UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (*EXTERNAL*)

Academic Year 2011/2012 – 1st Year Examination – Semester 1

IT1204 – Computer Systems I

Multiple Choice Question Paper

10th March, 2012 (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 11 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 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.

1) What is/are the specific technology/ies used in Third Generation computers?

(a) Vacuum Tubes	(b) Transistors	(c) Microprocessors
(d) ICs	(e) VLICs	

2) Which of the following devices was/were developed by Charles Babbage?

(a) ADA	(b) Punch Card Reader	(c) ENIAC
(d) Differential Engine	(e) Analytical Engine	

3) Which of the following devices was/were proposed by John Von Neuman, who introduced the stored-program computer concept?

(a) EDVAC	(b) Punch Card Reader	(c) ENIAC
(d) Differential Engine	(e) Analytical Engine	

4) Which of the following device(s) falls into the category of both input and output?

(a) Touch Screen.	(b) Plotter.	(c) Scanner
(d) Multimedia Projector.	(e) DVD Burner.	

5) Which of the following defines the range of integers that can be represented in an 8-bit register by using two's complement notation?

(a) -256 to + 256	(b) -511 to +512	(c) -512 to +512
(d) -128 to +127	(e) -128 to + 128	

6) What is the binary equivalent of the hexadecimal number DCBA?

(a) 1010 1011 1100 1101	(b) 1101 1100 1011 1010	(c) 1101 1011 1100 1110
(d) 1011 1110 0101 1101	(e) 1101 1100 1010 1011	

7) How many decimal digits can be obtained for precision from the IEEE standard 32-bit floating point representation?

(a) 4	(b) 6	(c) 8
(d) 10	(e) 12	

8) The equivalent in decimal number to the IEEE standard 32-bit floating point representation of **1 01111111 11000000000000000000** is

(a) +1.1	(b) -1.0	(c) +1.11
(d) -0.1	(e) -1.11	

9) The IEEE standard 32-bit floating point representation of the number -3.75 is

(a) 1 01111111 11000000000000000000000 (b) 0 11000000 11100000000000000000000
(c) 1 10000000 11100000000000000000000 (d) 1 11000000 11100000000000000000000
(e) 1 11000000 11000000000000000000000

10) Which of the following is a /are correct statement(s) in relation to an 8-Bit two's complement system?

(a) Two's complement number of the binary number N is given by 2^8-N.
(b) Two's complement number of the binary number N can be evaluated by first finding the One's complement of N and then by adding 00000001.
(c) Two's complement of 0 is given by 00000000, and that of –1 is given by 10000001.
(d) Two's complement of 0 is given by 00000000 and that of –1 is given by 11111111.
(e) The most significant bit or the 8th bit is set to one to represent negative numbers in this system.

11) Which of the following statements is/are true with respect to the Central Processing Unit (CPU)?

(a) Registers hold data that can be readily accessed by the CPU.
(b) ALU determines which actions are to be carried out according to the values in a Program Counter (PC) register and a status register.
(c) Arithmetic-Logic-Unit (ALU) and Control Unit (CU) are two principal parts of the CPU.
(d) ALU operations are controlled by the Control Unit.
(e) ALU sends signals to CPU components to perform sequenced operations.

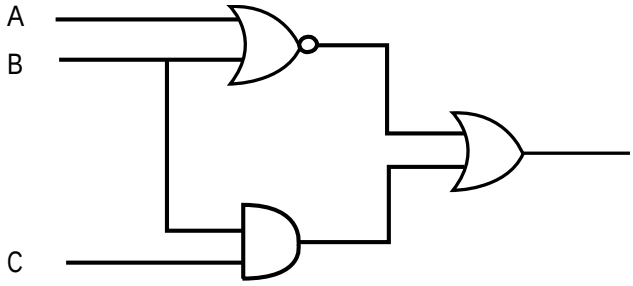
12) Consider the following Boolean function

$$F(x, y) = (\overline{x + y}) \cdot (\bar{x} + \bar{y})$$

Which of the following would be the result if the above Boolean function is simplified by using De Morgan's Law?

(a) x (b) y (c) x.y
(d) 0 (e) 1

13) Consider the following logic circuit



Which of the following Boolean function(s) equivalent to the above logic circuit?

