දකුණු පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව

තෙන් மாகாணத் கல்வித் திணைக்களம் 20 S I

Department of Education – Southern Province

General Certificate of Education (Advanced Level) Examination - 2022

අධ්‍යාපන පොදු සහතික පත්‍ර (උසස් පෙළ) විභාගය - 2022

Third Term Practice Test – 2022 December

තෙවන වාර පෙරහුරු පරීක්ෂණය - 2022 දෙසැම්බර්

| Grade 12	**Information & Communication Technology – I**	**02 hours**
12 ශ්‍රේණිය	තොරතුරු හා සන්නිවේදන තාක්ෂණය - I	පැය දෙකයි

Note :
- Answer **all** the questions.
- Write your **Index Number** in the space provided in the answer sheet.
- In each of the questions **1** to **50**, pick one of the alternatives from (1), (2), (3), (4), (5) which is **correct or most appropriate and mark your response on the answer sheet with a cross (x)**.

1. When the number (-39) is represented in sign magnitude, the answer will be,
   (1) 10100111   (2) 100111   (3) 00100111
   (4) (1) and (2) above   (5) (2) and (3) above

2. "Full adder has ….. inputs and … outputs." The corresponding values for blanks in the above expression are respectively,
   (1) 2,2   (2) 2,3   (3) 3,2   (4) 3,3   (5) 3,1

3. Which of the following statement is correct about the flip-flop?
   (1) Output depends on the input given at that time.
   (2) Output is determined based on the previously given inputs.
   (3) A simple circuit that can add two bits at a time.
   (4) A temporary memory can be created using this circuit.
   (5) This is the technique used in SRAM.

4. Which of the following values is the correct order of input bits in Karnaugh maps creation?
   (1) 00, 01, 10, 11   (2) 00, 10, 01,11   (3) 00, 01,11, 10
   (4) 10, 11, 00, 01   (5) 10, 01, 11, 00

5. The logic gate that equivalents to the logic circuit given above is,
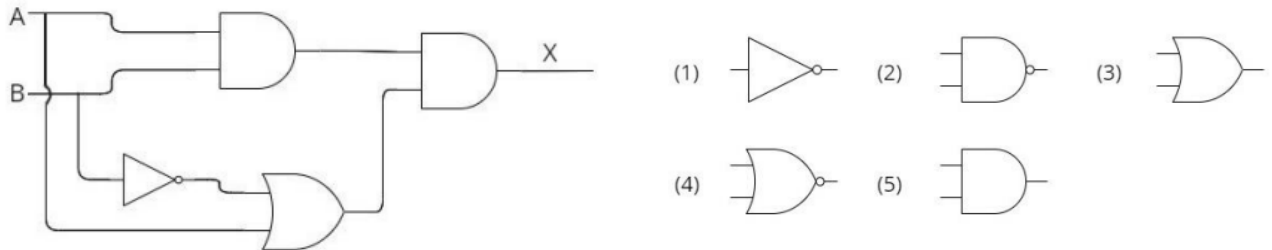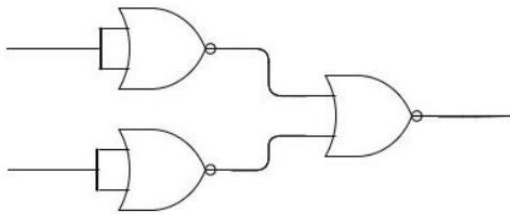

6. Which of the values can be assigned to A, B, C to be the value of X is 1?
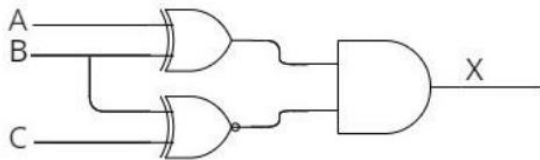
   (1) 1, 0,1   (2) 0, 0, 1   (3) 1, 1, 1   (4) 0, 1, 1   (5) 0, 1, 0

7.

   Above is an arrangement of a combinational gate circuit that made of universal gates. The gate equivalent to this circuit is,

   (1) NOT   (2) AND   (3) OR   (4) XOR   (5) NOR

8. The main designer of ENIAC computer is,
   (1) John Mauchly   (2) John Von Neumann   (3) Charles Babbage

   (4) Howard Egan   (5) John Bardeen

9. Which of the following statement is true?

    A. The first mechanical calculator was developed by Blaise Pascal.

    B. Hermon Hollerith developed the tabulating machine using the punch card concept.

    C. Jack Kilby was a forerunner in Integrated circuit design.

    (1) A only.   (2) A and B only.   (3) All A, B and C.

