   D. Programs which help user control and make best use of the hardware.

21. Select which type of software is considered system software.
   i. System utilities
   ii. Office system
   iii. Operating system
   iv. System support program
   A. i, ii and iii
   B. i, ii and iv
   C. ii, iii and iv
   D. iii, iv and i
22. Which of the following statement is FALSE?
   A. There are two types of standard transistors, Negative-Positive-Negative (NPN) and Positive-Negative-Positive (PNP).
   B. Only a few electrons in conductors that can freely move around.
   C. In insulators the electrons are tightly bound to the nucleus and do not move as freely.
   D. Integrated circuit (IC) is a thin chip consisting of at least two interconnected semiconductor devices.

23. Which of the following is NOT TRUE combination of algebra Boolean for AND operation?
   A. 1A = 1
   B. 0A = 0
   C. AA = A
   D. A’A = 0

24. To get an output $Y = 0$ from the circuit shown below; the inputs A, B, and C must be respectively.

   ![Circuit Diagram]

   A. 0, 1, 1
   B. 1, 0, 0
   C. 1, 0, 1
   D. 1, 1, 1

25. What is the name of the temporary microprocessor storage locations used by the control unit?
   A. Accumulators
   B. Apartments
   C. Registers
   D. Receptacles

26. Running multiple, simultaneous processors is called:
   A. parallel processing
   B. serial processing
   C. co-processing
   D. megaprocessing

27. The central processing unit (CPU) _____________________.
   A. plays a minimal role in the processing data.
   B. is different from a microprocessor.
   C. is a fairly simple device.
   D. is an integrated chip capable of processing signals.
28. A central processing unit (CPU) consists of the following components EXCEPT:

A. register
B. control unit (CU)
C. procedure unit (PU)
D. arithmetic and logic unit (ALU)

29. Show the TRUE steps performed by the control unit in executing a program.

i. Read operands from main memory, if any.
ii. Fetch the next instruction to be executed from memory.
iii. Decode the opcode.
iv. Execute the instruction and store results.
v. Go to step (ii).

A. i, ii, iii, iv, and v
B. i, iii, ii, iv, and v
C. ii, iii, i, iv, and v
D. ii, iii, iv, v, and i

30. Consider the value 12345678, show the sequent how the Operating System stored in memory starting at address 100 using "Big Endian" as use in Reduce Instruction Set Computer (RISC).

<table>
<thead>
<tr>
<th>Address</th>
<th>Value</th>
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<tbody>
<tr>
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<td>12</td>
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<tr>
<td>101</td>
<td>34</td>
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<tr>
<td>102</td>
<td>56</td>
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<td>103</td>
<td>78</td>
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<td>101</td>
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<td>102</td>
<td>73</td>
</tr>
<tr>
<td>103</td>
<td>84</td>
</tr>
</tbody>
</table>

31. List the lines of bus system based on functional groups.

A. Data and Address lines
B. Data and Control lines
C. Data, Address and Control lines
D. Data, Address and Signal lines
32. When interrupt occur, the processor and the Operating System are responsible for:

   i. recognizing an interrupt
   ii. suspending the user program
   iii. servicing the interrupt
   iv. resuming the user program
   v. stop the system and shutdown

A. i, ii, and iii
B. i, ii, iv and v
C. i, ii, iii, and iv
D. i, ii, iii, iv, and v

33. Which of the following statement are NOT TRUE regarding Bus Interconnection?

   A. Two(2) type of bus are Dedicated and Multiplexed
   B. Two(2) method of bus arbitration are Centralized and Distributed
   C. Two(2) type of bus timing are Asynchronous and Synchronous
   D. Two(2) type of bus width are according to Control and Address Bus

34. Show the TRUE steps if interrupt pending:

   i. Save context
   ii. Suspend execution of current program
   iii. Set Program Counter(PC) to start address of interrupt service routine (ISR) (also known as interrupt handler routine)
   iv. Process interrupt
   v. Restore context and continue interrupted program

A. i, ii, iii, iv, and v
B. i, iii, ii, iv, and v
C. ii, i, iii, iv, and v
D. ii, iii, iv, v, and i

35. Memory speed is ____________________

   A. faster than processor
   B. slower than processor
   C. advance than processor
   D. older than processor

36. Which one is memory type?

   A. Integrated Circuit (IC)
   B. Magnetic Disk
   C. Keyboard
   D. Central Processing Unit (CPU)
37. At Power On Self Test (POST) operation, the computer instruction read the programs from __________ to execute.

   A. Read Only Memory (ROM)
   B. Random Access Memory (RAM)
   C. Central Processing Unit (CPU)
   D. Hard Disc Storage

38. The main goal of the memory hierarchy is to try to match the processor speed with the rate of information transfer from the lowest element in the hierarchy. List down the memory hierarchy from the lowest speed to the highest speed.

