



**National Field Work Center, Conducting G.C.E. (Advanced Level) Examination - 2025, Term - 1**

**Time: 3 hours**

## Information & Communication Technology (ICT)

தகவல், தொடர்பாடல் தொழினுட்பவியல் I  
Information & Communication Technology I

A/L 2026  
Gr. 12

20

**E**

# I

**Instructions:**

- ❖ Answer all questions
- ❖ Write down your index number on the space provided.
- ❖ In each of the questions 1 to 40, pick one of the alternatives (1),(2),(3),(4),(5) which is correct or most appropriate. Mark a cross (X) on the number corresponding to your choice in the answer sheet provided.
- ❖ No use of calculators.

## Part – I

1. Which of the following major technology was used in second generation computers?  
(1) Vacuum tube (2) Transistor (3) Microprocessor  
(4) Integrated circuit (5) LSI
2. “Adding machine was developed by .....”.  
Which of the following is most appropriate to fill the blank in?  
(1) John von Neumann (2) Ada Lovelace (3) Blaise Pascal  
(4) Maurice Wilkes (5) Charles Babbage
3. Consider the following statements.  
A - all operating systems are open source software  
B - all perating systems are all system software  
C - all pplication software are open source software  
Which of the above is / are correct?  
(1) A only (2) B only (3) A,B only (4) A,C only (5) B,C only
4. Which of the following is a good example of real-time processing?  
(1) Sytem that repares payroll system  
(2) System that prepares electricity utility bill  
(3) Flight control system  
(4) Telecommunication payment system  
(5) System that prepares water utility bill
5. Which of the following is called the decoding component of the instructions brought into the central processing unit?  
(1) Program counter (2) Arithmetic logi unit (3) Control unit (CU)  
(4) Register unit (5) Main memory

[see page no. 2 A

6. Which of the following does not influence the reduction of the digital divide gap?
- (1) Development of communication infrastructure at village levels
  - (2) To develop awareness among the public about information communication technology
  - (3) Providing used computers to low income earners for learning purposes
  - (4) Providing opportunities for all students in schools to learn information communication technology
  - (5) Granting of loans to the general public by banks
7. In computer system, CMOS stands for.
- (1) Computer Metal Oxide Semi-conductor
  - (2) Complementary Metal Off Semi-conductor
  - (3) Complementary Metal Oxide Semi-conductor
  - (4) Complementary Media Oxide Semi-conductor
  - (5) Computer Media Oxide System
8.  $F2B_{16} =$
- (1)  $5053_8$
  - (2)  $7435_8$
  - (3)  $7345_8$
  - (4)  $7453_8$
  - (5)  $3547_8$
9. Which of the following is the simplified form of Boolean expression  $\bar{x}(x+y) + (x+y)(x+\bar{y})$  ?
- (1)  $x$
  - (2)  $\bar{y}$
  - (3)  $xy$
  - (4)  $x+y$
  - (5)  $y$
10. Which of the following is not a component of central processing unit?
- (1) Arithmetic Logic Unit (ALU)
  - (2) Program Counter
  - (3) Control Unit (CU)
  - (4) L1 cache memory
  - (5) Main memory
11. "Units of capacity and speed of Random access memory (RAM) modules are frequently compared respectively by ..... and .....".  
Appropriate to fill the blanks in are respectively.
- (1) Kilobytes, Gigabytes
  - (2) Gigabytes, megabits per second
  - (3) Gigabytes, megahertz
  - (4) Megahertz, Kilohertz
  - (5) Gigabits, megabits per second
12. "..... holds the address of the next instruction to be executed in the program".  
Which of the following is most suitable to fill the blank in?
- (1) Arithmetic Logic Unit (ALU)
  - (2) Program Counter
  - (3) Control Unit (CU)
  - (4) L1 cache memory
  - (5) Main memory

13. Consider the following statements.

A - L1 cache memory contains more capacity than L2 cache memory

B - L1 cache memory has less speed than L2 cache memory

C - L1 cache memory has more speed than L2 cache memory

Which of the above is /are correct?

