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Provincial Department of Education - NWP

20 | E | I

Second Term Test - Grade 12 - 2018

Index No : .... Information and Communication Technology I   Two - Hours

Instructions :
- **Answer all the Questions**
- **Write down your index number in the space provided in the answer sheet.**
- **Select the correct or most appropriate answer from the given answers of 1,2,3,4 or 5**

1. Kaweesha did Advanced Level examination in Science stream in 2014, got good results and selected to the medical faculty. Although her parents, teachers, relations and neighbours were highly interested in inquiring her results on the day she received her results, nobody asked about her AL results during last few years.

    This expression mentions about a fact related to a characteristic of valuable information. What is it?
    1. Relevancy   2. Accuracy   3. Timeliness   4. Completeness   5. Reliability

2. Which is a wrong expression regarding quantitative data?
    1. Quantitative data can be represented in an order.
    2. Numbers are used to represent quantitative data.
    3. Graphs can be used to process and represent quantitative data.
    4. Shape and colour are quantitative data.
    5. Addition, subtraction, multiplication, division can be done.

3. Which is not a service available on Internet ?
    1. Search engines   2. File sharing   3. World Wide Web
    4. email   5. Uniform Resource Locator (URL)

4. Select the option that contains only data validation methods

    1. Route check, Validity check, Presence check
    2. Direct check, Distant check, Type check
    3. Direct check, Indirect check, Range check
    4. Type check, Presence check, Range check
    5. Presence check, Direct check, Distant check,

5. Phishing can be defined as,
   1. Collecting information about bank accounts or electronic accounts by deceiving users.
   2. Prompting the user for another web pages buy misguiding when connecting to internet.
   3. A harmful software which automatically activates maintaining connections with other networks.
   4. Claiming the ownership of a copied product made by ideas or creations of another producer.
   5. A software that displays unnecessary notices on the screen.

6. Consider following instances,
   A. Processing monthly account statement of the credit card.
   B. Depositing money in a bank.
   C. Withdrawing money from an ATM.
   D. Telephone bill payment.
   Select the statement you can agree with regarding above A,B,C,D data processing instances.
   1. A and C include batch processing and B and D include real time processing.
   2. B and C include batch processing and A and D include real time processing.
   3. A include batch processing and C and D include real time processing.
   4. A and B include batch processing and C include real time processing.
   5. B include batch processing and D include real time processing.

7. Followings are some types of software
   A. Anti-virus software
   B. Linux
   C. Word Processing Software
   Select the expression that provides a correct interpretation for given software.

   1. A is an Application software   2.   B is a System software
   3. C includes Utility software   4.   B is an Application software
   5. C includes Operating systems

8. The electronic device used for producing UNIVAC-I is,
   1   Vacuum Tubes   2 Microprocessors   3 Transistor
   4   Integrated Circuits   5 Vapor engine.

9. Followings are some features changed with the evolution of the computer in generations.
   A. - Physical size   B. - Electricity consumption
   C. - Processor speed   D. - Heat generation
   The characteristics decreased with evolution are
   1. A , B and C   2. A ,B and D   3. A,C and D
   4. B, C and D   5. None of above

10. The BIOS programme activates as soon as the computer is switched on. The BIOS programme is located in
    1. Cache Memory   2. ROM   3. CMOS RAM
    4. Northbridge Chipset   5. Southbridge Chipset

11. Which is the answer that correctly mentions the phases of Fetch Execute cycle.
    1. Fetching next instruction from memory, Decode the instruction, Increment the programme counter, Execute the instruction.
    2. Decode the instruction, Fetching next instruction from memory, Execute the instruction.
    3. Decode the Instruction, Execute the instruction, Fetch next instruction from memory.
    4. Fetch next instruction from memory, Increment the programme counter, Decode the instruction, Execute the instruction.
    5. Increment the programme counter, Decode the instruction, Execute the instruction, Fetch next instruction from memory

