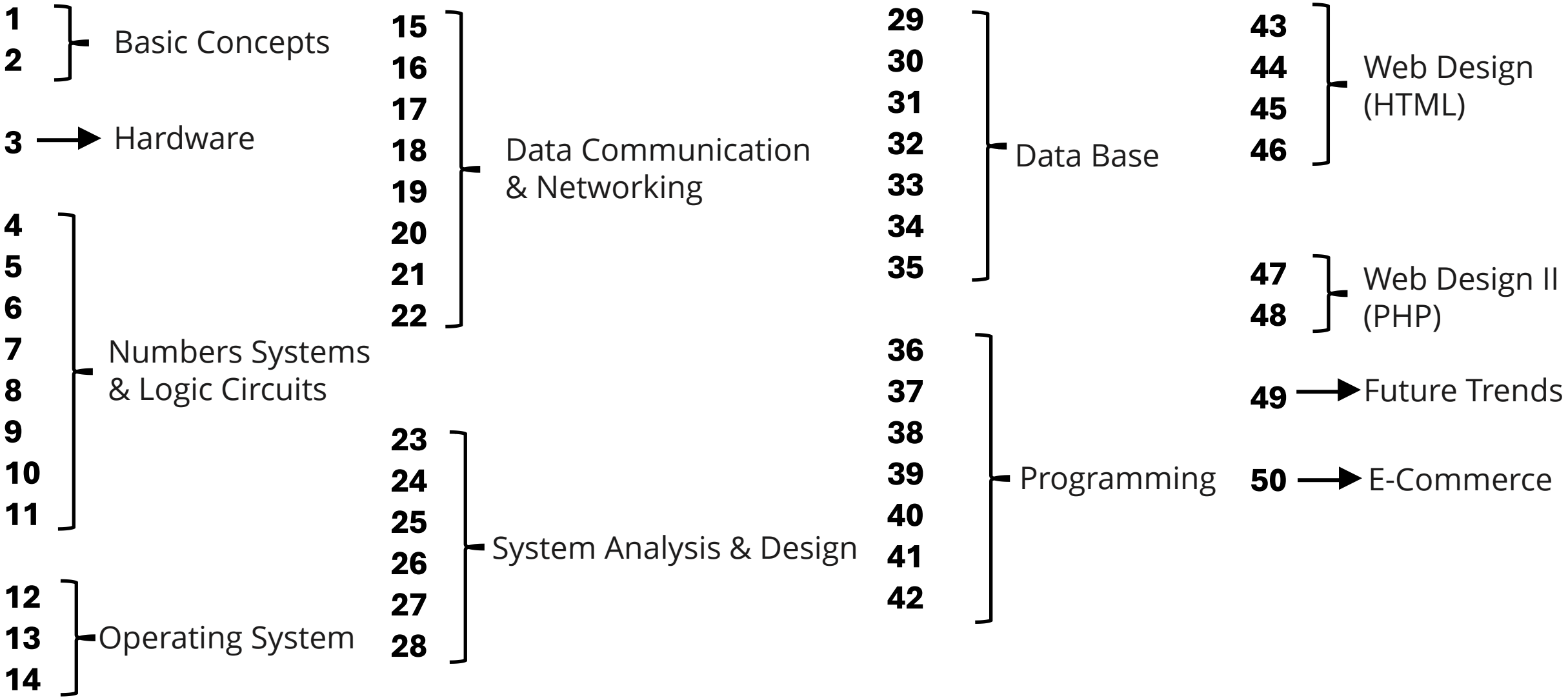
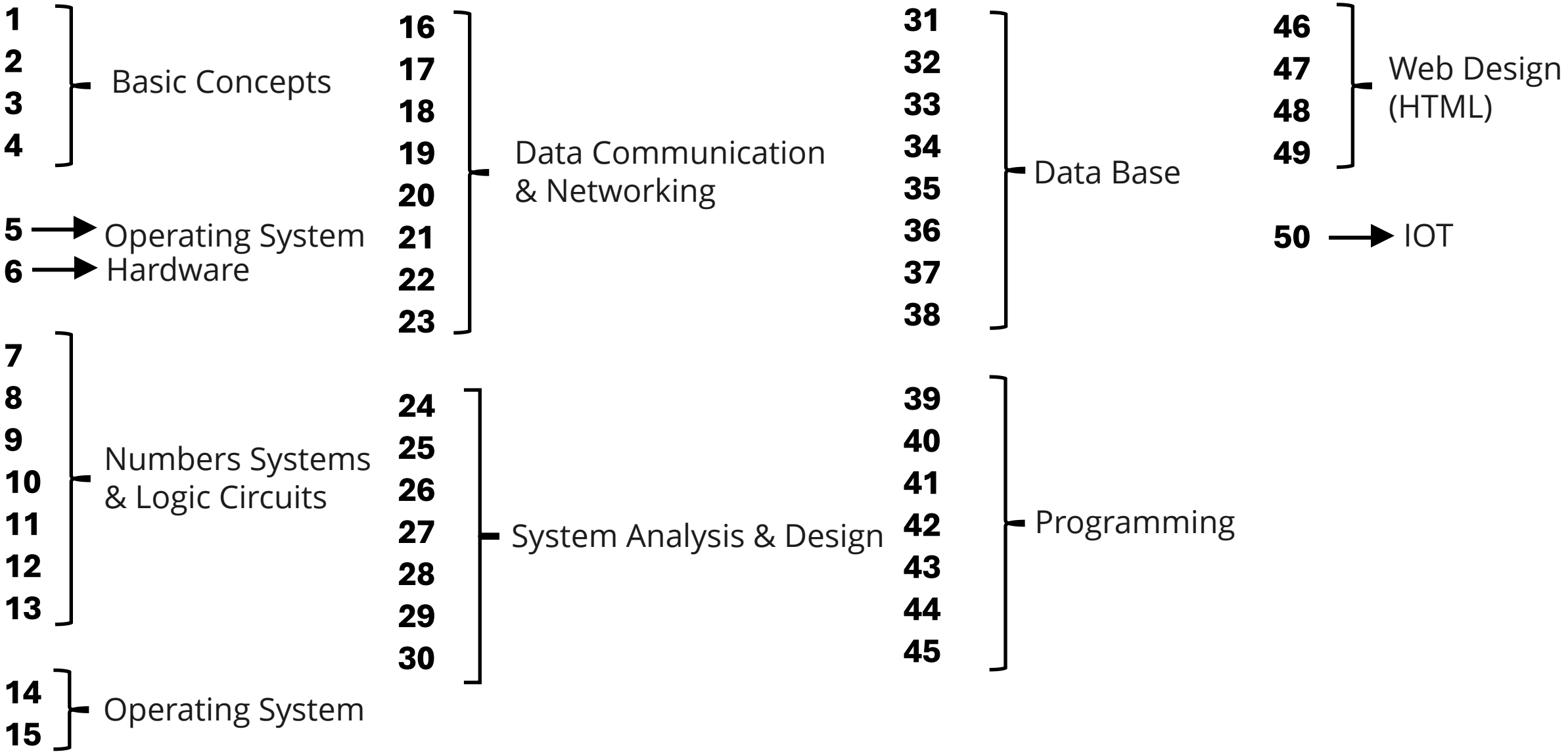
2024 MCQ SEMINAR

