

# Gampaha Education Zone

## Second Term Evaluation - 2025

Grade

13

Information and Communication Technology

Time

2 hours

නම/NAME:-.....

### Part I

- Answer the all questions . Choose the correct answer.

- Which of the following is an example of discrete quantitative data?
  - (1). Number of cars in a parking lot
  - (2). Height of students in a class
  - (3). Temperature in degrees Celsius
  - (4). Time taken to complete a task
  - (5). Daily rainfall values
- What is the main purpose of maintaining data about data?
  - (1). To describe and provide context for data
  - (2). To encrypt data for security
  - (3). To permanently delete data
  - (4). To make data inaccessible
  - (5). To maintain efficient data storage
- What is an example of a Platform service among the services provided by cloud computing?
  - (1) Google Docs
  - (2) Microsoft Azure App Services
  - (3) Dropbox
  - (4) Gmail
  - (5) Windows 10
- What is the purpose of setting the boot order in the Basic Input Output System (BIOS)?
  - (1). Increasing the computer's clock speed
  - (2). Selecting the boot drive (HDD, USB, CD/DVD) containing the operating system.
  - (3). Updating the BIOS
  - (4). Increasing the memory (RAM)
  - (5). Setting the BIOS password
- Which of the following is the fastest USB?
  - (1) USB 2.0
  - (2) USB 3.0
  - (3) USB 3.1 Gen 1
  - (4) USB 3.2 Gen 2x2
  - (5) USB-C
- What is the main function of the CMOS battery on the motherboard?
  - (1). Storing BIOS settings
  - (2). Providing power to the central processing unit
  - (3). Improving the performance of the graphics processing unit (Graphics Processing Unit / GPU)
  - (4). Increasing the speed of random access memory (RAM)
  - (5). Controlling the rotation speed of the hard drive.

7. What is the reason for installing L1 cache in the CPU?

- (1). To increase network access
- (2). To reduce the distance between the CPU and memory
- (3). To save power
- (4). To increase the size of the computer
- (5). Both 2) and 3)

8. What is the octal number equivalent to decimal 43?

- (1)  $47_8$
- (2)  $51_8$
- (3)  $53_8$
- (4)  $55_8$
- (5)  $57_8$

9. What is the binary value of the octal number  $47_8$ ?

- (1)  $100011_2$
- (2)  $100101_2$
- (3)  $100111_2$
- (4)  $101001_2$
- (5)  $101011_2$

10. Which of the following is correct?

- I.  $255 = 11111111_2$
- II.  $3A7_{16} = 935$
- III.  $128 = 80_{16}$

- (1) I only.
- (2) I and II only.
- (3) I and III only.
- (4) II and III only.
- (5) All I, II and III

11. The address of an instruction is represented as hexadecimal F6. What is the address in decimal form?

- (1) 365
- (2) 366
- (3) 246
- (4) 245
- (5) 189

12. What is the decimal value of the 10001010, which is in two's complement of eight bits?

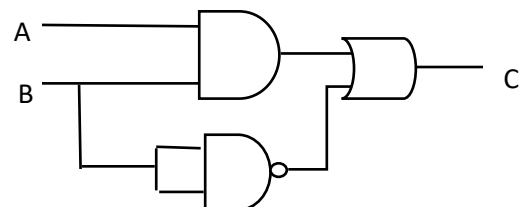
- (1) -138
- (2) 118
- (3) -10
- (4) -118
- (5) 166

13. XOR The number of NOR gates required to make an XOR gate is

- (1) 2
- (2) 4
- (3) 5
- (4) 6
- (5) 7

14. The output(C) of the logic circuit given below with inputs A and B. Which of the following answers represents the values for A, B and C respectively?

- (1) A =1, B =1 and C = 0
- (2) A =0, B =0 and C = 0
- (3) A =0, B =0 and C = 1
- (4) A =0, B =1 and C = 1
- (5) It is impossible to say about A, B and C.