    (4) C only.   (5) A and C only.

10. The first Electronic Digital Computer is,

    (1) MARK I   (2) EDVAC   (3) Pascaline

    (4) ABC Computer   (5) None of the above

11. The answer in descending order of storage capacity is,

    (1) Main memory, Compact Disk, Cache memory, Register

    (2) Magnetic tape, Main memory, Cache memory, Register

    (3) Magnetic tape, Hard Disk, Main memory, Cache memory

    (4) Main memory, Hard Disk, Magnetic tape, Cache Memory

    (5) None of the above

12. Which of the following can be included in a microprocessor?

    A – Cache Memory   B – Arithmetic and Logic Unit

    C – Random Access Memory (RAM)   D – Secondary Storage Devices

    E – Hard Disk Drive   F – Control Unit

    (1) A, B and C only.   (2) A, B and D only.   (3) C, D and E only.

    (4) A, B and F only.   (5) C, B and F only.

13. A memory that can be accessed faster is,

    (1) Hard Disk   (2) Cache memory   (3) Virtual Memory

    (4) Main memory   (5) Compact Disk

14. Posting another's thoughts, ideas, statements and activities as one's own work without mentioning the original creators is called _____.

    (1) Piracy   (2) Phishing   (3) Plagiarism

    (4) Software piracy   (5) Stealing

15. Which statement is incorrect regarding Cloud Computing?

   (1) Cloud computing provides services over a network from a remote location.

   (2) Having internet connection is a mandatory factor for cloud computing

   (3) PaaS, IaaS, SaaS are the three service models of cloud computing.

   (4) IaaS is giving environment to drive Application developments and application tools

   (5) SaaS provides the environment for running application development and deployment tools.

16. The length of time that queues remain in the ready state before a process is issued to the processor is called,
   (1) Turnaround time   (2) Response time   (3) Waiting time
   (4) Throughput   (5) Mid term schedular

17. Determines which of the processors in the ready state should be passed to the processor next,

   (1) Swapping scheduler   (2) CPU scheduler   (3) Job scheduler

   (4) Long term scheduler   (5) Medium term scheduler

18. The hardware that maps a virtual memory address to a physical memory address is?
   (1) PCB   (2) CPU   (3) MMU   (4) CU   (5) RAM

19. The appropriate terms for the blanks in the following statements are,

   A – Processor utilization in a multi-programmed operating system is ………………….

   B - In a time sharing operating system the user response time is …………………….

   (1) Maximum, Minimum   (2) Maximum, Maximum

   (3) Minimum, Maximum   (4) Minimum, Minimum

   (5) Maximum, Minimum and then maximum

20. Select the correct statement from the following statements.

   (1) Divide logical memory into blocks of same size is called frames.

   (2) Pages are used to store data in physical memory.

   (3) The data structure to map a page and a frame is called a page table.

(4) The task of selecting and dispatching processes to the processor done by the Task memory management unit.

(5) Virtual memory is located in the computer Random Access Memory

21. Consider the following statements about Contiguous allocation that an operating system performs in file management.

A – When a file is contiguous allocated, it is easy to increase the file size later.

B – Finding a free space on a hard disk to match the size of the file can be done efficiently.

C – External fragmenting results in Contiguous allocation.

Which of the following statement/statements is/are correct?

(1) A only.   (2) B only.   (3) A and B only.
(4) C only.   (5) B and C only.

22. An event that changes the alignment of the process functionality is called ....

(1) Context switching   (2) interrupt   (3) swapping

(4) Process termination   (5) Functional error

23. Which of the following statement is correct about file systems?

(1) File allocation system (FAT) is suitable to manage files with high capacity.

(2) File allocation system (FAT) is a free and open source file system.

(3) New Technology File System is maintained every file with two copies for file protection.

(4) New Technology File System does not support to file compression.

(5) New Technology File System is an improved file system of File Allocation System.

24. Which of the following represents functional requirements?

A – Patients in a hospital system should be diagnosed.
B – Twenty patients should be diagnosed in a hospital system.
C – There should be a camera system for diagnosing patients in a hospital system.
(1) A and C only   (2) B only   (3) C only

(4) A only   (5) All A, B and C

25. Which of the following is the false statement about data flow diagrams?

   (1) It should use a Document Flow Diagram as an intermediate note when converting level 1 data flow diagram to a level 2 data flow diagram.

