UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)
Academic Year 2018 – 1st Year Examination – Semester 1

IT1205 – Computer Systems I

Multiple Choice Question Paper

5th May, 2018
(TWO HOURS)

Important Instructions :

- The duration of the paper is **2 (two) hours**.
- The medium of instruction and questions is English.
- The paper has **50 questions** and **10 pages**.
- All questions are of the MCQ (Multiple Choice Questions) type.
- All questions should be answered.
- Each question will have 5 (five) choices with **one or more** correct answers.
- All questions will carry equal marks.
- There will be a penalty for incorrect responses to discourage guessing.
- The mark given for a question will vary from 0 (*All the incorrect choices are marked & no correct choices are marked*) to +1 (*All the correct choices are marked & no incorrect choices are marked*).
- Answers should be marked on the special answer sheet provided.
- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.
- Mark the correct choices on the question paper first and then transfer them to the given answer sheet which will be machine marked. **Please completely read and follow the instructions given on the other side of the answer sheet before you shade your correct choices.**
- Calculators are **not** allowed.

1) Microprocessors as switching devices were used in which generation of computers?

(a) First Generation	(b) Second Generation	(c) Third Generation
(d) Fourth Generation	(e) Fifth Generation	

2) Programs designed to perform specific tasks are known as

(a) System Software	(b) Application Software	(c) Utility Software
(d) Operating System	(e) Open Source	

3) The personal computer industry was started by

(a) IBM	(b) Dell	(c) Microsoft
(d) Compaq	(e) NEC	

4) The Arithmetic Logic Unit (ALU) of a computer normally contains high speed storage element called

(a) Semiconductor Memory	(b) Registers	(c) Magnetic Disk
(d) Control Unit	(e) Cache Memory	

5) Who is credited with the idea of using punch cards to control patterns in a waving machine?

(a) Pascal	(b) Hollerith	(c) Babbage
(d) Jacquard	(e) Neumann	

6) What is the hexadecimal value of the decimal number 1911?

(a) 77	(b) 717	(c) 777
(d) 771	(e) 7117	

7) Convert the decimal number 0.171875 to binary

(a) 0.010111	(b) 0.001101	(c) 0.001011
(d) 0.001110	(e) 0.000111	

8) Which of the following logical operator(s) is/are used in relation to identifying the sign (sign bit) in Two's Complement binary numbers?

(a) NOT	(b) AND	(c) OR
(d) XOR	(e) NAND	

9) The IEEE standard 32-bit floating point representation of the decimal number **+1024.96875** is

(a) 0 10010011 00000000011111100000000
(b) 0 10000011 00000000011111100000000
(c) 0 10001001 00000000011111100000000
(d) 0 10010011 00000000011111100000000
(e) 0 10001001 00000000011111100000000

10) What is the 16-bit floating point number of the decimal number +1024.875? Assume that this 16-bit floating point representation contains a sign bit, a 5-bit exponent and a 10-bit mantissa.

(a) 0 11010 0000000000
(b) 0 11101 0000000000
(c) 0 11001 0000000000
(d) 0 10110 0000000000
(e) 0 10111 0000000000

11) What is the loss of accuracy (round-off-error) when converting the decimal value +1024.96875 to its 16 bit floating point representation containing a sign bit, a 5-bit exponent and a 10-bit mantissa?

(a) 0.25	(b) 0.75	(c) 0.875
(d) 0.9375	(e) 0.96875	

12) The equivalent decimal number to the IEEE standard 32-bit floating point representation of **0 10000111 11111111110000000000000** is

(a) +512	(b) +511.5	(c) +511.75
(d) +511.875	(e) +512.5	

13) Consider the following Boolean function

$$Y = (A+B)C + A\overline{B} + (A+B)\overline{C} + (\overline{A}B)$$

Which of the following Boolean functions provide(s) a simplified form of *Y*?