15. What is the result of simplifying the following Boolean expression?

$$\overline{x}y (\overline{x} + y) (y + \overline{y})$$

- (1)  $\overline{x}$
- (2)  $\overline{y}$
- (3)  $y$
- (4) 1
- (5)  $xy$

16. What is the simplified Boolean expression can be obtained from the below Karnaugh map

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

		BC			
		00	01	11	10
A	0	0	0	1	1
	1	1	1	1	1

17. The transition of an operation from one state to another, either due to a software/hardware interruption or even under normal circumstances without such an interruption, is called .....

- (1) Context Switching
- (2) Blocking
- (3) Mapping
- (4) Swapping
- (5) Termination

18. which of the following situations does internal fragmentation occur in memory?

- (1). When the memory unit is smaller than the requirement.
- (2). When the memory unit is larger than requirement.
- (3). When the memory is completely full.
- (4). When a program terminates.
- (5). When the CPU usage is low

19. The information that is not included in the Process Control Block (PCB) is?

- (1). Process identification number
- (2). Input and output of the Process
- (3). Process status information
- (4). Memory management information
- (5). Program counter

20. Which of the following is correct about an analog signal?

- A - Represented by a square wave.
- B - Consists of a continuous range of values.
- C - Uses discrete values to represent information.

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

21. What is the main function of Dynamic Host Configuration Protocol (DHCP)?

- (1). Automatically assign IP addresses
- (2). Data encryption
- (3). Updating router tables
- (4). Domain Name Server (DNS) resolution
- (5). Identifying MAC addresses

22. Why has the usage of parity bits decreased?

- (1). Because of the availability of more effective error detection methods (CRC, Checksum)
- (2). Because it reduces data transmission speed
- (3). Because of the decline in network technology
- (4). Because encryption is difficult
- (5). None of above

23. A Layer 2 switch is based on which OSI layer?

- (1) Physical Layer
- (2) Data Link Layer
- (3) Network Layer
- (4) Transport Layer
- (5) Application Layer

24. Consider the IP address 192.168.1.100/26. The number of bits required to identify the network and the number of host bits are, respectively:

- (1) 6, 2  
(2) 2, 26

- (3) 2, 6  
(4) 26, 2

- (5) 26, 6

25. What is the main purpose of a digital signature?

- (1). Increase the speed of data transmission  
(2). Verify the integrity and identity of the message  
(3). Compress data  
(4). Verification of IP address  
(5). Verification of MAC address

**A school uses an attendance recording system to record the daily attendance of students. Consider the following job description related to that system and answer questions 26 and 27.**

The class teachers collect the relevant attendance data for each class and enter it into the system. The system then stores the data in the student attendance database. The school administration (such as the principal, vice principal or office staff) can generate reports related to student attendance based on the data. Parents can also request attendance summaries for their children, which are provided by the system. The system stores the attendance date, present/absence status and special notes (if any) related to the attendance of each student as data. The system can record the attendance of 1000 students in a maximum of five seconds at peak usage and the system is fully operational anytime between 7.30 am and 1.30 pm, Monday to Friday.

26. Which of the following statements is not correct regarding the functional and non-functional requirements of the above system?

- (1). The system shall record the attendance of at least 1000 students within a period of five seconds at its maximum utilization. - This is a functional requirement.  
(2). The system shall be able to generate relevant attendance records for each student - This is a functional requirement.  
(3). The system shall provide attendance summaries of students to parents upon request - This is a functional requirement.  
(4). The system shall operate from 7:30 AM to 1:30 PM, Monday through Friday - This is a non-functional requirement.  
(5). The system shall allow teachers to update student records - This is a functional requirement.