   A. Registers in the CPU, cache, main memory, disc cache, magnetic disc, and optical disc.
   B. Optical disc, Registers in the CPU, cache, main memory, disc cache, and magnetic disc.
   C. Cache, registers in the CPU, main memory, disc cache, magnetic disc, and optical disc.
   D. Optical disc, magnetic disc, disc cache, main memory, cache, and registers in the CPU.

39. Mnemonics code:

   A. Has a disadvantage such as vary by machine.
   B. Is not convenient and are not preferable than numbers alone.
   C. Is used to turn machine language into program code.
   D. Is used to replace the high level languages.

40. Based on this instruction, answer the questions below.

   MOVE T, D

   The result of this operation will be stored in..........,......

   A. T
   B. D
   C. X
   D. Buffer memory

41. Which of the following is NOT an arithmetic function in Assembly Language?

   A. MUL
   B. ADD
   C. MOV
   D. DIV
42. Choose Assembly language instruction which will move the content of AX register to memory address 101.

A. MOV 101, AX  
B. MOV AX, 101  
C. MOV [101], AX  
D. MOV [101], [AX]

43. A compiler performs several steps to compile a program. Arrange the following steps into its sequence:

i. Source code file is named to indicate the programming language, such as program.java where ".java" indicates a JAVA program;
ii. Source code is read from a file by the compiler and object code is written to a newly created file;
iii. Object code filenames generally have an ".o" or ".obj" appended to original root filename, such as program.o or program.obj;

A. i, ii, and iii  
B. ii, i, and iii  
C. ii, iii, and i  
D. iii, ii, and i

44. Choose the types of program translator from the following lists:

i. Linker  
ii. Loader  
iii. Compiler  
iv. Assembler  
v. Interpreter

A. i, ii and iii  
B. ii, iii and iv  
C. iii, iv and v  
D. i, iii and v

45. Which of the following is NOT one of the process that a high level language program must go through before it is ready to be executed?

A. Translation  
B. Controlling  
C. Lading  
D. Linking

46. A computer program that converts an entire program into machine language is called a/an

A. compiler  
B. simulator  
C. interpreter  
D. commander
47. Most common ways in planning the solution of programming process include:

   i. flowcharting
   ii. brainstorming
   iii. source-coding
   iv. pseudo-coding

   A. i and ii
   B. i and iv
   C. ii and iii
   D. ii and iv

48. Which of the following is NOT the phase of testing a program?

   A. Linking
   B. Translating
   C. Debugging
   D. Desk-checking

49. Which of the following is NOT the class of source code statements?

   A. Data operation
   B. Data declaration
   C. Control Structure
   D. Program Structure

50. Which of the following statement about ‘finker’ in program translator is NOT TRUE?

   A. A process of constructing a CPU instruction.
   B. A process of creating machine instruction call.
   C. A process known as link editing or binding.
   D. A process to replace corresponding library code before application can be executed.
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SECTION C : STRUCTURE QUESTIONS (50 marks)

Instruction: Answer ALL questions in the space provided in this question paper.

1. Briefly explain the THREE (3) binary integer representations below:
   a) Sign-magnitude. (1 mark)
   b) One's Complement. (1 mark)
   c) Two's Complement. (1 mark)

2. Briefly explain the file format EPS, PDF and PICT. Give an example each of them.
   a) EPS (1 mark)
   b) PDF (1 mark)
   c) PICT (1 mark)
3. Briefly explain the THREE(3) file formats for storing audio waveform formats below:

i. MOD  

ii. MIDI  

iii. VOC  

(1 mark)

(1 mark)

(1 mark)

4. Give THREE (3) reasons why machine language is not popular compared to other programming languages.

(3 marks)
5. State the process done by the following 8086 processor commands:
   a) XCHG AX,BX  
   b) ADD AL, 5  
   c) SUB BX,AX  
   d) DEC AX

(1 mark)  
(1 mark)  
(1 mark)  
(1 mark)

6. Explain FOUR (4) classifications of operating system below.
   a) Real-time Operating System

(2 marks)
b) Single User Single Task  

(2 marks)

c) Single User Multitask  

(2 marks)

d) Multiuser  

(2 marks)

7. Briefly explain FIVE (5) important phases involved in using system development life cycle (SDLC) for software development.  

(5 marks)
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8. From this expression \((A+B)' + BC + C' = F\):
   a) Draw the logic circuit (2 marks)

   b) Draw the Truth Table (2 marks)
9. From this expression $AB + (BC)' + C = F$;
   a) Draw the logic circuit using only NAND gates; show your calculation steps.

(8 marks)
b) Draw the logic circuit using only NOR gates; show your calculation steps. (9 marks)