සියලු ම හිමිකම් ඇවිරිණි
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බස්නාහිර පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
மேல் மாகாணக் கல்வித் திணைக்களம்
Department of Education - Western Province

තෙවන වාර පරීක්ෂණය
மூன்றாம் தவணைப் பரீட்சை - 2026
Third Term Test

ශ්‍රේණිය தரம் Grade	13	විෂයය பாடம் Subject	Information & Communication Technology	පත්‍රය வினாத்தாள் Paper	I	පැය மணித்தியாலம் Hours	2

Instructions:

- *Answer **all** the questions.*
- *Write your **Index Number** in the space provided in the answer sheet.*
- *Instructions are also given on the back of the answer sheet. Follow those carefully.*
- *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) **in accordance with the instructions given on the back of the answer sheet.***
- *Use of calculators is **not allowed.***

1. Which of the following statements regarding data validation checks is true?
   (1) Data type check is used to check the length of a text field.
   (2) Range check is commonly performed on non-numeric data.
   (3) A presence check ensures that a field is not left blank.
   (4) It is considered a key step in the data life cycle.
   (5) Data validation checks are not necessary to maintain data integrity.

2. What is the computing method where multiple tasks are processed simultaneously using multiple processors?
   (1) Grid Computing
   (2) Cloud Computing
   (3) Distance Computing
   (4) Mobile Communication
   (5) Parallel Computing

3. Which of the following is the correct statement about firmware?
   (1) It can run without any hardware device.
   (2) It stores essential data in the computer's main memory.
   (3) It is stored in secondary storage.
   (4) It can only be found on computers
   (5) It is essential for the computer's booting process.

4. Which of the following statements is **incorrect**?
   (1) Microprocessors were introduced in the third-generation computers.
   (2) Magnetic drums were used as memory in the first-generation computers.
   (3) Assembly language was introduced in the second generation.
   (4) Integrated circuits reduced size and increased reliability.
   (5) Very Large-Scale Integration technology was used in the fourth-generation computers.

5. Consider the following statements about Von Neumann architecture:
   A - Instructions and data are stored in the same memory.
   B - It uses separate buses for instructions and data.
   C - Execution of instructions follows a sequential order.
   Which of the above are correct?
   (1) A only
   (2) A and B only
   (3) A and C only
   (4) B and C only
   (5) All A, B and C

6. Which of the following is **not** a characteristic of Synchronous Dynamic Random Access Memory (SDRAM)?
   (1) It stores data in flip-flops instead of capacitors.
   (2) It is synchronized with the system clock.
   (3) It requires periodic data refresh.
   (4) It is faster than conventional DRAM.
   (5) It is suitable for main memory.

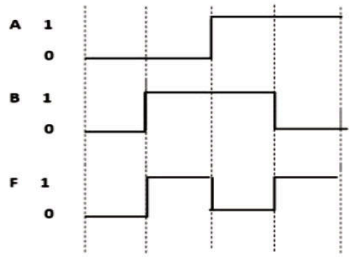
7. Which of the following representations are equivalent to the binary number 10111101.110_2?
   A. 189.75 B. 275.3_8 C. $BD.C_{16}$
   (1) A only (2) B only (3) A and C only
   (4) B and C only (5) All A,B and C

8. When performing a bitwise operation on two binary numbers, the answer was 1110110. Which of the following answers is the correct bitwise operation?
   (1) 110110 AND 1010001 (2) 1000110 XOR 1010010
   (3) 10010110 AND 1010011 (4) 1011010 OR 1011110
   (5) 1110110 OR 1010000

9. Consider the following statements about character encoding systems:
   A - ASCII is compatible with modern encodings.
   B - ASCII contains more characters than EBCDIC.
   C - BCD is commonly used in digital systems such as digital clocks and calculators.
   Which of the above are correct?
   (1) A only (2) A and C only (3) B only
   (4) B and C only (5) A and B only

10. The sum of -74 and +108 in 8-bit 2's complement is,
    (1) 10000010 (2) 00100010 (3) 11111110
    (4) 11011010 (5) 01011010

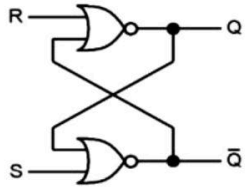
11. Below is a timing diagram of a logic circuit with inputs A and B and output F. Which of the following logic expressions produces the same output as F?