- (1) A only                      (2) B only                      (3) C only                      (4) A,B only                      (5) A,C only

14. Which of the following is /are equivalent of  $BD_{16}$  ?

A -  $275_8$

B -  $10111101_2$

C -  $189_{10}$

- (1) A only                      (2) B only                      (3) A,B only                      (4) A,C only                      (5) A,B,C all

15. Which of the following is not an application software?

- (1) Graphics software
- (2) Operating system software
- (3) Word processing software
- (4) Spreadsheet software
- (5) Accounting software

16. Consider the following statements.

A - Creating data

B - Data management

C - Data processing

D - Removing obsolete data

Which of the above is / are the **stage(s)** of data life cycle?

- (1) A only                      (2) A,B only                      (3) B,C only                      (4) A,B,C only                      (5) A,B,D only

17. Consider the following paragraph about computer memories.

Computer memory is broadly classified into primary and secondary memory .....①..... includes Random Access Memory and Read-Only Memory .....②..... is volatile, meaning it loses its data when the power is turned off, and is used for temporary storage while the computer is running .....③..... is non-volatile and retains its contents even when the power is off. Secondary memory includes storage devices like hard drives, solid-state drives, and optical disks, which provide long-term data storage. Unlike primary memory, secondary memory is .....④..... and used for permanently storing data and programs.

Which of the following is **correct**?

- (1) ①- Primary memory, ②- Random Access Memory, ③- Read-Only Memory, ④- Volatile
- (2) ①- Read-Only Memory, ②- Random Access Memory, ③- Primary memory, ④- Non-volatile
- (3) ①- Primary memory, ②- Read-Only Memory, ③- Random Access Memory, ④- Volatile
- (4) ①- Primary memory, ②- Random Access Memory, ③- Read-Only Memory, ④- Non-volatile
- (5) ①- Primary memory, ②- Read-Only Memory, ③- Random Access Memory, ④- Non-volatile

18. Consider the following statements.

- A - CRT display is a vacuum tube containing one or more electron guns, which emit electron beams that are manipulated to display images on a phosphorescent screen.
- B - LCD display is a flat-panel display that uses the light-modulating properties of liquid crystals combined with polarizers.
- C - LED display is a flat panel display that uses an array of light-emitting diodes as pixels for a video display.

Which of the above is / are **correct**?

- (1) A only      (2) C only      (3) A,B only      (4) B,C only      (5) A,B,C all

19. CMOS battery on computer motherboard is.

- (1) To provide power to computer needed
- (2) To provide power to motherboard needed
- (3) To provide power to computer power supply unit needed
- (4) To stored settings of basic input output system (BIOS) program
- (5) To provide power to hard disk needed

20. Time for study of students in a school is limited from 7.30 am to 1.30 pm weekdays. Which of the following is the most appropriate data validation check for this purpose?

- (1) Presence check
- (2) Range check
- (3) Length check
- (4) Format check
- (5) Type check

21. Consider the following statements.

- A - Dynamic random access memory (DRAM) technology is used in random access memory (RAM)
- B - Static random access memory (SRAM) technology is more expensive than dynamic random access memory technology
- C - Cache memory is built by using Static random access memory technology

Which of the above is /are correct?

- (1) A only      (2) B only      (3) C only      (4) A,B only      (5) A,B,C all

22. Which of the following is incorrect statement about computer data storage?

- (1) Secondary storage is a kind of non-volatile memory
- (2) Secondary storage is not directly accessible by central processing unit (CPU)
- (3) Main memory is directly accessible by central processing unit
- (4) Random access memory (RAM) uses sequential data access method
- (5) Main memory is considered as a secondary storage device

23. Consider the following statements.

- A - It is not necessary to obtain legal permission from owners of proprietary software to use it  
 B - All open source software can be used by downloading free of charge always  
 C - When comparing with proprietary software, open source software provides more rights to the users  
 Which of the above is/are correct?

- (1) A only (2) B only (3) C only (4) A,C only (5) B,C only

24. What is the simplified result of Boolean expression  $ABC + \bar{A} + A\bar{B}C$ ?

- (1)  $\bar{A} + C$  (2)  $AB + C$  (3)  $\bar{C}(A\bar{B} + B)$  (4)  $A\bar{C} + B$  (5)  $B + A\bar{C}$

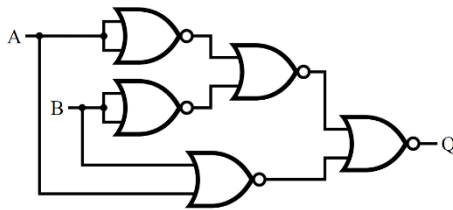
25. Consider the following Karnaugh map.