12. The high speed temporary storage that exist as a part of the Microprocessor, and retain data and instructions while execution is called ………………………………………,
    1. Registers   2. RAM   3. Virtual Memory   4. EPROM   5. Flash Memory

13. What are the interfaces used to connect Hard Disk, CD/DVD to Motherboard
    1. ISA   2. RAM Bank   3. USB Port   4. AGP Slot   5. SATA,IDE

14. Select the method which can be used to calculate correctly the capacity of a Hard Disk
    1. Heads x Cylinder x Sectors x Sector capacity   2. Plate x Cylinder x Sectors x Sector capacity
    3. Heads x Plate x Sectors x Sector capacity   4. Plate x Sectors x Sector capacity
    5. Heads x Cylinder x Sector capacity

15. Study following diagram

    Main Memory — A — CPU
                    └— AGP Slot
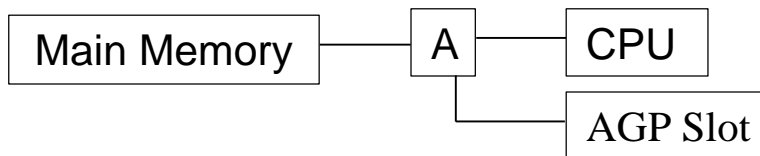
    Which part is indicated by 'A' in the diagram
    1. North bridge   2. South bridge   3. ISA Slot
    4. ROM   5. Memory Control Unit

16. Examine the given statements.
    A. HDMI is a port available in latest Laptop computers.
    B. Monitor and Multimedia projector can be connected to HDMI port.
    C. Digital TVs can be connected to HDMI
    Which can be considered as correct.
    1.Only A   2.Only B   3.Only A and B   4.Only A and C   5. A,B,C all

17. The technology used for scanning fast printed documents with many pages and digitizing as textual data.
    1. MICR   2. OMR   3. OCR   4. Barcode Reader   5. Magnetic Stripe Reade

18. The decimal value of 10101111_2 is,
    1. 185   2. 175   3. 187   4. 148   5. 125

19. What is the Hexadecimal value of 75_8
    1. 313_{16} 2. $2B_{16}$ 3. $3E_{16}$ 4. $2E_{16}$ 5. $3D_{16}$

20. What is the Octal equivalent of $F4_{16}$?
    1. 354_8 2. 364_8 3. 363_8 4. 265_8 5. 254_8

21. Calculate $01011_2 + 69_{10}$ and select the answer.
    1. 0011011_2 2. 69_{10} 3. 80_{10} 4. 100111_2 5. 83_{10}

22. Select the answer obtained by calculating $10110_2 \div 10_2$
    1. 01111_2 2. 01010_2 3. 11011_2 4. 01011_2 5. 00011_2

23. Select the answer which contains the 8 bit 2's complement of 6 and (-8) respectively.
    1. 00011110_2 , 11111000_2 2. 00000110_2 , 11111000_2 3. 00000110_2 , 11110111_2
    4. 00000100_2 , 11100000_2 5. 00000110_2 , 11000000_2

24. The Decimal value of the ASCII code of 'C' is 67. Accordingly, which ASCII values represent the characters 'B' and 'E'.
    1. 1001111 , 1010001   2. 1000011,1000011   3. 1000011, 1000001
    4. 1110011, 1100001   5. 1000010, 1000101

25. Select the answer obtained by calculating 9 + (-3) in 8 bit 2's complement.
    1. 11000110_2 2. 00011110_2 3. 00001110_2 4. 00000111_2 5. 00000110_2

26. What is the Least Significant Digit of 483.025?
    1. 4   2. 8   3. 3   4. 0   5. 5

27. What values should be substituted to A,B,C variables when the value of A+BC expression is '0'
    1. When A = 1, B = 0, C = 0   2. When A = 1, B = 1, C = 0
    3. When A = 0, B = 1, C = 0   4. When A = 0, B = 1, C = 1
    5. When A = 1, B = 0, C = 1