2022 Analysis



2023 Analysis



2022/2023
Basic Concepts of I.C.T.
MCQ

2022

1. Which of the following statements is/are correct?

A – *Firmware* is a computer program that is usually embedded in the volatile memory of a computer.

B – A *printer driver* is an example for an application software.

C – *Linux* is an example for a system software.

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

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

2023

1. Which of the following statements are correct?

A – Word processors and spreadsheet software belong to the category of *utility software*.

B – A *compiler* is an example for a program translator.

C – It is illegal to use a proprietary software without obtaining its license.

(1) *A* only (2) *B* only (3) *C* only

(4) *A* and *B* only (5) *B* and *C* only

2022

2. Which of the following require(s) *real-time* processing?

A – generating monthly electricity bills of customers
B – updating the bank account balance of a customer when she/he withdraws money from an ATM
C – updating the stock balance in a store upon successful completion of each transaction

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

2023

2. Personal information of students and their exam marks are input to a Student Information System. Marks for a subject range from 0 to 100. A student has to study a collection of compulsory and optional subjects and sit for the relevant examinations.
Which of the following are suitable data validations for the above system?

A – A *presence check* for the marks of all subjects taken/not taken by the student
B – A *range check* to check whether an input exam mark is within the range 0 and 100
C – A *data type check* to ensure that the input made for the telephone number of the student contains only digits

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

2023

3. The existing book management system in a school library is used with a computer, a monitor, a keyboard and a mouse. The school management wants to minimize the time taken presently for book lending/returning. Which of the following is most suitable for this purpose?

(1) Using a digitizer
(2) Using an external hard disk
(3) Using a touch screen
(4) Using a magnetic stripe reader
(5) Using bar code technology

4. Listed below are some phrases about the internal operation of three printers:

A – a moving print head striking an ink ribbon against the paper
B – toner attracting to what is printed on a cylinder which is then transferred to paper
C – nozzles spraying ink onto paper

Which of the following correctly matches *dot matrix, inkjet* and *laser* printers to the above phrases?

(1) *A* – dot matrix, *B* – laser, *C* – inkjet
(2) *A* – dot matrix, *B* – inkjet, *C* – laser
(3) *A* – inkjet, *B* – dot matrix, *C* – laser
(4) *A* – laser, *B* – dot matrix, *C* – inkjet
(5) *A* – laser, *B* – inkjet, *C* – dot matrix

2022/2023
Introduction to Computer MCQ

2022

3. Which of the following lists a computer memory hierarchy in the **descending order** of access speed?
   (1) hard disk, registers, L2 cache, L1 cache, main memory
   (2) main memory, L1 cache, registers, L2 cache, hard disk
   (3) registers, main memory, hard disk, L1 cache, L2 cache
   (4) registers, L1 cache, L2 cache, main memory, hard disk
   (5) L1 cache, L2 cache, registers, main memory, hard disk

2023

6. A program runs fastest when the data it requires are in the
   (1) hard disk.
   (2) L1 cache.
   (3) L2 cache.
   (4) magnetic tape.
   (5) main memory.

2022/2023
Number Systems & Logic Gates MCQ

2022

5. What is the correct binary equivalent of decimal 12.75_{10}?

(1) 1011.01_2 (2) 1011.11_2 (3) 1100.00_2 (4) 1100.11_2 (5) 1100.01_2

2023

7. What is the correct binary equivalent of decimal 13.125_{10}?

(1) 1100.001 (2) 1100.100 (3) 1101.001 (4) 1101.100 (5) 1101.101

2022

8. A particular command can be used to output a text file in its binary format.

Assume a file contains the following text:

0 Waste!

Referring the **Important notes** (i) and (ii) given below, select the correct output that will result when the said command is run on that file.

(1) 00110000 00100000 01010111 01100001 01110011 01110100 01100101 00001010
(2) 00110000 01010111 01100001 01110011 01110100 01100101 00100001 00001010
(3) 00110000 00100000 01010111 01100001 01110011 01110100 01100101 00100001 00001010
(4) 00110000 00100000 01110111 01100001 01110011 01110100 01100101 00100001 00001010
(5) 00110000 00100000 01010111 01100001 01110011 01110100 01100101 00100000 00001010

Important notes:

(i) The file ends with a LINE FEED character.