(a) A+B	(b) A+C	(c) B+C
(d) A+B+C	(e) (A+B) C	

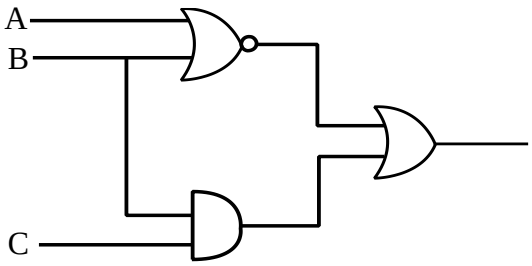
14) Consider the following Boolean function

$$F = \overline{x}y + xy\overline{z} + xyz$$

Which of the following Boolean functions provide(s) a simplified form of F?

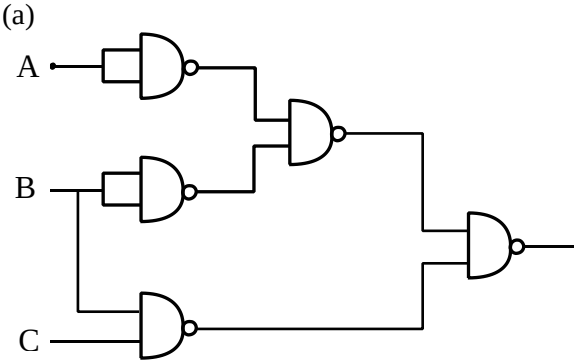
(a) $\overline{x}y + y$	(b) x	(c) y
(d) $\overline{x}y + x$	(e) $\overline{x}y + xy$	

15) The following figure represent a logic circuit

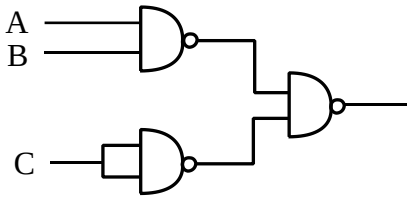


Which of the following logic circuit provide a similar output to the above circuit by implemented solely with NAND gates?

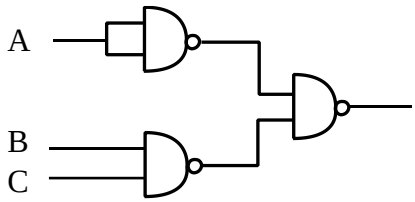
(a)



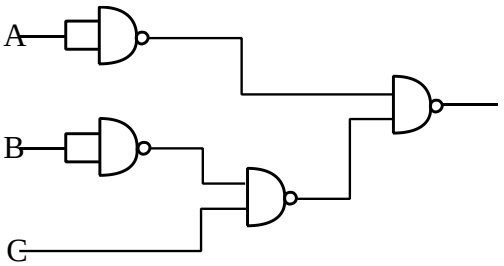
(b)



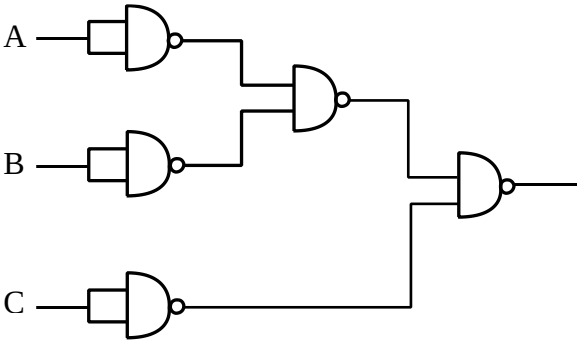
(c)



(d)



(e)



16) Consider the following Karnaugh map.

CD \ AB	00	01	11	10
00	1	1	1	1
01	1	0	0	1
11	0	0	0	0
10	1	0	0	1

What is the most compact form of Boolean function which represents the above Karnaugh map?