28. A and B are the inputs of following truth table

A	B	(AB)'	(A+B)'
0	0		
0	1		
1	0		
1	1		

The output values of both (AB)' (A+B)' becomes equal,
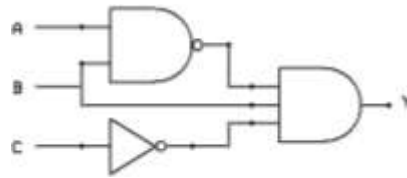X. When both A and B input values are '0'.
Y. When both A and B input values are '1'.
Z. When A = 1 and B= 0.
Which can be considered as acceptable,
1. Only X   2. Only Y   3. Only Z   4. Only X and Y   5. Only X and Z

4

29. Consider the given logic circuit. What should be the Boolean values of A,B,C variables when the output value is '1'.

1. When only B input is '1'
2. When all A, B, C inputs are '0'
3. When all A, B, C inputs are '1'
4. When only 'C' input is '1'
5. When only 'B' and 'C' inputs are '1'

30. The expression obtained when (A+B)(A+C) is simplified using Boolean laws.
   1. B+AC   2. C+AB   3. A+C   4. A+B   5. A+BC

31. AB+ AC is not a standard logical expression. Select the standard logical expression of this expression.
   1. ABC'+AB'C +A'BC   2. ABC+ABC' +AB'C   3. A'BC'+AB'C' +AB'C
   4. ABC+ A'B'C'+ AB'C   5. ABC+ AB'C'+ A'B'C

32. The Boolean function of $f(X,Y,Z) = \Sigma(0,2,3,4,6)$ has been represented in following Karnaugh map.

X \ YZ	00			
0	1		1	1
	1			1

   The simplified expression obtained from this map is,
   1. X'Y+Z'   2. XY'+Z   3. X'Y+Z   4. X'Y'+Z   5. XY+Z'

33. Suspending a running process in an Operating System and resuming the same process or starting another process is done in,
   1. Context Switching   2. Mapping   3. Software Interrupt
   4. Blocking   5. Waiting

34. The scheduler, which controls the transition of a process form New state to Ready state.
   1. Long Term Scheduler   2. Mid Term Scheduler
   3. Short Term Scheduler   4. Intermediate Scheduler
   5. Transition Scheduler

35. Latest Operating Systems have the capability to automatically detect and activate some hardware devices when connected. This facility is called,
   1. Automatic Installer.   2. Add new Hardware.   3. Fetch and Decode.
   4. Plug and Play.   5. Automatic Identifier.

36. Which is not a major function of Operating System from followings?
   1.File Organization   2. Process Management
   3.Controlling System devices   4. Removing computer viruses
   5. Providing user interface

37. Which is the method of sending a process which is in the main memory to secondary memory in order to bring another process to main memory?
   1. Blocking   2. Swapping   3. Terminating
   4. Transporting   5. Mapping

38. Select the option, which include the function of executing a sequence of non-interactive jobs in a computer related to the user.
   1. interactive scheduling   2. multischeduling
   3. multiprocessing   4. Semi- interactive processing
   5. Semi -interactive scheduling

39. Select the answer, which contains only guided media from following data transmission media.
   1. Twisted pair, Coaxial cable, Fiber optics   2. Microwawes, Infrared, Wi- Fi
   3. Fiber optics, Wi- Fi, Bluetooth   4.Bluetooth, Microwawes, Infrared
   5. Coaxial cable, Wi- Fi, Bluetooth

40. Study following pictures.

A.   B.   C.

Select the option that correctly labels these A,B,C pictures
   1. A. Fiber optics   B. Coaxial cable   C. Twisted pair
   2. A. Coaxial cable   B. Twisted pair   C. Fiber optics
   3. A. Twisted pair   B. Coaxial cable   C. Fiber optics
   4. A. Coaxial cable   B. Fiber optics   C. Twisted pair
   5. A. Fiber optics   B. Twisted pair   C. Coaxial cable