   (2) A zero level data flow diagram is called a context diagram.

   (3) Data stores have not to be represented in context diagrams.

   (4) Data transaction between two external entities is represented by dotted lines.

   (5) A direct data transfer can occur between two processes.

26. The vehicle revenue license online system was first implemented only for vehicles registered in the Western Province. What is the method of implementation of the system used here?

   (1) pilot   (2) direct   (3) parallel

   (4) partial   (5) phased

27. Before releasing a new version of Windows operating system to the market, Microsoft provides customers with the opportunity to download and use a special copy of the new version for free as a way to check for bugs. This testing is called,

   (1) Integrated testing   (2) Beta Testing   (3) System Testing

   (4) Unit testing   (5) Alpha Testing

28. Among the phases, a phrase of System development life cycle (SDLC) covered by the Structured Systems Analysis and Design Methodology (SSADM) is,

   (1) Strategy planning   (2) Maintenance   (3) System Analysis

   (4) Implementation   (5) Testing

29. Which of the following is not a major objective of Structured Systems Analysis and Design Methodology (SSADM)?

   (1) Improving the management and control of a project

   (2) Promoting of superior in quality information systems

   (3) Able to continue the project despite a reduction in staff

   (4) Providing a framework for building the system

   (5) To obtain approval from the top management of the organization.

30. Which of the following statement is false regarding the feasibility study that carried out in building a system?

   (1) If the feasibility study report of a project is rejected by the top management, the project cannot be implemented.

   (2) Finding the technical resources of the software development company is called technical feasibility.

   (3) By conducting a feasibility study before starting a project, it is able to avoid future wastage of money and time.

   (4) The amount of money that can be invested in the project and finding the benefits received is called economic feasibility.

   (5) Organizational feasibility is the determination of whether the proposed system will help in achieving the objectives of the organization.

31. Which of the following list of requirements is an essential functional requirement?

   (1) It should be able to deliver data to the printer via Wi-Fi.

   (2) It shall be able to be deliver data to the printer .

   (3) The printer shall be able to get 15 copies per minute.

   (4) The printer should be able to print A4 size papers.

   (5) Color printed copies must be available from the printer.

32. Which of the following is the answer for $11101_2 + 45_8$?

   (1) 1000010_2　　　　　　　　(2) 102_8　　　　　　　　(3) 66_{10}

   (4) (1) and (2) only　　　　　　(5) All (1), (2) and (3)

33. 1's complement of number (-27) is,

   (1) 11100101　　　　　　　　(2) 00011011　　　　　　　　(3) 11100100

   (4) 11011000　　　　　　　　(5) 11111011

34. Number of students in a classroom is 110011_2. 1/3 of these are boys and the rest of are girls. How many girls are there?

   (1) 101010_2　　　　　　　　(2) 34_8　　　　　　　　(3) 42_{10}

   (4) 42_8　　　　　　　　(5) 11100_2

35. The octal number equal to the $A7B_{16}$ is?

    (1) 2573   (2) 5173   (3) 5363

    (4) 5366   (5) 6573

36. What is the decimal number equal to 1000111.00101_{BCD} number?

    (1) 47.05   (2) 47.28   (3) 87.21

    (4) 87.28   (5) 431.021

37. The correct statement about modulation is,

    A - Modification of one characteristic or more characteristics of the carrier signal to match the original signal is called modulation.

    B - In frequency modulation simulation, the amplitude and phase remaining constant and the frequency varies.

    C - PCM coverts a digital signal into an analog signal.

    (1) B and C only.   (2) A and C only.   (3) A and B only.
    (4) B only.   (5) All A, B and C.

38. Which of the following is incorrect regarding MAC (Media Access Control) or physical addressing?

    (1) A unique ID assigned to each interface for communication within the data link layer of a network segment.
    (2) When data is transmitted between two networks, the source IP address and the receiver IP address of the data packet are constant and source and destination MAC addresses are changed from time to time.
    (3) Although the MAC addresses are unique, they do not support for routing.
    (4) Frames are exchanged using MAC addresses beyond the local area network.
    (5) There is no hierarchical addressing scheme for MAC addresses.

39. Which of the following statements are correct regarding encoding schems?

    A – Encoding is the method used to convert bits of data into signals that can be transmitted over a medium.

    B – There is a transition in the center of the signal at NRZ-L.

    C – At the beginning of the bit period in NRZ-I, a transition is represented by a binary 1.