(a) $\overline{B}\overline{C} + \overline{B}\overline{D} + \overline{C}\overline{D}$
(b) $\overline{C}\overline{D} + \overline{B}\overline{C} + \overline{A}\overline{B}\overline{D} + A\overline{B}\overline{D}$
(c) $\overline{C}\overline{D} + \overline{B}\overline{D} + \overline{A}\overline{B}\overline{C} + A\overline{B}\overline{C}$
(d) $B.C + B.\overline{D} + \overline{C}\overline{D}$
(e) $\overline{B}.\overline{C} + \overline{B}.\overline{D} + C\overline{D}$

17) The output of the Boolean function $F(x, y, z) = x.\overline{y} + z\overline{x} + y\overline{z}$ is 0 when

(a) x=1, y=1, z=0	(b) x=1, y=0, z=1	(c) x=1, y=1, z=1
(d) x=0, y=1, z=1	(e) x=0, y=1, z=0	

18) How many NAND gates are required for the logic function F, if it is to be implemented using NAND gates only?

$$F = C\overline{A} + B.\overline{C} + A.\overline{B}$$

(a) 5	(b) 6	(c) 7
(d) 8	(e) 9	

19) If any word of size 32 bits in a memory space can be addressed by using a 28-bit memory address and each location holds one word, what should be the size of the memory space?

(a) 256MB	(b) 512MB	(c) 1GB
(d) 2GB	(e) 4GB	

20) Which of the following registers is loaded with the contents of the memory location pointed to by the Program Counter (PC)?

(a) Memory Address Registers	(b) Memory Data Registers	(c) Instruction Register
(d) General Purpose Registers	(e) Status Register	

21) Given below are some statements about cache memory. Identify the correct statement(s) from among them.

(a) Cache memory enhances overall execution performance by providing a faster memory access time.
(b) Level 1 cache is always smaller than the Level 2 Cache.
(c) Level 2 cache is used every time a Level 1 cache miss occurs.
(d) In modern computers, the Level 2 cache is referred as the external cache.
(e) We define a cache hit to be caused by a reference to an item that is resident in main memory.

Questions 22, 23, 24 and 25 are based on the following:

A two-word instruction is stored in memory at address 500 and 501.The instruction is **LOAD $R1, 1000**. The contents of memory addresses 1000, 1100, 1200 and 1300 are 1200, 1400, 1500 and 2000 respectively. The content of indexed (base) register is 300.

22) What is the value loaded into register $R1 after the execution of the instruction, if the addressing mode is Immediate?

(a) 1000	(b) 1200	(c) 1400
(d) 1500	(e) 2000	

23) What is the value loaded into register $R1 after the execution of the instruction, if the addressing mode is Direct?

(a) 1000	(b) 1200	(c) 1400
(d) 1500	(e) 2000	

24) What is the value loaded into register $R1 after the execution of the instruction, if the addressing mode is Indirect?

(a) 1000	(b) 1200	(c) 1400
(d) 1500	(e) 2000	

25) What is the value loaded into register $R1 after the execution of the instruction, if the addressing mode is Indexed (Base)?

(a) 1000	(b) 1200	(c) 1400
(d) 1500	(e) 2000	

26) The ALU of a computer normally contains a number of high speed storage elements called

(a) Accumulator	(b) CPU Registers	(c) Control Unit
(d) Program Counter	(e) Buffer	

27) Which of the following memory type(s) is/are having a direct data path to the processor?

(a) RDRAM	(b) SDRAM	(c) MPDRAM
(d) EDORAM	(e) DDR2 SDRAM	

28) Which of the following memories must be refreshed many times per second?

(a) Static RAM	(b) Dynamic RAM	(c) EPROM
(d) EDORAM	(e) ROM	

29) Which of the following memory is/are referred to as “Fast page mode DRAM"?

(a) DDR2 SDRAM	(b) RDRAM	(c) FPRAM
(d) FPMDRAM	(e) MPDRAM	

30) Which printer is/are very commonly used for desktop publishing?

(a) Thermal Wax Printer	(b) Plotter	(c) Ink-Jet Printer
(d) Laser Printer	(e) Optical Printer	

31) Which printer(s) used in conjunction with computers uses dry ink powder?

(a) Thermal Wax Printer	(b) Plotter	(c) Ink-Jet Printer
(d) Laser Printer	(e) Daisy Wheel Printer	

32) Which of the following is /are not volatile type memory?

(a) USB	(b) Memory Stick	(c) XD-Picture Card
(d) Compact Flash Card	(e) DRAM	

33) Which of the following is/are considered as an optical storage device?