(ii) Some selected rows from the 7-bit ASCII table are given below:

Character	Binary
(LINE FEED)	0001010
(SPACE)	0100000
!	0100001
0	0110000
W	1010111

Character	Binary
a	1100001
e	1100101
s	1110011
t	1110100
w	1110111

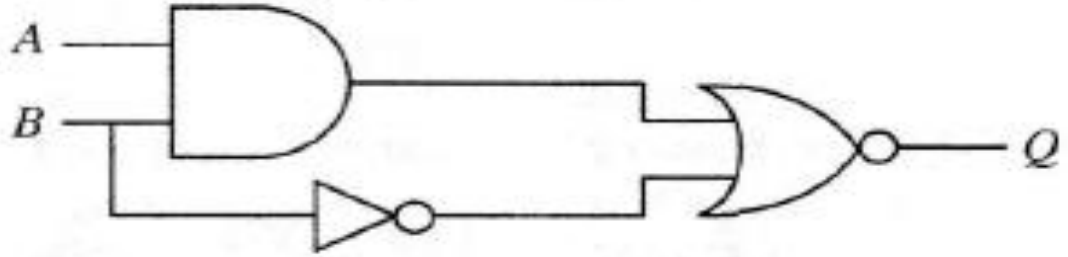
2023

10. A document contains 2048 characters including spaces and line-breaks. How many bits are needed to encode this document in ASCII also using the parity bits?

(1) 2048 (2) 2048 × 2 (3) 2048 × 7 (4) 2048 × 8 (5) 2048 / 8

2022

9. Consider the following logic circuit:

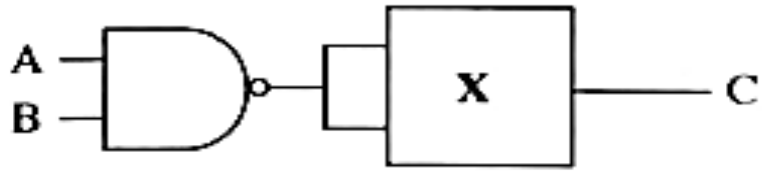


When $B=1$, what would **definitely** be the output at Q?

(1) A (2) $\overline{A}$ (3) B (4) $\overline{B}$ (5) 0

2023

12. Consider the following logic circuit in which **X** indicates a two-input logic gate.



Which of the following should **X** be so that when A = 0 and B = 1, the output C would be 0?

I – a NAND gate
II – a NOR gate
III – an XOR gate

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

2022

10. Simplified Boolean expressions help to obtain simpler circuits.
Which of the following is a simplified form of $X + \overline{X}Y$?

(1) X (2) Y (3) XY (4) $\overline{X}Y$ (5) $X + Y$

2023

13. Which of the following is the simplified form of the Boolean expression $X(\overline{X}+Y)$?

(1) X (2) Y (3) XY (4) $\overline{X}$Y (5) X+Y

2022

4. Which of the following gives the correct results of bit-wise AND and bit-wise OR operations between the two binary numbers 01010100_2 and 11101001_2 respectively?

(1) 01000000_2, 11111101_2
(2) 00000010_2, 10111001_2
(3) 10111101_2, 11001010_2
(4) 11000000_2, 00101100_2
(5) 11111101_2, 01010011_2

2023

8. Which of the following are equivalent to octal 674_8?

A – $110\ 111\ 100_2$
B – 444_{10}
C – $2BC_{16}$

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

2022

11. Consider the following truth table:

A	B	C	Z
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0

What is the correct Karnaugh map for the above truth table?

(1)

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

(2)

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

(3)

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

(4)

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

(5)

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

2022/2023
Operating Systems
MCQ

2022

12. A program in execution in a computer is called a *process*. Such a process transits between several states during its lifetime. Which of the following correctly represents a possible state transition sequence of a process?

(1) New → Ready → Running → Waiting → Ready → Running → Terminated

(2) New → Ready → Waiting → Running → Waiting → Running → Terminated

(3) New → Running → Ready → Waiting → Running → Ready → Terminated

(4) New → Running → Waiting → Ready → Waiting → Running → Terminated

(5) New → Waiting → Running → Ready → Running → Ready → Terminated

2023

14. A program in execution in a computer is called a *process*. Which of the following is a possible state transition sequence of such a process?

(1) New → Ready → Running → Terminated

(2) New → Blocked → Terminated

(3) New → Ready → Blocked → Running → Terminated

(4) New → Running → Ready → Running → Terminated

(5) New → Blocked → Ready → Running → Terminated

2022

13. Which of the following is **not** a task of a computer operating system?

(1) selecting a memory *frame* for a *page* of a process
(2) maintaining a list of free memory *frames*
(3) maintaining a *page table* for each process
(4) monitoring the usage of binary files on a hard disk
(5) swapping processes between main memory and hard disk

2023

15. Amara powers on the computer and starts a spreadsheet application. Then he also opens a web browser. Which of the following are possible execution sequences on the processor of his computer?

(1) BIOS → OS → spreadsheet process → OS → web browser process → OS → ...
(2) BIOS → spreadsheet process → OS → web browser process → OS → spreadsheet process → ...
(3) BIOS → spreadsheet process → web browser process → OS → ...
(4) BIOS → OS → spreadsheet process → web browser process → OS → ...
(5) BIOS → OS → spreadsheet process → web browser process → spreadsheet process → web browser process → ...

2022

14. The *block size* of a disk is 4KB. A portion of its File Allocation Table (FAT) at a particular time is shown below. The portion shown indicates the blocks of the *average.py* file as well.

FAT

200	202
201	200
202	–1
203	201
204	205

Notes: **I.** The last block of a file is indicated by –1.

II. The *directory entry* of a file contains the block number of the first block of the file

Which of the following gives the *directory entry* for the *average.py* file and the disk space allocated for the average.*py* file respectively?

(1) 200, 12KB (2) 200, 16KB (3) 200, 20KB (4) 203, 16KB (5) 203, 20KB

2022/2023
Data Communication & Networking
MCQ

2022

16. Which of the following statements is/are correct about MAC and IPv4 addresses?

A – MAC addresses are 32 bits in length and are used in the network layer.
B – MAC addresses are 48 bits in length and are used in the datalink layer.
C – IPv4 addresses are 32 bits in length and are used in the network layer.