(1) $F = \overline{\bar{A}B + A\bar{B}}$
(2) $F = \overline{AB.\bar{A}\bar{B}}$
(3) $F = \overline{(A+\bar{B})}.\overline{A+B}$
(4) $F = \overline{(\bar{A}+B).(A+\bar{B})}$
(5) $F = \overline{(\bar{A}.\bar{B})(\overline{AB})}$

12. Consider the following SR latch circuit designed using NOR gates. What are the expected values of a, b, c and d according to the values given in the table below for the S and R inputs of the circuit?.

S	R	Q	$\bar{Q}$
1	0	a	b
0	0	c	d



(1) a=1,b=0; c=1,d=0 (2) a=1,b=0; c=0,d=1 (3) a=0,b=0; c=0,d=1
(4) a=1,b=1; c=1,d=1 (5) a=0,b=1; c=1,d=1

13. Which sequence of operating system generations is correct with respect to historical evolution of Operating Systems (OS)?
    (1) Batch → Real-Time → Time-Sharing → Distributed
    (2) No OS → Batch → Time-Sharing → Multi-programmed Batch
    (3) Single-User → Multi-User → Network → Cloud
    (4) Batch → No OS → Time-Sharing → Multi-programmed Batch
    (5) No OS → Batch → Multi-programmed Batch → Time-Sharing

14. Consider the following statements related to operating systems.
    A - High throughput, high turnaround time, and low response time increase the efficiency of a system.
    B - In non-preemptive scheduling, running → ready transition is not possible.
    C - The long-term scheduler decides which processes in memory are to be executed.
    D - The mid-term scheduler temporarily removes processes from main memory and places them on secondary memory or vice versa.

    Which of the above are correct?

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

15. In a multitasking environment, several applications send print jobs simultaneously. The OS uses a device driver to handle this. What is the device driver's role in this situation?
    (1) It stores all print jobs permanently, allowing access to the printer.
    (2) It directly executes application code.
    (3) It replaces the need for print spooling.
    (4) It helps coordinate communication between the OS and the printer.
    (5) It increases the printer's hardware speed while sharing with several applications.

16. Consider the following statements about IPv4 address subnetting:
    A - Class C network can have 3 subnets of 64 hosts each.
    B - Subnet mask of the IP address 125.54.2.100/20 is 255.255.240.0
    C - Class C network can have 6 subnets of 30 hosts each.
    D - The network address of the host IP address 10.16.3.65/23 is 10.16.3.0.

    Which of the above are true?

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

17. Which of the following is correct about Media Access Control protocols?
    (1) In Pure ALOHA, devices transmit only at the beginning of fixed time intervals to avoid collisions.
    (2) Slotted ALOHA allows a device to send data immediately without waiting for any specific transmission period.
    (3) In CSMA/CD, devices transmit data without checking whether the communication channel is busy or idle.
    (4) CSMA/CD is mainly designed for wireless communication systems where collision detection is impossible.
    (5) Slotted ALOHA reduces the probability of collisions by allowing transmissions only at synchronized intervals.

18. Alice sends the word **"NETWORK"** from her computer to Bob using a TCP connection, letter by letter as separate packets. Due to network delays, the packets arrive at Bob in this order: N → T → E → W → O → R → K.
Which of the following is correct regarding the above delivery?
(1) TCP delivers letters immediately as they arrive, so Bob sees "NETWORK."
(2) TCP discards out-of-order letters and requests retransmission for missing ones.
(3) TCP reorders them according to sequence numbers before delivering them to Bob.
(4) TCP merges the letters randomly and sends an acknowledgment for the entire word.
(5) TCP sends the letters to UDP for faster delivery and ordering.

19. A student downloads a "free game" from an unknown website. The game installs successfully and appears to work normally. However, in the background, it secretly collects personal data and sends it to an attacker.
Which type of malware is described in the scenario?
(1) Virus (2) Trojan Horse (3) Worm
(4) Adware (5) Ransomware

20. Consider the following IP address:

172.18.11.40 /27

Which of the following are valid host addresses on this subnet?

A - 172.18.11.42
B - 172.18.11.32
C - 172.18.11.57
D - 172.18.11.63
E - 172.18.11.0

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

21. A student sends a message from her laptop using a web browser. The message travels through several layers before reaching the destination server. During this transmission:
- the data is divided into segments
- logical addressing is added
- the data is converted into electrical or optical signals

Which of the following sequences correctly represents the layers of the TCP/IP model, respectively, for each of the above actions?
(1) Transport → Network → Physical (2) Network → Internet → Transport
(3) Network Access → Transport → Internet (4) Transport → Internet → Network Access
(5) Transport → Network Access → Physical

22. A company wants to reduce risk by implementing a new system in a limited part of the organization before deploying it throughout the entire organization. The most suitable deployment method is,

(1) Parallel deployment (2) Direct deployment (3) Pilot deployment
(4) Phased deployment (5) Agile deployment

23. Which of the following statements is correct about requirement analysis?

A - Requirement analysis helps to identify critical success factors.
B - It helps to identify conflicts between requirements.
C - Requirement analysis identifies functional and non-functional requirements.