(a) Zip Disk	(b) Super Disk	(c) Memory Stick
(d) CD-ROM	(e) Magnetic Tape	

34) What is the latest write-once optical storage media?

(a) Thumb Drives	(b) Super Disks	(c) WORM Disks
(d) Jaz Drives	(e) Magneto-optical disks	

35) Which of the following statements is/are true with respect to Control Unit of a microprocessor?

(a) Act as a Policemen or Traffic Manager
(b) Accepts input data from keyboard
(c) Carries out logical and arithmetic operations
(d) Determines which actions to carry out according to the values in a Program Counter (PC) register
(e) Hold data that can be readily accessed by the microprocessor

36) Which device(s) is/are used as the standard pointing device in a Graphical User Environment?

(a) Keyboard	(b) Mouse	(c) Joystick
(d) Track ball	(e) Touch pad	

37) Which of the following will happen when data is entered into a memory location?

(a) It will add to the content if there is already data at the memory location
(b) It will change the address of the memory location if there is already data at the memory location
(c) It will erase the previous content if there is already data at the memory location
(d) It will not be fruitful if there is already some data at the memory location
(e) When data is entered into a memory location for first instance, usually it looks for memory location immediately available with respect to previously entered data at the memory location

38) Given below are some statements about Issues and Conflicts of Instruction Level Pipelining. Identify the incorrect statement(s) from among them.

(a) The machine's architecture supports fetching both instructions and data in parallel.
(b) The amount of control logic decreases with the number of stages.
(c) Several instructions can be fetched and decoded before the execution of a preceding branch instruction is finished.
(d) The not-yet-available result of one instruction can be the operand of a subsequent instruction.
(e) One instruction may store a value to memory while another instruction may fetch data from memory.

39) Which of the following statements is/are true with respect to High Level Languages?

(a) High level languages must be converted into machine language to execute
(b) High level language programs are more efficient and faster to execute
(c) It is more difficult to identify errors in high level language program than in low level programs
(d) High level language programs have limitation of lower efficiency
(e) High level language programs are not machine dependable and no need to do machine level coding

40) Which of the following transmission media is/are **not** used as guided data communication media?

(a) Microwave	(b) Optical fibre	(c) Satellite
(d) Coaxial	(e) Infrared	

41) What is/are the commonly use medium to send signals from a remote controller to a television?

(a) Laser	(b) Ultra Violet	(c) Infrared
(d) Flash Light	(e) Microwave	

42) Which of the following factors is an/are advantage(s) in a networked computer system?

(a) Enforce standards	(b) High reliability	(c) Resource sharing
(d) Remote Computability	(e) Data redundancy	

43) Computer instructions written with the use of English words instead of binary machine code is referred to as

(a) Mnemonics	(b) Symbolic codes	(c) Gray codes
(d) Opcodes	(e) Character codes	

44) Operating systems, editors, and debuggers belong to which category/ies?

(a) System software	(b) Application software	(c) Utility programs
(d) Proprietary software	(e) Scientific software	

45) What is an interpreter?

(a) An interpreter does the conversion line by line as the program is run
(b) An interpreter is the representation of the system being designed
(c) An interpreter is a general purpose language providing very efficient execution
(d) An interpreter translates one instruction at a time
(e) An interpreter save object code for future use

46) What do you call the process which takes an assembly language program as input & produces a machine language code as output?

(a) Compiler	(b) Interpreter	(c) Debugger
(d) Assembler	(e) Translator	

47) Which of the following is/are problem oriented language(s)?

(a) High level language	(b) Low level language
(c) Machine language	(d) Assembly language
(e) Compilers	

48) The subject of cybernetics deals with the science of

(a) Genetics	(b) Control and communication
(c) Molecular biology	(d) Biochemistry
(e) Nanotechnology	

49) A computer can solve more than one kind of problem. This is related to which of the following characteristics?

(a) Accuracy	(b) Reliability	(c) Diligence
(d) Versatility	(e) Performance	

50) The term GIGO is related to which characteristic(s) of computers?

(a) Accuracy	(b) Reliability
(c) Diligence	(d) Versatility
(e) Performance	

****