41. The most suitable data transmission media to transmit signals for long distances,
    1. Twisted pair   2. Coaxial cable   3. Fiber optics
    4. Infrared   5. Bluetooth

42. Followings are some pictures of network cable connectors

    D.   E.   F.

    Select the answer that correctly name the given cable connectors
    1. D. BNC,   E. RJ45,   F. M12   2. D. M12,   E. BNC,   F. RJ45
    3. D. BNC,   E. M12,   F. RJ45   4. D. RJ45,   E. BNC,   F. M12
    5. D. RJ45,   E. M12,   F. BNC

43. Select the correct statement given about cable connectors.
    1. M12 connector is used to connect Twisted pair cable
    2. BNC connector is used to connect Coaxial cable
    3. RJ45 Connector is used to connect Fiber optics cable
    4. M12 connector is used to connect Coaxial cable
    5. RJ45 Connector is used to connect Coaxial cable

44. Which is the option that mention the need for amplification of transmitted signals
    1. The occurance of Signal distortion
    2. Forming Cookies.
    3. Constructing Network topologies
    4. Requirement of Signal inclusion
    5. Occurance of signal attenuation

45. A class C network 200.138.1.0 has been subnetted with a subnet mask of 255.255.255.252 Select the answer that mentions respectively the number of subnets and number of hosts per network respectively.
    1. Subnets 64 , Hosts 2   2. Subnets 2 , Hosts 64
    3. Subnets 64 , Hosts 4   4. Subnets 4 , Hosts 64
    5. Subnets 8 , Hosts 30

46. Public library is a system and it can be classified as,
    1. a natural and closed system   2. a natural and open system
    3. an artificial and closed system   4. an artificial and open system
    5. a dynamic and closed system

47. The key areas in feasibility study in system development include;
    1. Testing feasibility, Adapting feasibility, Maintenance feasibility, Expansion feasibility.
    2. Technical feasibility,Economic feasibility,Operational feasibility, Organizational feasibility.
    3. Testing feasibility, Economic feasibility, Maintenance feasibility, Expansion feasibility.
    4. Progress feasibility,Expansion feasibility,Maintenance feasibility,Organizational feasibility.
    5. Testing feasibility, Economic feasibility, Progress feasibility, Organizational feasibility.

48. In which System Development Model the system user is involved in all phases of the system development?
    1. Waterfall model
    2. Prototyping Model
    3. RAD Model
    4. Waterfall model and Prototyping Model
    5. Prototyping Model and RAD Model

49. Study following statements
    A- The system testing method does not change according to followed System Development Model
    B- System maintenance is the updating of system to new requirements.
    C- The output of a phase of waterfall model becomes input for next phase.
    What can be considered as correct?
    1. Only A   2. Only B   3. Only A and B
    4. Only B and C   5. A , B and C all.

50. School is a system. What can not be considered as a subsystem in the school system?
    1. Academic staff   2. Mathematics section
    3. Vehicle park   4. Library
    5. Science Section

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Provincial Department of Education – NWP

| 20 | E | II |

Second Term Test - Grade 12 - 2018

Index No : .... Information and Communication Technology II Three Hours

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Answer all questions in Part A and only four questions selected from part B

Part –A - Structured essay

- **Answer all the four questions on this paper itself.**
- **Write your answers in the space provided for each question.**

01. i. What are big data? Describe briefly.

ii. Mention three difficulties arising in manipulating data in manual methods.

iii. What is 'Cloud Computing'. Provide a definition.

iv. Describe with an example the need of Presence Check in data input

2   i.   Draw a block diagram that represent the Von Neumann architecture of computer system and name the components.

ii.   Complete the given table mentioning three examples for each memory type.