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

2023

20. Select the answer containing the correct replacements for Ⓐ and Ⓑ in the following paragraph:

In the Internet, a host is identified by its IP address. In IPv4, each IP address consists of _____Ⓐ_____ bits to identify a host. The newer version named IPv6 consists of _____Ⓑ_____ bits in an IP address.

(1) Ⓐ = 32, Ⓑ = 48
(2) Ⓐ = 32, Ⓑ = 128
(3) Ⓐ = 48, Ⓑ = 32
(4) Ⓐ = 48, Ⓑ = 128
(5) Ⓐ = 128, Ⓑ = 32

2022

18. An organization with the assigned IP address block 193.1.1.0/24 needs to define **eight** subnets. Each subnet should provide for more than 25 IP addresses. Which of the following correctly lists the number of bits needed to identify the given network, the total number of bits needed to identify the subnets, and the number of bits needed to assign unique IP addresses for this requirement, respectively?

(1) 24, 3, 5 (2) 24, 5, 3 (3) 24, 27, 5 (4) 27, 3, 5 (5) 27, 30, 2

2023

22. Which of the following statements regarding IP addresses are correct?

A – In class C networks, first octet value ranges from 192 through 223.
B – IPv4 can assign addresses up to 4 million devices.
C – 192.168.0.0 – 192.168.255.255 is a private IP address range.

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

2022

15. Which of the following are *Transport Layer* protocols of the TCP/IP stack?

A – Transmission Control Protocol (TCP)
B – User Datagram Protocol (UDP)
C – File Transfer Protocol (FTP)
D – Internet Protocol (IP)

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

2023

21. Which of the following statements regarding DNS (Domain Name System) are correct?

A – It maps web addresses to IP addresses and vice versa.
B – HTTP uses the services provided by the DNS.
C – DNS maintains a hierarchy of domain names.

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

2022

22. Match each of the given data communication protocols labelled from P to T to the corresponding descriptions labelled from 1 to 5.

Protocol	Description
P – Hyper Text Transfer Protocol (HTTP)	1 – provides directory lookup service for given web addresses and URLs
Q – Transmission Control Protocol (TCP)	2 – provides a very reliable data transfer service
R – Domain Name System (DNS) Protocol	3 – used in the world wide web
S – Internet Protocol (IP)	4 – provides a connection-less transport service
T – User Datagram Protocol (UDP)	5 – handles unique addressing of hosts in the Internet

(1) P – 2, Q – 4, R – 1, S – 5, T – 3
(2) P – 2, Q – 5, R – 4, S – 1, T – 3
(3) P – 3, Q – 2, R – 1, S – 5, T – 4
(4) P – 3, Q – 4, R – 5, S – 1, T – 2
(5) P – 4, Q – 2, R – 3, S – 1, T – 5

2022

21. Which of the following statements is/are correct?

A – A *digital signature* ensures the authenticity of a message.
B – In *asymmetric key encryption*, different keys are used for encryption and decryption.
C – The encryption process transforms plaintext to ciphertext.

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

2023

23. If Suresh wants to send an encrypted message to be read only by Amara using *asymmetric key encryption*, then

(1) Suresh should encrypt his message using his public key.
(2) Suresh should encrypt his message using his private key.
(3) Suresh should encrypt his message using Amara's public key.
(4) Suresh should encrypt his message using Amara's private key.
(5) Suresh should encrypt his message using both private and public keys of Amara.

2022

26. *Non-functional requirements* specify quality attributes of a system. Which of the following is an example for a *non-functional requirement*?

(1) the email system should allow users to attach files
(2) each page of the website must load within 4 seconds
(3) administrator of the E-commerce website should be able to view a list of customers
(4) a user of the online banking system should be able to view the last transactions
(5) the ATM machine should allow users to print a receipt

2023

25. Which of the following is a *non-functional requirement* for an e-commerce site?

(1) Being able to add items to the shopping cart
(2) Being able to make payments online
(3) Being able to view the items based on item category
(4) Each item to be shown with a small image and a description
(5) The e-commerce site to be accessible through popular web browsers

2022/2023
System Analysis & Design
MCQ

2022

28. Which of the following statements is correct regarding *software testing*?

(1) Integration testing is usually carried out before unit testing.

(2) Black-box testing techniques are usually used in acceptance testing.

(3) White box testing examines the behaviour of a software based only on the inputs to a system.

(4) Unit testing examines the entire system's functionality as a whole.

(5) System testing is usually carried out after the user acceptance testing.