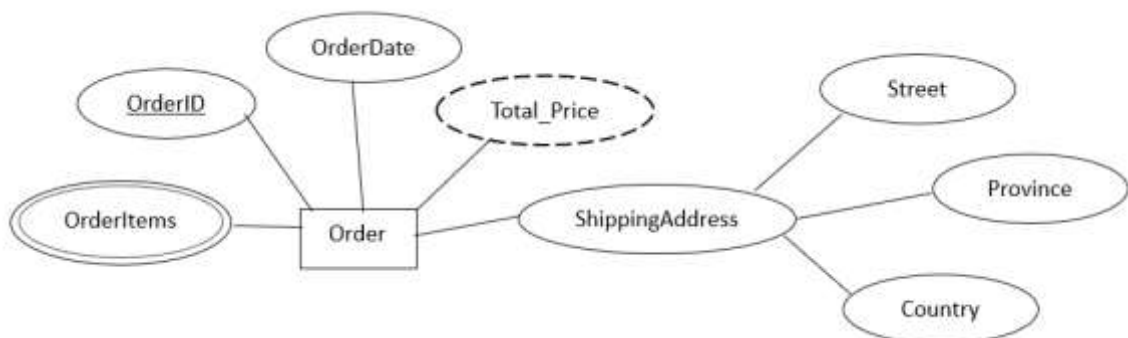
27. If a data flow diagram is constructed for the above system, which of the following is a scenario where correct data flow can occur between its processes, external entities, and data stores?

- (1). School Administration → Attendance Database  
(2). Attendance Database → Class Teacher  
(3). School Administration → Parents  
(4). Attendance Database → Generating Attendance Summary Reports  
(5). Parents → Generating Attendance Summary Reports

28. Which of the following best describes a “feasibility study” for creating a system?

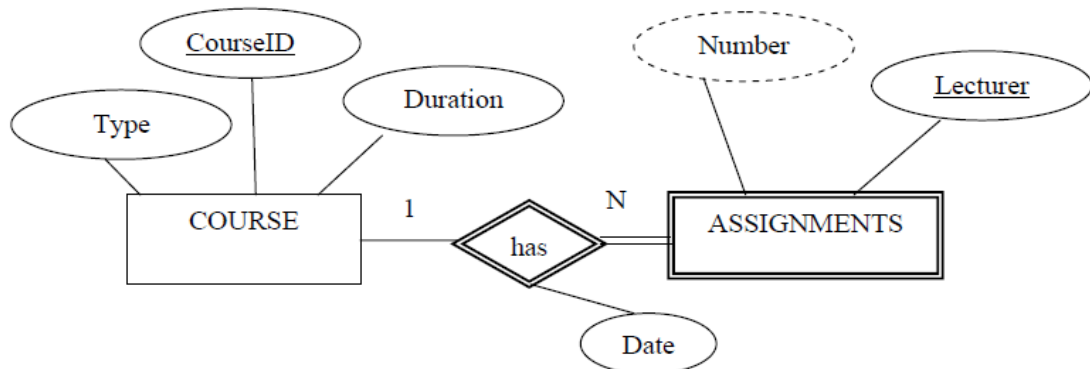
- (1). Feasibility studies focus primarily on verifying through testing that the final system meets user requirements.  
(2). Feasibility studies are conducted to analyze whether the system design follows appropriate technical standards and coding practices.  
(3). Feasibility studies determine whether the proposed system is realistic and valuable in terms of cost, time, technical capability, and organizational needs.  
(4). Feasibility studies ensure that users are fully trained and ready to operate the system after implementation.  
(5). Feasibility studies are used to separate system processes and convert them into data flow diagrams for better system design.

29. Which of the following is an example of parallel implementation when implementing systems in a school environment?
- (1). All classes in the school will be switched from the existing manual attendance system to a new digital application on the same day.
  - (2). The school will test a new library management system, first in the secondary school section and then expand it to the primary and advanced levels.
  - (3). Before the full switchover, the school will use both the old and new student grading systems for one semester to compare results.
  - (4). The student learning management system will be introduced to the school in phases over several weeks - first providing learning aids, then conducting assessments and monthly/term tests, and finally measuring student progress.
  - (5). The school will introduce a new timetable system in phases for the advanced level science section only - first creating teacher and classroom timetables, and secondly setting timetables for laboratories.
30. In an e-commerce application, when a customer makes a purchase, several workflows are involved; namely, the ordered item is deducted from inventory, the corresponding payment is processed, and a confirmation email is sent to the customer.
- Which of the following test cases represents checking whether these actions occur correctly and sequentially when the customer completes a purchase of a product?
- (1). Unit Testing
  - (2). Acceptance Testing
  - (3). Integrated Testing
  - (4). Black Box Testing
  - (5). System Testing
31. Among the following are some of the advantages of off-the-shelf packages:
- (1). May contain features that the user organization does not need.
  - (2). May lack features designed to meet the specific needs of the user organization.
  - (3). May be difficult to integrate with the user organization's existing systems and functions.
  - (4). May be purchased and implemented quickly by the user organization based on its needs.
  - (5). May require the user organization to rely on the manufacturer for updates and bug fixes.
32. The statement that is incorrect regarding the characteristics of the following Entity is:



- (1). OrderID is a key attribute that uniquely identifies each order.
- (2). OrderDate is a simple attribute that stores data about the date each order was placed.
- (3). Total\_Price is a derived attribute that derives its value from other attributes.
- (4). OrderItem is a descriptive attribute that describes all the data included in each order.
- (5). ShippingAddress is a composite attribute that stores data about the location where the order should be delivered.

33. Consider the given ER diagram.



Which of the following table lists most accurately translates this note into the linked form?

- (1) COURSE (CourseID, Duration, Type), ASSIGNMENT (Lecturer, Number)
- (2) COURSE(CourseID, Duration, Type), ASSIGNMENT(CourseID, Lecturer, Number, Date)
- (3) COURSE(CourseID, Duration, Type, Lecturer), ASSIGNMENT (Lecturer, Number, Date)
- (4) COURSE(CourseID, Duration, Type, Date), ASSIGNMENT (Lecturer, Number)
- (5) COURSE(CourseID, Duration, Type), ASSIGNMENT(Lecturer, Number)  
COURSE\_ASSIGNMENT(CourseID, Lecturer, Date)

Below are some tables extracted from a database related to an airline company. Using these tables, answer questions 34 to 36.

**Booking**

PassengerID	BookingID	BookingDate	TotalFare	Status
P101	B001	2025-07-01	250	Confirmed
P102	B001	2025-07-02	750	Confirmed
P101	B002	2025-07-03	150	Confirmed
P103	B001	2025-07-04	1200	Confirmed
P104	B001	2025-07-05	900	Pending

**Flight\_Booking**

FlightID	PassengerID	BookingID	SeatNumber	Class
F001	P101	B001	12A	Economy
F002	P102	B001	23C	Business
F001	P101	B002	14B	Economy
F003	P103	B001	01A	First
F003	P104	B001	11C	Economy

**Flight**

FlightID	Origin	Destination	DepartureTime	ArrivalTime
F001	Colombo	Male	2025-08-10 8:00:00	2025-08-10 9:30:00
F002	London	New York	2025-08-10 14:00:00	2025-08-10 17:00:00
F003	Dubai	Sydney	2025-08-11 1:00:00	2025-08-11 22:00:00
F004	Doha	Paris	2025-08-11 10:00:00	2025-08-11 16:30:00
F005	Hong Kong	Los Angeles	2025-08-12 9:00:00	2025-08-12 7:00:00

**Passenger**

PassengerID	FirstName	LastName	Nationality
P101	John	Doe	American
P102	Jane	Smith	British
P103	Fatima	Ahmed	Emirati
P104	Chen	Li	Chinese
P105	Maria	Garcia	Spanish

34. The correct statement/statements regarding the following relational tables is,

- A- One Passenger can make multiple bookings.
- B- There can be multiple bookings for one Flight.
- C- Only one Passenger can book one Flight.