Volatile memory	Non volatile memory
1…………………………………………………………. 2………………………………………………………… 3………………………………………………………….	1………………………………………………………… 2………………………………………………………… 3…………………………………………………………

iii. Floppy disks are not used nowadays. Mention three reasons for becoming them out of use gradually.

3). i. Complete the output columns of the given truth table of Half adder.

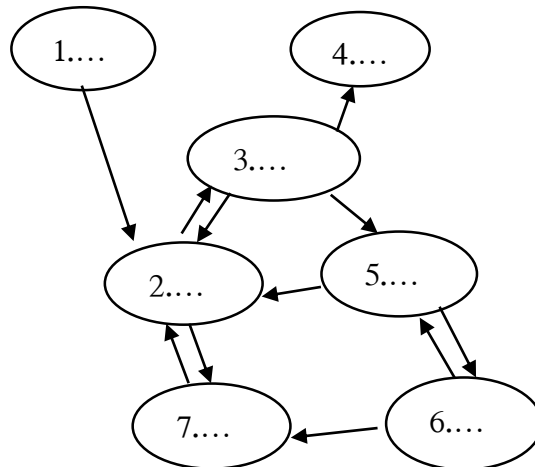| inputs		Output	
A	B	S	C_{ou}
0	0		
0	1		
1	0		
1	1		

ii. Mention Boolean expressions related to the output columns obtained in question 'i'

S =

C_{out} =

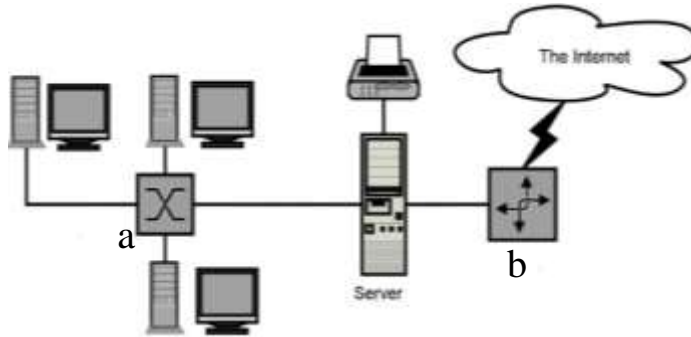iii. Draw a logic circuit for Half adder representing Boolean Expressions constructed in question 'ii'.

4). a) Write the process status required to fill in the blanks from 1 to 7.

1……………………………………   2……………………………………   3……………………………………

4……………………………………   5……………………………………   6……………………………………

7……………………………………

3

b). i. Briefly describe what is an IP address.

ii. Following is a diagram of a school computer network connected to Internet. Mention the names of the devices labeled as 'a' and 'b'.

a…………….............……………..   b……………………………………….

1). A signal is activated in a vehicle indicating the need of testing engine oil of the vehicle related to following conditions.

 1. When detecting that the engine oil level is lower than required level.

 2. When vehicle has exceeded the maximum running distance and the Viscosity (thickness) of oil is lower than the standard level.

The signal activation depends on following conditions.

input		Logic state
A	The engine oil level is lower than the required level	1
	The engine oil level is in required level	0
B	The vehicle has exceeded the maximum running distance	1
	The vehicle has not exceeded the maximum running distance	0
C	The Viscosity of oil is lower than the standard level	1
	The Viscosity of oil is in the standard level	0

 i. Construct a truth table that represents the logical states of activating the signal in the vehicle.
 ii. Derive the Boolean expression related to the logical states that activate the signal.
 iii. Simplify the Boolean expression obtained in question 'ii' using a Karnaugh Map.
 iv. Construct a logic circuit to represent the simplified expression.
 v. Prepare a truth table for the Simplified Boolean expression.

2). a). Suneth comes to school to obtain the character certificate and result sheets to apply for a job.