2023

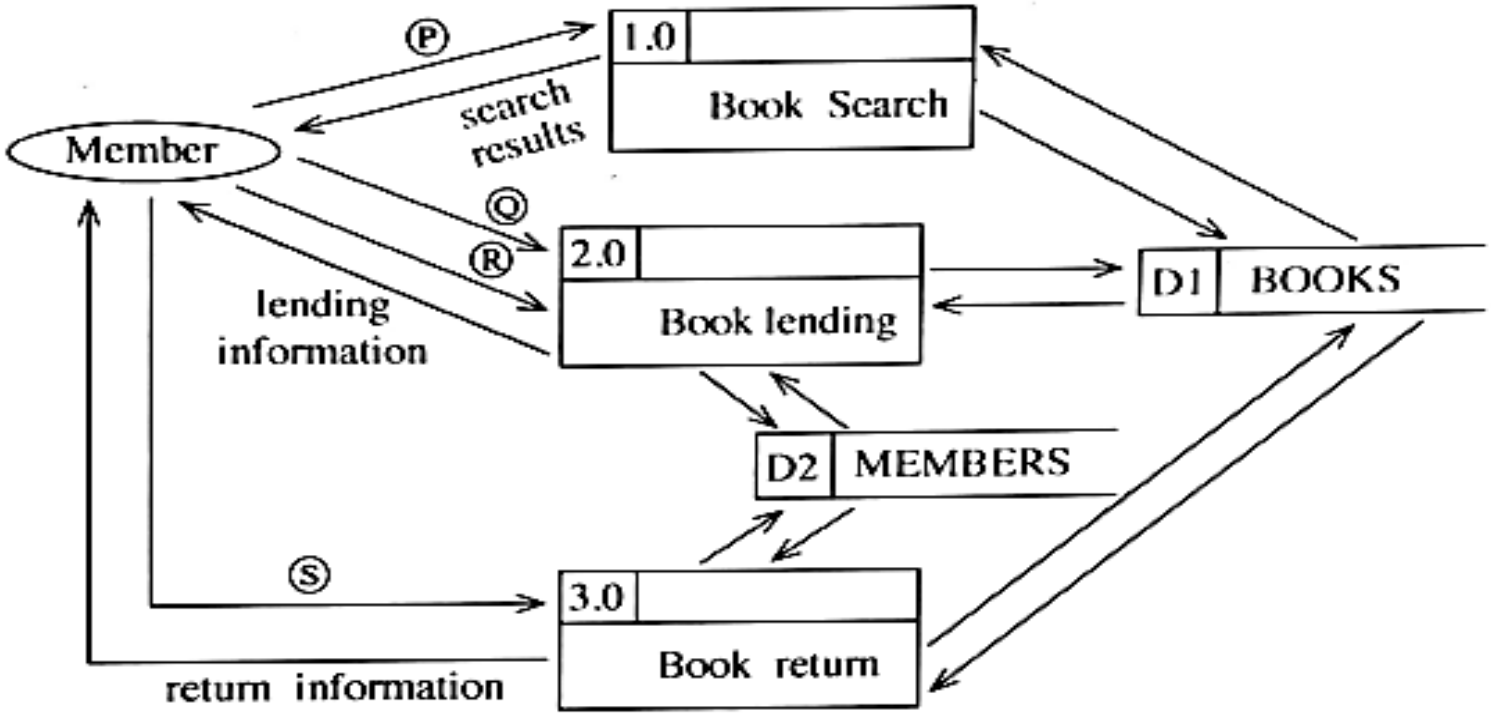
26. During which of the following is an application tested by its developers in a setting that closely resembles its intended deployment hardware, software, and network configuration environment?

(1) Acceptance testing (2) Integration testing (3) Parallel testing

(4) System testing (5) Unit testing

2023

28. Select the option which includes most suitable replacements for the labels Ⓟ to Ⓢ in the following Data Flow Diagram of a library management system.



(1) Ⓟ – keyword, Ⓠ – member ID, Ⓡ – book details, Ⓢ – book details

(2) Ⓟ – keyword, Ⓠ – keyword, Ⓡ – book details, Ⓢ – member ID

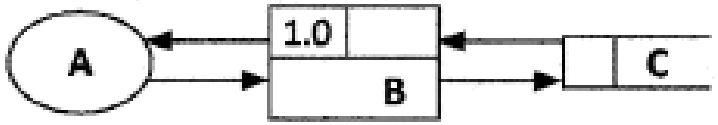
(3) Ⓟ – keyword, Ⓠ – keyword, Ⓡ – book details, Ⓢ – keyword

(4) Ⓟ – member ID, Ⓠ – keyword, Ⓡ – member ID, Ⓢ – member ID

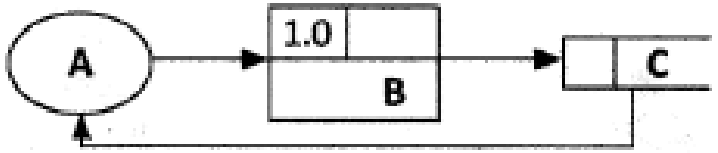
(5) Ⓟ – member ID, Ⓠ – member ID, Ⓡ – book details, Ⓢ – book details

2022

27. Which of the following Data Flow Diagrams (DFDs) is correct with respect to the rules of data flow modelling? (Note: A – an external entity, B – a process, C – a data store)

(1) 

(2) 

(3) 

(4) 

(5) 

2022

Database Management MCQ

2022

29. Consider the following relational schema:

Student (StudentId, StudentName, Address, Gender, DateOfBirth)

Study (StudentId, SubjectId, Grade)

Subject (SubjectId, SubjectName)

Which of the following is the most suitable *Entity Relationship (ER)* diagram to correctly represent the relationship between **Student** and **Subject** entities?

Note: In the ER diagrams, the entities are drawn without attributes.

(1) 

(2) 

(3) 

(4) 

(5) 

2022

- The tables which are partially extracted from a database used in an information system developed for **a shop are shown below. Answer the questions from 30 to 32 using those tables.**

Customer

CusId	Fname	Lname	Location
C001	Saman	Perera	Dehiwala
C002	Kalum	Gamage	Galle
C003	Shiromi	Silva	Galle
C004	Kalum	Perera	Kandy

Product

ProdId	Name
PR001	Refrigerator
PB401	Blender
PM025	Mobile Phone
PP009	Inkjet Printer

Order

OrderId	CusId	OrderDate	SellerId
A001	C002	2022-07-14	S001
A002	C003	2022-07-14	S001
A003	C002	2022-07-18	S002
A004	C004	2022-07-20	S002

Order_Product

OrderId	ProdId
A003	PR001
A001	PR001
A002	PB401
A003	PM025
A004	PP009

30. Which of the following shows the most suitable *primary keys* for **Order** and **Order_Product** relations?

(1) **Order**: CusId, **Order_Product**: OrderId
(2) **Order**: OrderId, **Order_Product**: OrderId
(3) **Order**: OrderId, **Order_Product**: OrderId + ProdId
(4) **Order**: CusId + SellerId, **Order_Product**: ProdId
(5) **Order**: OrderId + CusId, **Order_Product**: OrderId

31. What will be the output after executing the following SQL statement?

```
SELECT Customer.Fname, Customer.Lname, Order.OrderId
FROM Customer INNER JOIN Order ON Customer.CusId = Order.CusId
WHERE Customer.Location="Galle";
```

(1)

Fname	Lname	OrderId
Kalum	Gamage	A001
Kalum	Gamage	A003
Shiromi	Silva	A002

(2)

Fname	Lname	OrderId
Kalum	Gamage	A004
Kalum	Perera	A001
Kalum	Gamage	A003
Shiromi	Silva	A002

(3)

Fname	Lname	OrderId
Kalum	Gamage	A001
Kalum	Perera	A003
Shiromi	Silva	A002

(4)

Lname	Fname	OrderId
Gamage	Kalum	A001
Gamage	Kalum	A003
Silva	Shiromi	A002

(5)

Fname	Lname	OrderId
Kalum	Gamage	A001
Shiromi	Silva	A002

32. Which of the following is correct regarding the **Order** relation?

(1) CusId attribute uniquely identifies each tuple in the relation.
(2) The relation is in First Normal Form (1NF).
(3) The relation is in Second Normal Form (2NF).
(4) Orders of each customer are handled by a unique salesperson.
(5) The relation consists of a composite primary key.