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

Which of the following is the **Boolean expression** given by the Karnaugh map?

- (1)  $AC + \bar{A}\bar{B}$   
 (2)  $AB + BC$   
 (3)  $AB + \bar{A}BC$   
 (4)  $BC + AB$   
 (5)  $A\bar{C} + \bar{B}$

26. Consider the following logic circuit.



What is the logical equivalent Q of the above logic circuit?

- (1) AND (2) NAND (3) XOR (4) NOR (5) XNOR

27. Which of the following is **equivalent** to  $19.375_{10}$  ?

- (1)  $10011.011_2$  (2)  $11011.011_2$  (3)  $10011.101_2$  (4)  $10011.001_2$  (5)  $11101.011_2$

28. What is the result of **XOR** operation of  $10101010_2$  and  $11010111_2$  ?

- (1)  $10111101_2$  (2)  $00111101_2$  (3)  $01111100_2$  (4)  $01100101_2$  (5)  $01111101_2$

29. Consider the following Boolean results.

P -  $(A + \bar{B}) = \bar{A} + \bar{B}$  Q -  $(A + B)(A + C) = A + BC$

R -  $A.(B + C) = A.B + A.C$  S -  $A + \bar{A}B = A + B$

Which of the above is / are **correct**?

- (1) P only (2) Q only (3) P,R only (4) Q,R,S only (5) P,Q,R,S all

30.  $25.75_{10} =$

- (1)  $10101.10_2$  (2)  $11000.01_2$  (3)  $100000.10_2$  (4)  $11001.11_2$  (5)  $100000.01_2$

31. Which of the following data storage device that uses laser technology for reading and writing data?

- (1) Hard disk
- (2) Floppy disk
- (3) Compact disc
- (4) Magnetic tape
- (5) Solid-state drive (SSD)

32. Which of the following is correct when the value of Boolean function  $f(x, y, z) = x\bar{y} + z\bar{x} + y\bar{z}$  is 0 ?

- (1)  $x = 1, y = 1, z = 0$
- (2)  $x = 1, y = 0, z = 1$
- (3)  $x = 1, y = 1, z = 1$
- (4)  $x = 0, y = 1, z = 1$
- (5)  $x = 0, y = 1, z = 0$

33. What is the simplified Boolean expression represented by the following Karnaugh map?

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

- (1)  $\bar{A} + \bar{B} + \bar{C}$
- (2)  $A + B + C$
- (3)  $ABC$
- (4)  $A + \bar{B}C$
- (5)  $A + BC$

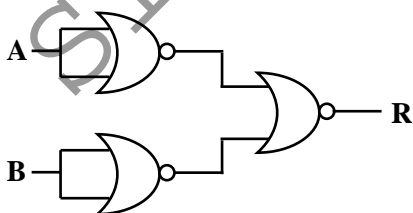
34. Register is a.

- (1) Software and has the fastest data access
- (2) Software and has the slowest data access
- (3) Hardware and has the fastest data access
- (4) Hardware and has the slowest data access
- (5) Memory with slowest data access

35. Which of the following is not considered as the characteristics of big data?

- (1) Volume
- (2) Variety
- (3) Visibility
- (4) Variability
- (5) Veracity

36. Consider the following logic circuit.



What is the output R of this logic circuit?

- (1)  $A \cdot B$
- (2)  $A + B$
- (3)  $\bar{A} \cdot \bar{B}$
- (4)  $A \cdot \bar{B}$
- (5)  $\bar{A} \cdot \bar{B}$

37. Which of the following Boolean expression is represented by the following Karnaugh map?

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

- (1)  $\bar{A}B + CD$       (2)  $AB + \bar{C}D$       (3)  $A\bar{B}CD$       (4)  $\bar{A}B + A\bar{B}D + \bar{C}$       (5)  $A\bar{B} + C\bar{D}$

38. What is the simplified result of the Boolean expression  $A\bar{B}\bar{C} + \bar{A}\bar{B}C + BC + B\bar{C}$  ?

- (1)  $A\bar{C} + \bar{A}C + B$   
 (2)  $\bar{B}(A\bar{C} + \bar{A}C) + B$   
 (3)  $\bar{C}(A\bar{B} + B) + C(\bar{A}\bar{B} + B)$   
 (4)  $A\bar{C} + B$   
 (5)  $B + A\bar{C} + \bar{A}C$