    D – Parity checking is used for error handling. 1111000 has an even parity bit of 0.

    (1) A and B only   (2) A and C only   (3) B and D only

    (4) A and D only   (5) All A, B, C and D

40. Which of the following statement is incorrect about IP addresses and subnet masks?

    (1) An IPv4 address is 32 bits and the number of IP addresses received through it is limited.

    (2) 255.255.252.192 is a correct subnet mask.

    (3) An IPV6 address is 128 bits and it is represented in hexadecimal.

    (4) The IP address segment 172.16.12.80/27 has 30 hosts and is a classless IP address.

    (5) As there is a hierarchical structure for IP addresses, they are used for data transmission over the network.

41. Which of the following is the subnet mark of a subnet that the initial host address and the last host address are 192.168.10.65 and 192.168.10.70 respectively?
    (1)   255.255.224.0   (2) 255.255.255.224   (3) 255.255.255.192
    (4)   255.255.255.248   (5) 255.255255.128

42. You have given the IP group 192.168.10.128/25. If it is divided into networks through the subnet mask of 255.255.255.224, the number of subnets formed and the network address to which that address belong are?
    (1) 8 and 192.168.10.0   (2) 8 and 192.168.10.128
    (3) 4 and 192.168.10.128   (4) 16 and 192.168.10.128
    (5) 8 and 192.168.10.32

43. Which of the following pairs of IP addresses require a router to connect? Consider the subnet mask 255.255.252.0.
    (1) 192.168.2.4 and 192 .168.3.2   (2) 192.168.4.4 and 192.168.7.20
    (3) 192.168.3.4 and 192.168.4.222   (4) 192.168.1.4 and192 .168.2.29
    (5) 192.168.3.4 and 192.168.3.2

44. Consider following statements.

    A – PURE ALOHA and SLOTTED ALOHA are the two types of ALOHA.

    B – PURE ALOHA issues frames to media with some control. Only full collisions occur, in there.

    C – SLOTTED ALOHA issues frames to the medium without any control. Only partial collisions occur, in there.

    D – In CSMA/CD, frames are issued to the medium only if there is no data transmission listening on the medium.

    The correct answer is,

    (1) A and B only.   (2) A and C only.   (3) B and D only.
    (4) A and D only.   (5) All A, B, C and D.

45. Consider the following statements.

A – Any frame received by the hub is transmitted only to the respective computer.

B – The switch forwards the frame to its destination using Media Access Control addresses.

C – The switch performs multicasting to find the MAC addresses associated with the switch.

D – Routing is done through a multilayer switch.

The correct answer is,

(1) B and C only. (2) A, C and D only. (3) B, C and D only.
(4) B and D only. (5) All A, B, C and D.

46. Consider the following statements.

A – The DNS server operates at the data link layer.

B – IP addresses are dynamically assigned to hosts via DHCP server.

C – When the domain name www.mystuffs.com is provided through a web browser, the DNS server converts IP addresses to domain names.

D – The DHCP server operates under UDP Protocol.

The correct answer is,

(1) B and C only. (2) A, C and D only. (3) B and D only.
(4) B, C and D only. (5) All A, B, C and D.

47. Which of the following answer is incorrect regarding TCP and UDP protocols?

(1) TCP transmits data without establishing a UDP connection as well as establishing a connection

(2) Port numbers are combined in TCP and UDP.

(3) TCP is implemented at the transport layer in services such as FTP, WWW, Email, Remote login.

(4) UDP is used in DHCP, DNS, router information and real-time audio-visual communication.

(5) Compared to TCP, UDP operates at a lower speed and the amount of data drops that may occur in TCP is higher compared to UDP.

48. Which of the following statement is incorrect about encryption?

   (1) Encrypting a message so that the unauthorized people cannot understand it

   (2) Symmetric and asymmetric are two techniques of encryption.

   (3) In asymmetric encryption, both the encryption and decryption processes involve the source's public and private keys.

   (4) Asymmetric encryption is known as common key encryption.

   (5) The digital signature is bound to the source's private key

49. A system for providing fuel quota for vehicles using QR technology falls under which of the following classification of information systems?

   (1) Batch Processing Systems
   (2) Real Time Systems
   (3) Decision Support Systems
   (4) Transaction Processing Systems
   (5) Knowledge-based Systems

50. Which of the following is a technique of system testing?

   (1) Unit testing   (2) Integrated testing   (3) System testing

   (4) White box testing   (5) Acceptance testing