 In order to obtain these certificates he first meets the library assistant. Library assistant prepares a confirmation letter of returning library books using the computer, gives a printed letter to Suneth and save a copy of the letter permanently in the library information system.

 Suneth gives his copy to the principle. Following principle's instructions the office clerk inserts the school admission number of the student to school information system. If the admission number of the student is correct, the information system displays the results and details of the student's performance on the screen.

 After confirming that the results displayed belong to the relevant student, the clerk prepares the result sheets and the character certificate, and gets them printed. Further, a copy of those certificates is stored in the data file of the student.

 This case includes five steps used in data processing. Mention the steps and write an example for each step based on this case.

b). Briefly describe following coding systems used for data representation.
    i.   ASCII   ii. BCD   iii. Unicode

c). Describe with examples following issues related to ICT
    i.   Digital Divide   ii. Plagiarism

3).   i.   Stored program concept is a basic feature in Von Neumann architecture. Briefly describe what is stored programme concept.
    ii.   Mention three measures can be taken for safety of physical devices of the computer.
    iii.   What is Defragmentation ? Describe briefly.
    iv.   Write three employment opportunities available in the field of ICT and mention the professional competencies required to those employments.
    v.   Prepare a list of Hardware and Software required to a personal computer proposed to buy for a school student. Mention the features such as capacity or speed of the devices appropriately if available.

4).   a)   It is required to construct subnets to make 25 subnets using the Network Address 215.37.1.0/24.   What is the subnet mask suitable for constructing those subnets ?

    b)   The IP address 192.168. 1.15/26 Has been assigned to a Node of the first subnet in a Network.
        i.   What is the Subnet Mask used for subnetting?
        ii.   What is the Network address?
        iii.   What is the Broadcast address?
        iv.   What is the first IP address assignable to a Node in this subnet.
        v.   What is the last IP address assignable to a Node in this subnet.

    c)   Mention the Seven Layers of the OSI model.

5).   a).   It is possible to make payments in supermarkets via a Smart Card to pay the bill amount from the bank account.
        i.   In which information systems this facility is available ?
        ii.   Mention four special features of these information systems should possess.

    b).   There are many devices available nowadays which contain Smart Systems.
        i.   What are Smart Systems ?
        ii.   Mention three applications of Smart Systems.

c). The organizational structure of an institution can be represented as follows,
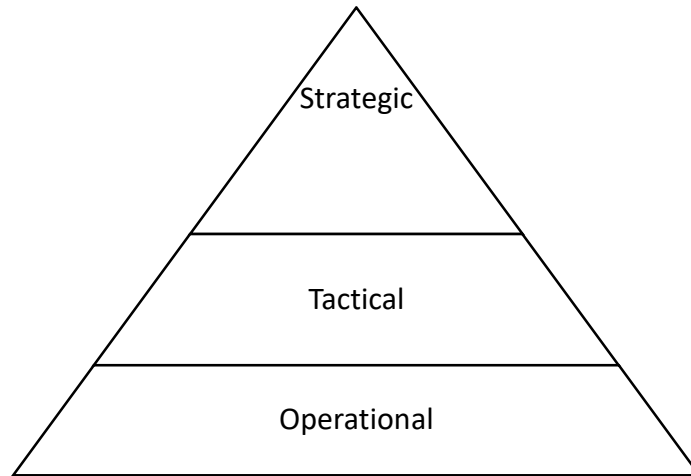
Mention two information systems suitable for top level management in an institution and describe them briefly.

6). a). Answer the questions given involving following Uniform Resource Locator.

$$\underbrace{\text{https}}_{p}://www.\underbrace{\text{finder}}_{q}.com/online-shopping$$

i. Mention the parts of URL indicated by 'p' and 'q'
ii. Write four top level domain names available in URLs and mention the types of websites of those URLs.
iii. Briefly describe what is WWW.

b). Describe following technologies with examples.
i. Mobile computing
ii. Mobile communication