2022

33. Which of the following statements is/are correct regarding the *normalization* concept?

A – In first normal form, atomic attributes are **removed** from a relation.
B – In second normal form, partial dependency of attributes on the primary key are **removed**.
C – In third normal form, transitive dependency of attributes are **removed**.

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

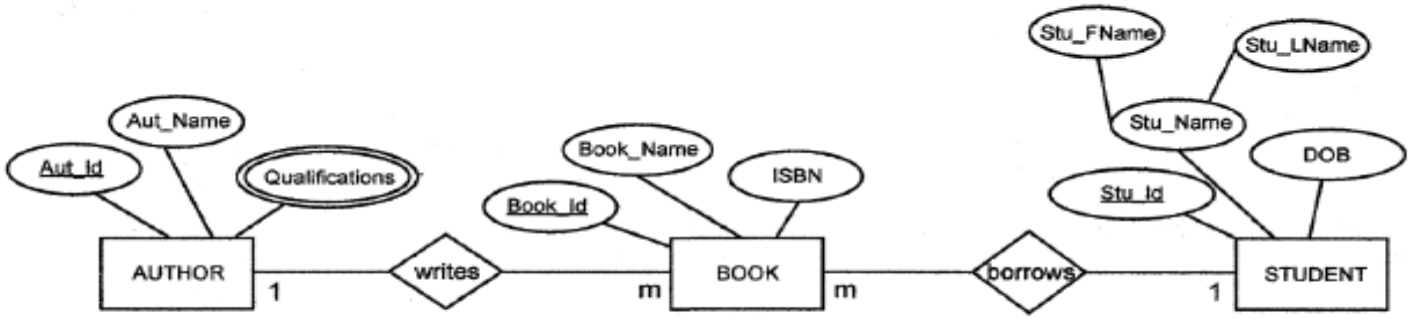
34. Which of the following statements is/are correct regarding *Entity Relationship (ER) modelling*?

A – A weak entity is dependent on another entity.
B – A derived attribute is represented as an attribute in a relation.
C – An entity can contain a multi-value attribute and a composite attribute at the same time.

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

2022

35. The following ER diagram represents a scenario of students borrowing books from a library. Which of the following gives the most suitable relation list for the given ER diagram?



(1) BOOK (Book_Id, Book_Name, ISBN, Stu_Id, Aut_Id)
STUDENT (Stu_Id, Stu_FName, Stu_LName, DOB)
AUTHOR (Aut_Id, Aut_Name)
AUTHOR_QUALIFICATION (Aut_Id, Qualifications)

(2) BOOK (Book_Id, Book_Name, ISBN)
STUDENT (Stu_Id, Stu_FName, Stu_LName, DOB)
AUTHOR (Aut_Id, Aut_Name)
AUTHOR_QUALIFICATION (Aut_Id, Qualifications)

(3) BOOK (Book_Id, Book_Name, ISBN, Stu_Id, Aut_Id)
STUDENT (Stu_Id, Stu_FName, Stu_LName, DOB)
AUTHOR (Aut_Id, Aut_Name, Qualifications)

(4) BOOK (Book_Id, Book_Name, ISBN, Stu_Id, Aut_Id)
STUDENT (Stu_Id, Stu_Name, DOB)
AUTHOR (Aut_Id, Aut_Name)
AUTHOR_QUALIFICATION (Aut_Id, Qualifications)

(5) BOOK (Book_Id, Book_Name, ISBN, Stu_Id, Aut_Id)
STUDENT (Stu_Id, Stu_Name, DOB)
AUTHOR (Aut_Id, Aut_Name)
AUTHOR_QUALIFICATION (Aut_Id, Qualifications)
BORROW (Aut_Id, Book_Id)
WRITE (Aut_Id, Book_Id)

2023

Database Management MCQ

2023

31. Match the given **entity attributes** labelled from **A** to **D** to the corresponding **descriptions** labelled from **1** to **4**.

Entity attribute	
A	Composite attribute
B	Simple attribute
C	Multivalued attribute
D	Derived attribute

Description	
1	an attribute that cannot be broken down into smaller components
2	an attribute that can be broken down into component parts
3	an attribute whose values can be calculated from related attribute values
4	an attribute that may take more than one value

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

32. Consider the following **Employee** Relation:

Employee_ID	Employee_Name	Salary
1001	John	60000
1002	Hari	55000
1003	Mahas	70000
1004	Sarath	65000
1005	Rajah	75000

What would be the output of the following SQL query when it is applied on the **Employee** relation?

```
SELECT COUNT(*)
FROM Employee
WHERE Salary > ANY (SELECT Salary FROM Employee);
```

(1) 3 (2) 4 (3) 5 (4) 6 (5) 10

2023

33. Consider the given SQL statements to create two database tables named **LENDING** and **STUDENT**:

```
CREATE TABLE LENDING
 (BOOK_NUMBER VARCHAR(10) NOTNULL,
  BOOK_NAME VARCHAR(20) NOTNULL,
  AUTHOR VARCHAR(25) NOTNULL,
  DESCRIPTION VARCHAR(75) NOTNULL,
  ISSUED_DATE DATE,
  STUDENT_ID CHAR(5) NOTNULL,
  PRIMARY KEY(BOOK_NUMBER));

CREATE TABLE STUDENT
 (STUDENT_ID CHAR(5) NOTNULL,
  NAME VARCHAR(25) NOTNULL,
  BIRTHDAY DATE NOTNULL,
  ADDRESS VARCHAR(25) NOTNULL,
  PROVINCE CHAR(10),
  PRIMARY KEY(STUDENT_ID));
```

Which of the following statements are correct?