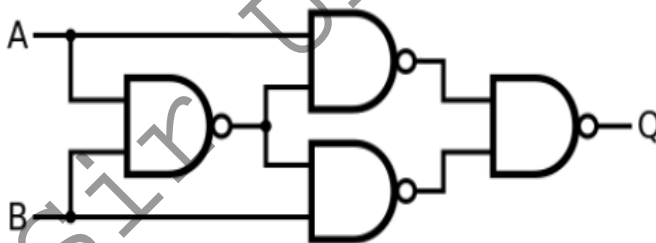
39. Consider the following Karnaugh map.

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

Which of the following Boolean expression is given by Karnaugh map?

- (1)  $AC + \bar{A}\bar{B}$   
 (2)  $AB + BC + \bar{A}\bar{B}\bar{C}$   
 (3)  $AB + \bar{A}BC$   
 (4)  $BC + AB + A\bar{C}$   
 (5)  $B\bar{C} + \bar{A}C$

40. Consider the following logic circuit.



Which of the following Boolean expression is equivalent to the output Q of the logic circuit given above?

- (1)  $\bar{A}B + A\bar{B}$   
 (2)  $AB + \bar{A}\bar{B}$   
 (3)  $AB + \bar{A}$   
 (4)  $A + \bar{B}$   
 (5)  $A + B$

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**G.C.E. (Advanced Level) Examination - 2025 , Term - 1**

**G.C.E. (Advanced Level) Examination - 2025, Term - 1**

## Information & Communication Technology (ICT)

**தகவல், தொடர்பாடல் தொழினுட்பவியல் II**  
**Information & Communication Technology II**

A/L 2026  
Gr. 12

20

## E

## II

## Part – II A

**Answer all the questions**

**1.**

**(a)**

(i) Give  $(+19_{10})$  in 2's complement form with 8-bits. Show your calculations.

YAN

**(ii)** Give  $(-15_{10})$  in 2's complement form with 8-bits. Show your calculations.

Handwriting practice lines with the letters 'L' and 'A' on a four-line grid.

**(iii)** Use 2's complement form to calculate  $(19_{10} - 15_{10})$  with 8-bits. Show your calculations.

*(This area is intentionally left blank for student response.)*

**(b)** What do you mean by golden rule of information?

.....

.....

.....

.....

*Do not  
write in this  
column*



- (c) Secondary storage devices use three kinds of data reading and writing technologies or media. State each them and write down one example for each.

Do not  
write in  
this column

.....

.....

.....

2.

- (a) Give any three service models in cloud computing.

① .....

② .....

③ .....

- (b) Give the major technologies used in first four generations of computer.

① .....

② .....

③ .....

④ .....

- (c) Write down three steps of data management.

.....

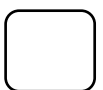
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- (d) Consider the following Boolean expression.

$$(A + B + C + \bar{D})(A + \bar{B} + C + \bar{D})(\bar{A} + \bar{B} + C + \bar{D})(\bar{A} + B + C + \bar{D})(A + \bar{B} + \bar{C} + \bar{D})(\bar{A} + \bar{B} + \bar{C} + \bar{D})$$

- (i) Simplify the Boolean expression given by using Karnaugh map.



[see page no. 3]

(ii) Draw the logic circuit for the simplified Boolean expression.

3.

(a) If each of the following statements is correct, indicate it as True, or otherwise, False.

(i) Frequently used instructions in computer are used in cache memory .....

(ii) Generally, the capacity of L2 cache memory is more than L1 cache memory .....

(iii) Device driver executes or controls the specific device connected with computer .....

(iv) Non-volatile memory is not lost data even when the power of computer is switched off  
.....

(b) Explain briefly the term “software piracy”  
.....  
.....  
.....

(c) Choose the suitable words from the list given below. Write down only the appropriate numbers for the blanks.

(i) Memory that is lost data / instructions when power is switched off .....

(ii) Protection of personal information in computer data bank from abuse is called data privacy  
.....

(iii) It refers to the use of small and portable computing devices in wireless enabled networks that provide wireless connections to a central main server .....

(iv) It is the attempt to acquire sensitive information such as usernames, passwords, and credit card details for malicious reasons, by masquerading as a trustworthy entity in an electronic communication .....