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

24. Match the descriptions labelled D1–D4 with the appropriate information systems labelled A–E.

Description	Information System
D1 - Systems used to collect, store, analyze, and display location-based	A - Management Information Systems (MIS)
D2 - Systems that integrate and manage an organization's business processes through a centralized system.	B - Geographical Information Systems (GIS)
D3 - Systems that provide summarized information from organizational data to support managerial decision-making	C - Enterprise Resource Planning Systems (ERP)
D4 - Systems that use a knowledge base and inference rules to provide solutions or recommendations similar to a human expert.	D - Expert Systems (ES)

Choose the correct answer:

(1) D1–B, D2–A, D3–D, D4–C
(2) D1–B, D2–C, D3–A, D4–D
(3) D1–C, D2–B, D3–D, D4–A
(4) D1–A, D2–D, D3–C, D4–B
(5) D1–A, D2–C, D3–B, D4–D

25. Four different system development situations are given below.

A - A project needs to be developed quickly with frequent user feedback.
B - A software company develops a high-risk medical system and continuously evaluates risks at each stage before proceeding.
C - A government project requires strict documentation, clear stages, and no changes once a phase is completed.
D - A project with frequent changes, high user involvement, and delivery of small working increments until the final product meets all user requirements.

Select the correct combination of development models suitable for each of the above situations.

(1)	A–Spiral	B–Agile	C–Waterfall	D–RAD
(2)	A–RAD	B–Spiral	C–Waterfall	D–Agile
(3)	A–Agile	B–Waterfall	C–RAD	D–Spiral
(4)	A–RAD	B–Spiral	C–Agile	D–Waterfall
(5)	A–Waterfall	B–RAD	C–Spiral	D–Agile

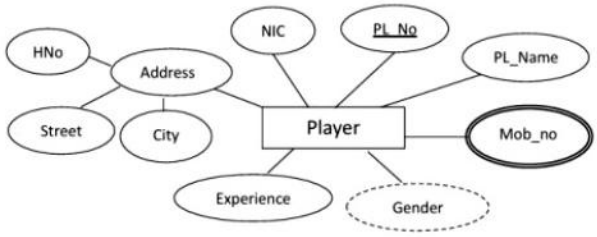
26. A software company develops an online banking system. The testing process includes the following stages.

Testing Types	Activities
A - Integration Testing	P - Modules are combined and tested
B - Unit Testing	Q - The whole system is tested as one
C - Acceptance Testing	R - Selected users test the system and give feedback before release
D - System Testing	S - Individual modules are tested separately

Which of the following shows the correct match between two columns and arrange in testing types in the order they carry out?

(1) B–S → A–P → D–Q → C–R
(2) A–P → B–S → D–Q → C–R
(3) B–P → A–S → D–Q → C–R
(4) B–S → D–Q → A–P → C–R
(5) A–S → B–P → D–Q → C–R

- Below is a diagram showing the attributes of a player. Use this diagram for questions 27 and 28.



27. The attribute not represented in this diagram is
    (1) Derived Attribute.
    (2) Multi-valued Attribute.
    (3) Composite Attribute.
    (4) Descriptive Attribute.
    (5) Primary Key Attribute.

28. The correct relational schema for Player Entity is,
    (1) Player (PL_No, PL_Name, Address, HNo, Street, City, NIC, Experience, Mob_no)
    (2) Player (NIC, PL_No, PL_Name, HNo, Street, City, Experience, Gender)
    (3) Player (PL_No, PL_Name, HNo, Street, City, NIC, Experience)
    (4) Player (NIC, PL_No, PL_Name, HNo, Street, City, , Experience, Mob_no, Gender)
    (5) Player (PL_No, PL_Name, Address, HNo, Street, City, NIC, Experience, Mob_no, Gender)

- The following is a part of two database tables relating to employees and sections of a certain organization. Use the tables to answer questions 29 and 30.