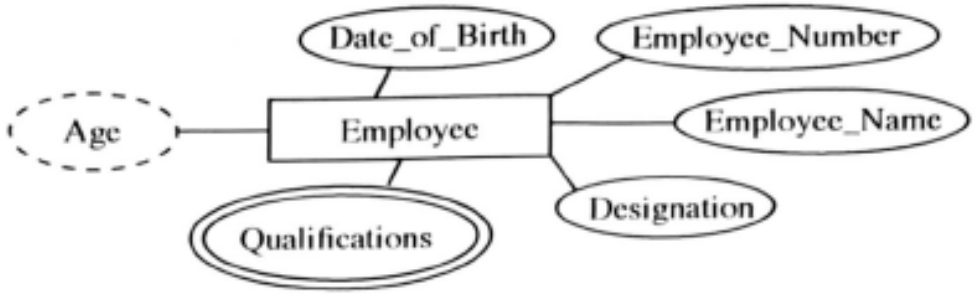
A – STUDENT_ID is a foreign key in the LENDING table.
B – It is compulsory to input data to the DATE data type fields in both tables.
C – STUDENT_ID can contain only five English letters.

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

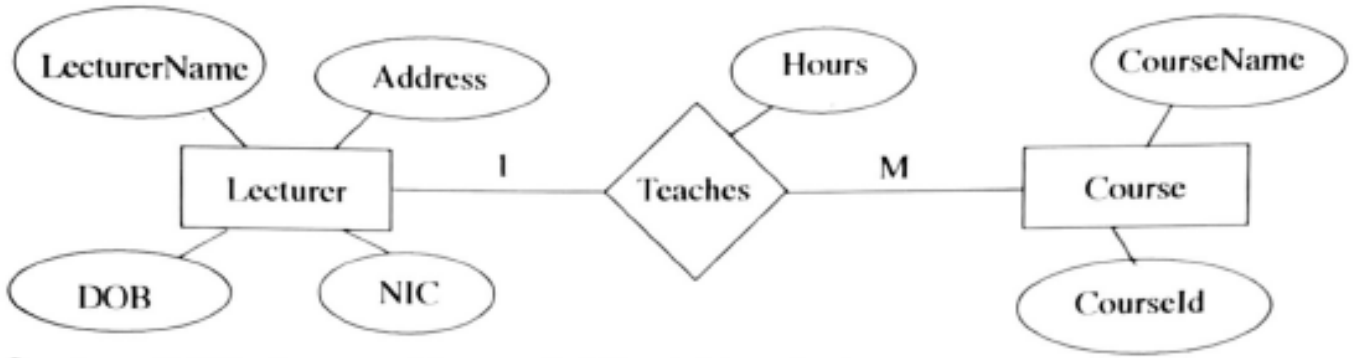
2023

34. When the **Employee** entity of the following diagram is represented in a database which of the following should **not** be included?

(1) Date_of_Birth
(2) Designation
(3) Employee_Name
(4) Employee_Number
(5) Qualifications



35. Which of the listed relations will be obtained if the following ER diagram is correctly mapped into the relational model?



A – Lecturer(NIC, LecturerName, DOB, Address)
B – Lecturer(NIC, LecturerName, DOB, Address, CourseId)
C – Teaches(NIC, CourseId, Hours)
D – Course(CourseId, CourseName, Hours, NIC)

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

2023

36. Which of the following gives a correct matching between ER diagram components and the relational model?

(1) Entity → Field, Attribute → Table, Unique attribute → Primary key, Multivalued attribute → Table

(2) Entity → Table, Attribute → Field, Unique attribute → Primary key, Multivalued attribute → Table

(3) Entity → Table, Attribute → Field, Unique attribute → Table, Multivalued attribute → Primary key

(4) Entity → Table, Attribute → Primary key, Unique attribute → Primary key, Multivalued attribute → Table

(5) Entity → Table, Attribute → Table, Unique attribute → Primary key, Multivalued attribute → Primary key

2023

- Consider the following relations to answer questions **37** and **38**.

adviser (adId, adName, adGender, adNIC, adPhone)
farmer (farmerId, farmerName, farmerAddress, farmerPhone)

task (taskId, taskName, farmerId, startDate, endDate)
advises (adId, taskId, startDate, endDate)

Note: adNIC – The National Identity Card number of an adviser

37. Which of the following statements are correct?

A – One farmer can have many tasks.
B – One adviser can advise many tasks.
C – For one task, a farmer can have many advisers.

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

38. Which of the following statements are correct with respect to the given relations?

A – All relations are in 3rd normal form.
B – The startDate attribute in the **task** relation is a derived attribute.
C – adNIC is a candidate key in the **adviser** relation.

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

2022/2023

Programming MCQ

2022

37. What would be the output of the following Python code if the input was 25?

```
x = int(input())
x = (x % (x - 21)) **3
print(x)
```

(1) 0 (2) 1 (3) 3 (4) 12 (5) 25

2023

39. What would be the output of the following Python code, if a = 10, b = 4, and c = 7?

```
ans=a%b+c//(a-b)
print(ans)
```

(1) 3 (2) 5 (3) 7 (4) 9 (5) 11

2022

38. What would be the output of the following Python code?

```
def fun(para1,para2):
    x=foo(para2, para1)
    return x

def foo(para3, para4):
    return para3 – para4

result=fun(2,4)
print("Result is " + str(result))
```

(1) Result is 0 (2) Result is 2 (3) Result is –2
(4) Result is (2, 4) (5) Result is +2