(v) It is a work arrangement using of ICT tools in which employees do not commute to a central place of work .....

[List: ① - Central processing unit (CPU) , ② - Volatile memory, ③ - Non-volatile memory  
④ - Mobile computing, ⑤ - Telecommuting, ⑥ - Phishing, ⑦ - Data privacy]

(d) Categorize the following software each whether they are application software or system software.

**Lists:**

[Google chrome, Ms-Windows, Mac OS X, Ubuntu Linux, Adobe Photoshop, GIMP]

	Application software	System software
(i)		
(ii)		
(iii)		

4.

(a) Define the following terms briefly.

(i) Computer hardware

.....  
.....

(ii) Computer software

.....  
.....

(b) Briefly explain the difference between data and information with the help of examples available in your school Library information system [ hint: definitions are not needed].



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• Data

.....

.....

.....

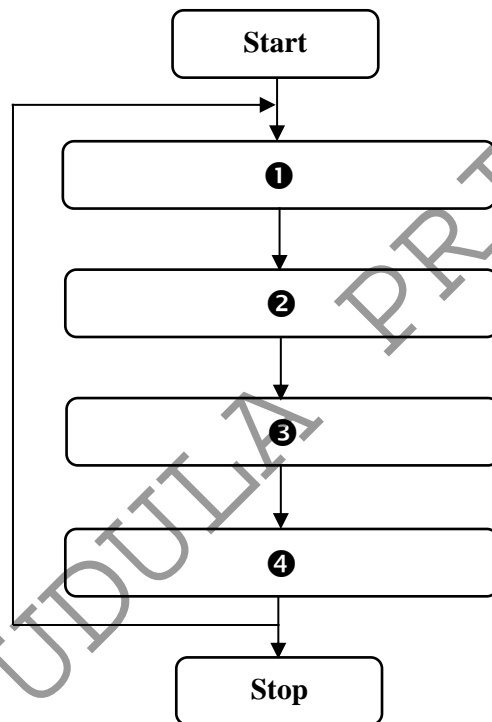
• Information

.....

.....

.....

(c) Write down the steps of fetch-execute cycle in computer instruction processing from the list given below.



- ① .....
- ② .....
- ③ .....
- ④ .....

[Lists: Executing instructions, decoding instructions, Fetching instructions, Increment of Program Counter]

\*\*\*

[see page no. 6]



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## National Field Work Center, Conducting G.C.E. (Advanced Level) Examination - 2025, Term - 1

### Information & Communication Technology [ICT]

தகவல், தொடர்பாடல் தொழினுட்பவியல் II  
Information & Communication Technology II

A/L 2026  
Gr. 12

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E

II

#### Part – II B

Answer any two questions only

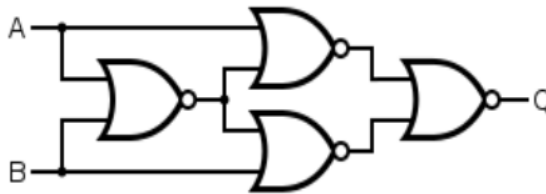
5.

(a) Consider the following Karnaugh map.

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

- Obtain a simplified Boolean expression in the form of sum of products (SOP) using the Karnaugh map. Show the loops clearly in the Karnaugh map.
- Construct a logic circuit corresponding to the simplified Boolean expression using only NAND gates.
- Construct a truth table corresponding to the simplified Boolean expression.

(b) Consider the following logic circuit.



- Derive the output Q of the logic circuit given above.
- Construct truth table for the simplified Boolean expression.
- Which is the single logic gate equivalent to the output Q?

6. Consider the following Boolean expression.

$$A\bar{B}\bar{C} + AB\bar{C}\bar{D} + \bar{A}\bar{B}\bar{C}D + \bar{A}\bar{B}\bar{C}\bar{D}$$

- (a) Convert this Boolean expression to standard SOP (Sum of Products).
- (b) State Karnaugh map to represent Boolean expression obtained in (b) above and simplify this Boolean expression using this Karnaugh map.
- (c) Draw a logic circuit for the Boolean expression simplified in (b) above using AND, OR, NOT gates only.

7.

- (a) Write down four components of computer system.
- (b) Give any two functions of BIOS.
- (c) Give two devices that are used to capture data automatically in digital form.
- (d) Write down two advantages of 2's complement method.

\*\*\*

[end.]