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

14) The Boolean function $F = P + \overline{Q}.R$ is equivalent to

i. $(P+\overline{Q}).(P+R)$

ii. $(\overline{P+Q}).(P+R)$

iii. $P+(\overline{Q+\overline{R}})$

iv. $P\cdot(\overline{Q}+R)$

v. $P+\overline{Q}+R$

Which of the above statements is/are correct?

(a) Only (i) and (iii) (b) Only (ii) and (iii) (c) Only (ii) and (v)
(d) Only (i), (iii) and (iv) (e) Only (iii) and (iv)

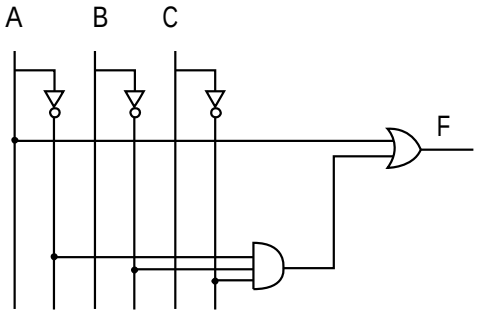
15) Output of the Boolean function $F(x,y,z) = x.\overline{y} + z\overline{x} + y\overline{z}$ is 1 when

(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

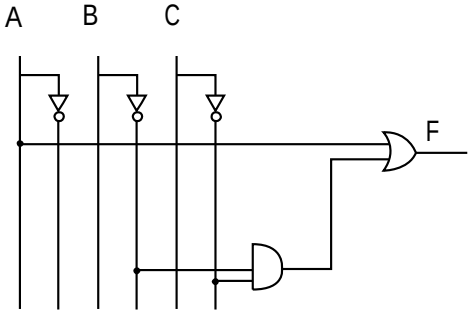
16) Consider the following Boolean function

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

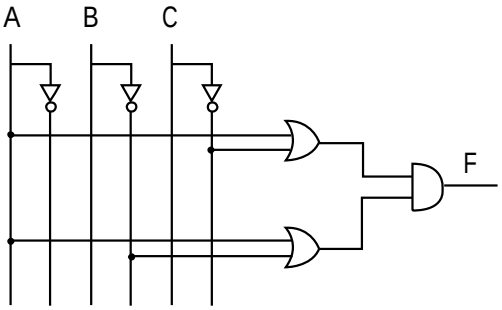
Which of the logic circuit diagrams provide(s) an output equivalent to the above Boolean function F?



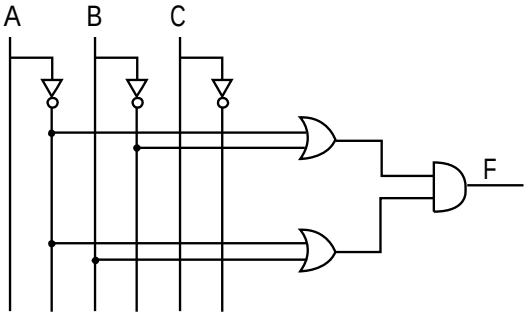
(i)



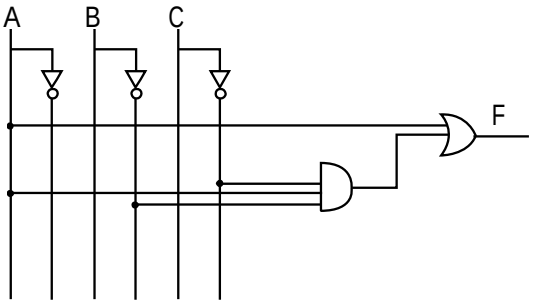
(ii)



(iii)



(iv)



(v)

(a) Only (i) and (ii)	(b) Only (ii) and (iii)	(c) Only (ii)
(d) Only (iii)	(e) Only (iv) and (v)	

17) Consider the following Boolean function

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

Which of the following Boolean functions provide a simplified version of the above Boolean function?

(a) $B + AC$.	(b) $AB + BC$.	(c) $A + \overline{B}\,\overline{C}$
(d) $AB + AC + BC$	(e) $A + \overline{B}C$	

18) Consider the following Karnaugh map.