Employee

Empno	Empname	Gender	Address	Join_Date	Sectcode
E01	Samantha	F	Kalutara	22.03.17	H1
E02	Kamala	M	Wadduwa	23.06.01	P1
E03	Gamini	M	Dehiwala	23.09.13	M1
E04	Jayamini	F	Panadura	24.01.01	P1
E05	Wijesinghe	M	Colombo	24.08.28	H1

Section

Sectcode	SectName
H1	HR
P1	Production
M1	Marketing

29. Which of the following statements about the above tables are true?
    A - The relationship between Employee and Section is 1:1.
    B - Both tables are in third normal form.
    C - Referential integrity is maintained between the Employee and Section tables through Sectcode.
    (1) A only
    (2) B only
    (3) A and B only
    (4) B and C only
    (5) A and C only

30. The correct SQL statement to output the Employee number, name, and Join_Date of male employees working in the HR department is,
    (1) SELECT Empno, Empname, Join_Date FROM Employee, Section WHERE SectName= HR AND Gender= M;
    (2) SELECT Empno AND Empname AND Join_Date FROM Employee, Section WHERE SectName= 'HR' AND Gender= 'M';
    (3) SELECT Empno, Empname, Join_Date FROM Employee WHERE Sectcode = 'H1' AND Gender= 'M';
    (4) SELECT Empno, Empname, Join_Date FROM Employee WHERE SectName= 'HR' Gender= 'M' Section.Sectcode = Employee. Sectcode;
    (5) SELECT Empno, Empname, Join_Date FROM Employee, Section WHERE SectName= 'HR' AND Gender= 'M' AND Section.Sectcode = Employee. Sectcode;

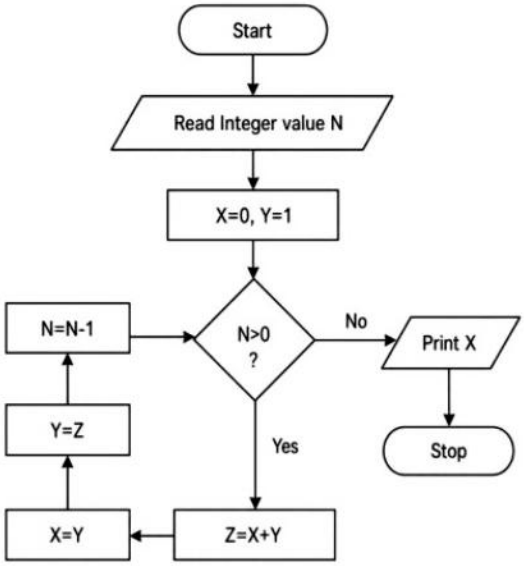
31. Which of the following correctly describes the generalization of the EER diagram?

(1) Dividing a superclass into specific subclasses.
(2) Merging several lower-level entities into a higher-level entity.
(3) Removing or modifying redundant attributes.
(4) Combining several data values to produce a single result.
(5) Assigning primary keys and foreign keys.

- Consider below flowchart to answer the questions 32 and 33

32. If the user inputs 4 for N at the start, what will be the final printed output of X?

(1) 2
(2) 3
(3) 4
(4) 5
(5) 6



33. What happens to the program if the user inputs -2 for N?

(1) The program never initiates
(2) The program enters an infinite loop.
(3) The program outputs -2.
(4) The program bypasses the loop entirely and outputs 0.
(5) The program crashes due to a negative number error.

34. Which of the following expressions are valid?

A. 5 + "5"
B. "5" + "5"
C. 5 * "5"
D. "5" - "2"
E. 10 / 2

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

35. Evaluate the expression below. What is the printed value?

```
result = 2 + 3 * 4 ** 2 - 1
print(result)
```

(1) 25 (2) 49 (3) 53 (4) 97 (5) 100

36. Which code segment will print a square pattern as given below?

```
**
**
```

A.
```
for i in range(2):
    for j in range(2):
        print("*", end="")
    print()
```

B.
```
for i in range(2):
    print("*" * 2)
```

C.
```
for i in range(2):
    for j in range(3):
        print("*")
```

D.
```
for i in range(2):
    for j in range(i):
        print("*")
```

E.
```
print("**\n**")
```

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

37. Which scenario best represents the use of the imperative programming paradigm?

(1) A program uses reusable functions without modifying data.
(2) A program defines a sequence of steps to calculate the total of student marks.
(3) A program reacts to user clicks in a graphical interface.
(4) A program models real-world entities as interacting objects.
(5) A program describes the desired output without specifying steps.

38. What is a key characteristic of a compiler?

(1) Slower execution speed than the interpreter.
(2) Requires full translation before any execution can begin.
(3) Cannot detect errors of the source code.
(4) Executes the source code line by line.
(5) No output file generated from the source code.