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

35. Which of the following lists the primary keys for the Booking and Flight\_Booking tables, respectively?

- |  |   |
|--|---|
| (1) <b>Booking:</b> BookingID              | <b>Flight_Booking:</b> FlightID, PassengerID            |
| (2) <b>Booking:</b> BookingID, PassengerID | <b>Flight_Booking:</b> FlightID, BookingID, PassengerID |
| (3) <b>Booking:</b> BookingID              | <b>Flight_Booking:</b> FlightID, BookingID              |
| (4) <b>Booking:</b> BookingID, PassengerID | <b>Flight_Booking:</b> FlightID, BookingID              |
| (5) <b>Booking:</b> PassengerID            | <b>Flight_Booking:</b> FlightID, PassengerID            |

36. What will be the output after executing the following SQL statement on the above tables?

```
SELECT P.FirstName, P.LastName, FB.SeatNumber
FROM Passenger P, Booking B, Flight_Booking FB, Flight F
WHERE P.PassengerID = B.PassengerID AND B.Status = 'Confirmed' AND B.PassengerID = FB.PassengerID AND
B.BookingID = FB.BookingID AND FB.FlightID = F.FlightID AND F.Destination = 'New York';
```

(1)

FirstName	LastName	SeatNumber
John	Doe	12A

(2)

FirstName	LastName	SeatNumber
Fatima	Ahmed	01A

(3)

FirstName	LastName	SeatNumber
Jane	Smith	23C

(4)

FirstName	LastName	SeatNumber
Chen	Li	27K

(5)

FirstName	LastName	SeatNumber
John	Doe	14B

Consider the following Project\_Employee\_Skill relationship table. Use that table to answer questions 37 and 38.

ProjectID	ProjectName	EmployeeID	EmployeeName	EmployeeRole	Skill	SkillLevel
P001	Alpha Launch	E101	Alice Brown	Developer	Java	Expert
P001	Alpha Launch	E101	Alice Brown	Developer	SQL	Advanced
P001	Alpha Launch	E102	Bob White	Tester	Manual Test	Intermediate
P002	Beta Rollout	E101	Alice Brown	Developer	Java	Expert
P002	Beta Rollout	E103	Carol Green	Manager	Project Mgmt	Expert
P002	Beta Rollout	E103	Carol Green	Manager	Leadership	Advanced
P003	Gamma Fix	E102	Bob White	Tester	Automation	Intermediate

37. Based on the Project\_Employee\_Skill table provided above, which of the following functional dependencies is not a correct dependency?

- (1) ProjectID → ProjectName
- (2) EmployeeID → EmployeeName, EmployeeRole
- (3) {EmployeeID, Skill} → SkillLevel
- (4) Skill → SkillLevel
- (5) {ProjectID, EmployeeID, Skill} → ProjectName, EmployeeName, EmployeeRole, SkillLevel

38. Considering the Project\_Employee\_Skill table and its data above, what standard type does this relationship currently exist in?

- (1) 0<sup>th</sup> Normal Form
- (2) 1<sup>st</sup> Normal Form
- (3) 2<sup>nd</sup> Normal Form
- (4) 3<sup>rd</sup> Normal Form
- (5) There is no standardization requirement.

39. If the output value of X is 7 after executing the following Python code, what is the appropriate Python arithmetic operator for "?"?

```
x=17 ? 6*2-3
print(x)
```

- |       |        |       |
|-------|--------|-------|
| (1) + | (3) /  | (5) % |
| (2) * | (4) // |       |

40. What will be the output of executing the following Python code if **a=2** and **b=10**?

```
a = int(input('Enter the number a:'))
b = int(input('Enter the number b:'))

if a < b:
    a, b = b, a
d = a - b

while d>3:
    print(d)
    d = d - b
```

- |         |           |              |
|---------|-----------|--------------|
| (1) 4   | (3) 6,4,2 | (5) 10,8,6,4 |
| (2) 4,2 | (4) 8,6,4 |              |

41. If the output after executing the following Python code is '**ec Bit**', then the String Slicing part that can be applied to the **A** space is,

```
a_string = "My Tec Bits"
sub_string = a_string[...A...]
print(sub_string)
```

- |         |           |          |
|---------|-----------|----------|
| (1) : 4 | (3) 4: 9  | (5) :: 4 |
| (2) 4 : | (4) 4: -1 |          |

42. The output after executing the following Python function might be,

```
def additem(numbers):
    numbers+=[2]

mylist=[12,16,18,20,24]
additem(mylist)
print(len(mylist))
```