CD	00	01	11	10
00	1	1	1	1
01	1	0	0	1
11	0	0	0	0
10	1	0	0	1

Which of the following is the most compact form of a Boolean function representing the above Karnaugh map?

(i) $\overline{B}\,\overline{C} + \overline{B}\,\overline{D} + \overline{C}\,\overline{D}$

(ii) $\overline{C}\,\overline{D} + \overline{B}\,\overline{C} + \overline{A}\overline{B}\overline{D} + A\overline{B}\,\overline{D}$

(iii) $\overline{C}\,\overline{D} + \overline{B}\,\overline{D} + \overline{A}\overline{B}\overline{C} + A\overline{B}\,\overline{C}$

(iv) $B.C + B.\overline{D} + \overline{C}\,\overline{D}$

(v) $\overline{B}.\overline{C} + \overline{B}.\overline{D} + C\overline{D}$

(a) Only (i)	(b) Only (i) and (ii)	(c) Only (ii) and (iii)
(d) Only (iii)	(e) Only (iv) and (v)	

19) If any word of size 32 bits in a memory space can be addressed by using a 20-bit memory address and each location holds one word, what should be the size of the memory space?

(a) 1 MB	(b) 2 MB	(c) 4 MB
(d) 8 MB	(e) 64 MB	

20) A memory unit of a computer has 512K memory addresses of 32 bits each and 64 internal registers. The computer has an instruction format with 3 fields **opcode**, **register** and **memory address**. Assuming that an instruction is 32 bits long how large must the **opcode** field be?

(a) 4 bits	(b) 5 bits	(c) 6 bits
(d) 7 bits	(e) 8 bits	

21) In a register/memory type CPU, the instruction lengths are typically variable. This presents a problem when the program is incremented during the Fetch-Decode-Execute cycle. What statements(s) is/are **not** true with regard to Program Counter (PC) incrementing?

(a) PC is incremented by the largest possible fixed value, irrespective of the variability of the instruction.
(b) Increment value is known when the current instruction is decoded with the Instruction Register (IR).
(c) Increment value is known when the current instruction has completed execution.
(d) The binary loader overcomes the problem by positioning instructions at word boundaries so that PC can be calculated.
(e) PC incrementing method is implementation dependent.

22) Which of the following can be categorized as (a) solid-state memory device(s)?

(a) Flash Memory Drive (b) Hard Disk (c) MP3 Player
(d) CD-RW (e) Floppy Disk

23) Which of the following technolog(y/ies) is/are used for Video adapters or 3-D accelerators?

(a) RIMM (b) SRAM (c) DRAM
(d) MPDRAM (e) DDR SDRAM

24) Which of the following device(s) is/are most likely to have a BIOS ROM chip?

(a) SCSI Adapter (b) VGA Card (c) Sound Card
(d) Network Interface Card (e) Hard Disk

25) Which of the following is an/are impact printer(s)?

(a) Plotter (b) Ink Jet printers (c) Laser printers
(d) Dot matrix printers (e) Thermal Wax printers

26) Which of the following technologies is/are used for Processor Cache memory?

(a) SRAM (b) DRAM (c) EEPROM
(d) RDRAM (e) DDR SDRAM

27) Which of the following is a/are volatile type(s) of memory?

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

28) Which of the following is/are **not** considered as an optical storage device?

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

29) Which of the following device(s) is/are a biometric device(s)?

(a) IRIS Scanners (b) DVD Camcorder (c) Barcode Readers
(d) Fingerprint Readers (e) OCR Devices

30) Which of the following is a/are key element(s) of a PC motherboard's form factor?

(a) Physical dimensions (b) Power supply (c) Number of available USB ports
(d) Placement of mounting screw holes (e) Location of the processor slot

31) Which of the following devices is/are used to produce 3-Dimensional display?

(a) Overhead Projector (b) Holographic display (c) Digital projector
(d) Varifocal mirror display (e) Movie projector

32) Which of the following wireless technologies is/are used to connect external devices to a computer?

(a) Blue-Tooth (b) Blue-Ray (c) IrDA
(d) Microwave (e) Wi-Fi

33) Which of the following ports could be used to connect a Sound card?