39. Select the correct HTML code segment to insert the audio file "song" to a web page

(1) <audio src="song.mp3"></audio>
(2) song.mp3
(3) <Source src="song.mp3"></source>
(4) <audio><source src="song.mp3"></audio>
(5) <audio source src="song.mp3"></audio>

40. Consider below statements regarding HTML,CSS and PHP .

A - PHP is a server-side scripting language.
B - CSS is used to make a HTML document more visually appealing.
C - The output of an HTML document can be formatted using spaces, tabs, and blank lines.
Select correct statement/statements from the above.

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

41. What is the output of the below PHP program?

```
<?php
$f = 'ICT';
$b = $f;
$b = "I Like $b";
echo $b;
echo $f;
?>
```

(1) Error
(2) I Like ICT ICT
(3) I Like ICT I Like ICT
(4) I Like ICTICT
(5) No output

42. Select the correct HTML code segment to render the below output.

Day	Subjects	
	Morning	**Evening**
Monday	HTML	Python
Tuesday	CSS	Database
Wednesday	Project Practice	

(1)	<table border="1"> <tr><td rowspan="2">Day</td><td colspan="2">Subjects</td></tr> <tr><th>Morning</th><th>Evening</th></tr> <tr><td>Monday</td><td>HTML</td><td>Python</td></tr> <tr><td>Tuesday</td><td>CSS</td><td>Database</td></tr> <tr><td>Wednesday</td><td colspan="2">Project Practice</td></tr> </table>
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- Consider the below HTML code segment to answer questions 43 to 44

```
<head><style>
.highlight { background-color: red; }
#special{ text-decoration: underline; }
</style></head><body>
<p class="highlight">Paragraph One</p>
<p>Paragraph Two</p>
<p class="highlight" id="special">Paragraph Three</p>
<h2 class="highlight" id=”special”>Heading One</h2></body>
```

43. Which element contents will have a red background?
    (1) Paragraph One, Paragraph Three, Heading One
    (2) Paragraph Two,Paragraph Three,Heading One
    (3) Paragraph One,Paragraph Two,Heading One
    (4) Paragraph One,Heading One
    (5) Paragraph One,Paragraph Three

44. Which element contents will have an underline?
    (1) Paragraph One, Heading One
    (2) Paragraph Three
    (3) Heading One
    (4) Paragraph Three, Heading One
    (5) Paragraph One, Paragraph Three

45. In an IoT-based smart agriculture system, soil moisture sensors send data to a central system that automatically turns on irrigation when needed.

    What is the main advantage of this system?
    (1) It reduces human intervention.
    (2) It eliminates the need for internet connectivity
    (3) It prevents all hardware failures
    (4) It increases water usage unnecessarily
    (5) It stores data without using it

46. A student connects an LED to a microcontroller GND (ground) pin through a 220Ω resistor. When the program sets the pin to HIGH, the LED turns on. What is the PRIMARY purpose of the 220Ω resistor?

    (1) To increase the brightness of the LED
    (2) To limit the current flowing through the LED
    (3) To act as a switch for the LED
    (4) To store energy for the LED
    (5) To filter noise from the power supply

47. Which of the following best describes the term group purchasing?

    (1) A single buyer purchasing large quantities from multiple sellers.
    (2) A seller offering discounts to individual buyers.
    (3) An e-marketplace where sellers and buyers negotiate online.
    (4) Multiple sellers offer prices to a buyer.
    (5) Multiple buyers combining orders to secure discounts from sellers.

48. Which of the following is **not** an advantage of e-transactions?

(1) They allow businesses to reach a global market quickly.
(2) They reduce transaction costs compared to traditional methods.
(3) They provide convenience and 24/7 accessibility for consumers.
(4) They eliminate all risks of fraud and security breaches.
(5) They enable faster communication between buyers and sellers.

49. Which of the following are examples of man-machine coexistence?

A. A human surgeon performing an operation assisted by a robotic arm.
B. Two robots assembling a car together without human involvement.
C. A factory worker using an exoskeleton suit to lift heavy objects safely.

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

50. Consider the following Artificial Intelligence concepts and descriptions:

A. Emotional / affective computing : A system that detects user emotions from text and adapts its responses accordingly.
B. Quantum computing : A computer program that learns from data to make predictions without explicit programming.
C. Bio-inspired computing : A type of computing inspired by the structure and function of the human brain.

Which of the above are correct?

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