- |       |        |        |
|-------|--------|--------|
| (1) 2 | (3) 7  | (5) 26 |
| (2) 6 | (4) 14 |        |

43. The output after executing the following Python code might be,

```
a = [0, 1, 2, 3]
for a[-1] in a:
    print(a[-1],end="")
```

- |       |          |          |
|-------|----------|----------|
| (1) 0 | (3) 012  | (5) 1233 |
| (2) 3 | (4) 0122 |          |



44. A perfect number is a number such that when all the numbers that are proper divisors of that number (excluding that number) are added together, the total sum is equal to that number itself. 6 is such a perfect number. That is, the factors of 6 are 1, 2, and 3, and  $1+2+3=6$ . The following Python program is written to select perfect numbers from a given list of numbers.

```
numbers = [6, 8, 28, 15, 496]
perfects = []

for num in numbers:
    total = 0
    for i in range(1, __P__):
        if num % i == 0:
            total += __Q__
    if total == __R__:
        perfects.append(__S__)

print(perfects)
```

If the above Python program examines each number in the list numbers and stores the perfect numbers in it in a new list, the most accurate choice of terms for the labels **P**, **Q**, **R**, and **S** is,

- (1) num, i, num, num
- (2) num + 1, num, i, num
- (3) num, i, num, perfects
- (4) num + 1, i, num, num
- (5) num - 1, i, i, i

45. Consider the following statements regarding the scope of variables associated with Python functions.

- A. A variable declared inside a function using the global keyword can be accessed only inside that function.
- B. A local variable can be accessed from outside the function in which it is defined.
- C. A variable declared outside all functions can be accessed inside a function using the global keyword.

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

46. Which of the following is not an element that should be considered when creating a web page layout?

- (1). Make it easy for users to access and interact.
- (2). Be designed to fit different screen sizes and types of devices.
- (3). Clearly divide and organize page content according to priorities.
- (4). Use the necessary back-end programming if connecting to databases.
- (5). Provide the necessary facilities to navigate within and outside the page.

47. What HTML tag is used to separate a section of an HTML document and display the elements in that section?

- (1) <dir>
- (2) <div>
- (3) <dbo>
- (4) <br>
- (5) <cite>

48. What is the output when the following HTML code is rendered?

```
<ul>
  <li><strong>HTML</strong> - Structure of the web</li>
  <li><em>CSS</em> - Styling the web</li>
  <li><u>JavaScript</u> - Adds interactivity</li>
</ul>
```

(1)

- **HTML** - Structure of the web
- *CSS* - Styling the web
- JavaScript - Adds interactivity

(2)

1. **HTML** - Structure of the web
2. *CSS* - Styling the web
3. **JavaScript** - Adds interactivity

(3)

- **HTML** - Structure of the web
- **CSS** - Styling the web
- JavaScript - Adds interactivity

(4)

- **HTML** - Structure of the web
- **CSS** - Styling the web
- JavaScript - Adds interactivity

(5)

1. **HTML** - Structure of the web
2. *CSS* - Styling the web
3. JavaScript - Adds interactivity

49. The correct HTML encoding for opening the link <https://www.example.com> in a new tab is,

- (1) <a href="https://www.example.com" newtab>Visit Example</a>
- (2) <a src="https://www.example.com" target="\_blank">Visit Example</a>
- (3) <a href="https://www.example.com" target="\_blank">Visit Example</a>
- (4) <link href="https://www.example.com" target="new">Visit Example</link>
- (5) <a href="https://www.example.com">Visit Example</a>

50. Consider the following HTML and CSS code.

HTML

```
<p class="highlight">This is important text.</p>
```

CSS

```
.highlight {
  color: red;
  font-weight: bold;
}
```

Which of the following statements is true regarding the output obtained when the above code is rendered by a web browser?

- (1). The highlighted text will appear in bold.
- (2). The paragraph font will appear in red and bold.
- (3). The paragraph font will appear in bold and the background will be red.
- (4). The paragraph will be highlighted in red.
- (5). The paragraph font will not show any style change.