(a) ISA (b) PCI (c) AGP
(d) EISA (e) PCI-Express

34) Which of the following expansion cards contains its own processor and a memory to improve performance level?

(a) Sound card (b) Fire-wire card
(c) Graphics accelerator card (d) TV and video capture card
(e) Network card

35) Which of the following interfaces can be used to connect a hard disk to a motherboard?

(a) Fiber Channel (b) USB (c) RJ-45 connector
(d) SCSI (e) Wi-Fi

36) Which of the following statements is/are true about Wi-Fi?

(a) The speed of an IEEE 802.11b network is much higher than that of an IEEE 802.11g network.
(b) Wi-Fi refers to the IEEE 802.11b wireless Ethernet standard.
(c) The maximum speed of a Wi-Fi network is 11MBps.
(d) Access points are a must in-order to communicate via Wi-Fi.
(e) Establishing a Wi-Fi network is less expensive compared with establishing a 10/100 Ethernet (wired) network

37) Which of the following statements is/are true with USB and FireWire interfaces?

(a) FireWire, built from the ground up for speed, uses a "Peer-to-Peer" architecture in which the peripherals are intelligent and can negotiate bus conflicts to determine which device can best control a data transfer.
(b) The FireWire high-speed communication port is also referred to as the IEEE 1395 or the i.Link port.
(c) The FireWire port is a high-speed serial communication port.
(d) USB supports Plug and Play technology.
(e) USB 2.0 uses a "Master-Slave" architecture in which the computer handles all arbitration functions and dictates data flow to, from and between the attached peripherals.

38) Which of the following is a/are functionalit(y/ies) of the Operating System performance?

(a) Manages the way information is stored in the disks and how they are retrieved
(b) Coordinates how programs work with the computer's hardware and other software
(c) Sending documents to the printer and activating the printer
(d) Providing resources to copy or move data/contents from one file to another or from one program to another
(e) Can reduce the amount of disk space required to store a file or reduce the time it takes to transfer a file over the internet

39) What is the commonly used medium to send signals from a remote controller to a television?

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

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

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

41) Which of the following is a/are device(s) used to differentiate voice and data with the ordinary telephone network?

(a) Hub (b) Router (c) Splitter
(d) Gateway (e) Modem

42) Which of the following technologies do/does **not** allow a phone call to be routed over network wires?

(a) Teleconferencing (b) Video-Conferencing (c) Fast Ethernet
(d) Wi-Fi (e) Voice Over Internet Protocol

43) Which of the following is/are true about Optical Fiber Cables?

(a) Used for transmission of data over long distances at high data range like 40GB/s
(b) Save space in cabling specially in LAN environment
(c) Immune to electrical interface preventing cross talk
(d) Glass or plastic fiber designed to guide light over its length
(e) Electro-magnetic field carrying the signals in the space between inner and outer conductors

44) Which of the following are example(s) for a Wireless Application?

(a) Network Operating Systems
(b) Television Remote Controls
(c) Cellular Telephones
(d) Global Positioning System (GPS)
(e) Satellite Television

45) Which of the following software is/are utility software?

(a) Compression software (b) Backup Software (c) Disk Defragmenter
(d) Virus Guard software (e) Online Information Systems

46) Which of the following are properties of a UNIX operating system?

(a) Single User/Single Tasking (b) Single User/Multi Tasking
(c) Multi User/Single Tasking (d) Multi User/Multi Tasking
(e) Real-Time OS

47) Which of the following Operating System(s) is/are used in embedded systems?

(a) Windows CE (b) Linux (c) Symbian OS
(d) Windows NT (e) Android

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

(a) Microwave (b) Satellite (c) Optical Fibre
(d) Coaxial (e) Twisted Pair

49) Which of the following components need(s) to be taken into considerations when upgrading a processor?

(a) Motherboard	(b) Main Memory	(c) Power Supply
(d) Chassis	(e) Hard Disk	

50) Which of the following can be achieved through disk defragmentation?

(a) Improve CPU performance	(b) Clustering file space
(c) Transfer data to a new format	(d) Eliminate duplicates
(e) Create additional empty spaces	

****