2023

40. What would be the value of the **'result'** variable after executing the following Python code?

```
def  func1(a,b):
     return  a+b
def  func2(a,b):
     return  a*b
result  =  func1(3,func2(2,4))
```

(1) 11 (2) 12 (3) 14 (4) 15 (5) 20

2022

39. What would be the output of the following Python code?

```
def foo(name, age=18, address="Kandy"):
    print(name, address, age)

foo("Nimal", 25, "Colombo")
```

(1) Nimal Colombo 25
(2) Nimal, Colombo, 25
(3) Nimal, Kandy, 18
(4) Nimal Kandy 18
(5) Nimal 18 Kandy

2023

41. What would be the output of the following Python code, when it gets executed?

```
def  modify_string(input_string):
      input_string+="  World"
text="Hello"
modify_string(text)
print(text)
```

(1) Hello
(2) Hello Hello
(3) Hello World
(4) World
(5) World Hello

2022

41. What would be the output of the following Python code?

```
val = 9
for  i  in  range(5):
     for  j  in  range(2, 3, 1):
          val  += 1
          if  (val % 2) == 0:
              continue
              val  += 2
          else:
              val  += 2
print(val)
```

(1) 18 (2) 24 (3) 29 (4) 38 (5) 39

2023

43. How many '*'s does this program output?

```
i=7
while  i>0:
  i-=3
  print('*')
  if  i<=2:
       break
  else:
    print('*')
```

(1) 1 (2) 3 (3) 5 (4) 7 (5) 9

2022

42. Which of the following is/are correct regarding Python functions?

A – A Python function can return a data structure that contains multiple values.
B – A Python function can be used without passing any parameters to it.
C – Parameters can be passed to a python function by value or by reference.

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

2023

44. Which of the data structures among *Dictionary*, *List* and *Tuple* in Python could be used to store a collection of key-value pairs where the keys must be unique?

(1) Dictionary only
(2) List only
(3) Tuple only
(4) Dictionary and List only
(5) List and Tuple only

2022

WEB DEVELOPMENT MCQ

2022

42. Which of the following is/are correct regarding Python functions?

A – A Python function can return a data structure that contains multiple values.
B – A Python function can be used without passing any parameters to it.
C – Parameters can be passed to a python function by value or by reference.

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

43. Which of the following HTML tags can be used to change the appearance of a word in a text?

(1) <i>, , <li>,
 (2) <b>, <i>, , <h1>
(3) <b>, , <sup>, <li> (4) <i>, <u>, <br>, <sup>
(5) <u>, <i>, <ol>, <b>

45. Which of the following statements is/are correct regarding HTML and CSS?

A – CSS can be used to describe how HTML elements are to be displayed on screen.
B – External CSS can be used to define the style for many HTML pages.
C – Inline CSS can be used to apply a style to a single HTML element.

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

2022

44. What would be the output of the following HTML code segment?

```
<dl>
      <dt> Vegetable </dt>
        <dd> Potato </dd>
      <dt> Fruit </dt>
        <dd>  Orange </dd>
</dl>
```

(1)
- Vegetable
  - Potato
- Fruit
  - Orange

(2)
Vegetable
Potato
Fruit
Orange

(3)
- Vegetable

Potato
- Fruit

Orange

(4)
1. Vegetable

Potato
2. Fruit

Orange

(5)
- Vegetable
  - Potato
- Fruit
  - Orange

46. Which of the following HTML code line can be used to create a hyperlink to the website of the National Institute of Education? (The URL of the website is http://nie.lk)

(1) National Institute of Education
(2) National Institute of Education
(3) National Institute of Education
(4) <a href = "http://nie.lk"National Institute of Education>
(5) <a src = http://nie.lkNational Institute of Education>

2023

WEB DEVELOPMENT MCQ

2023

46. Consider the following code fragment in an HTML file:

```
<style>
        body {
                color: yellow;
                font-family: Arial,  Cambria;
        }
        .highlight {
                color: red;
        }
</style>
```

What happens if one applies the class 'highlight' to a element within <html> and </html> tags in the above file?

(1) The element's text will turn red.
(2) The element's text will turn yellow.
(3) The element's font size will increase.
(4) The element's font type will change to Cambria.
(5) The element's border colour will change to red.

47. Which of the following statements regarding Search Engine Optimization (SEO) are correct?

A – Meta tags on web pages help SEO.
B – It increases the visibility of a web page in search engines.
C – Powerful computers should be used to create SEO friendly web pages.

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

2023

47. Which of the following statements regarding Search Engine Optimization (SEO) are correct?

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

48. Consider the following HTML code line related to a form:

```
<form  method="post"  action="process.php">
```

The "action" attribute in it

(1) specifies the data type of the form.
(2) specifies the server file that handles the data in the form.
(3) controls the form's alignment on the web page.
(4) declares the form as a PHP script.
(5) shows the process.php file on the screen.

2022

WEB DEVELOPMENT II (PHP) MCQ

2022

47. Which of the following could be used to create an array in PHP?

A – $city[ ] = array("Colombo");
B – city[ ] = "Colombo";
C – $city = array("Colombo");

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

2022

48. Given below is a partially completed PHP script used to connect to a database named **Employees** using MySQLi (procedural method). Which option is most suitable to fill in the blank spaces Ⓐ, Ⓑ and Ⓒ respectively?

```
<?php
        $servername = "127.0.0.1";
        $username = "username";
        $password = "password";
        $conn = mysqli_connect($servername, $username, $password);
        if (!$conn)  {
            die("Connection failed: " . mysqli_connect_error());
        }
        $sql = "CREATE DATABASE _____Ⓐ____";
        if (mysqli_query(___Ⓑ__, Ⓒ___) {
            echo "Database created successfully";
        } else {
            echo "Error creating database: " . mysqli_error($conn);
        }
        mysqli_close($conn)
?>
```

(1) $sql, $conn, $Employees
(2) $conn, $sql, Employees
(3) $Employees, $conn, $sql
(4) Employees, $conn, $sql
(5) Employees, $sql, $conn

2022

OTHER MCQ

2022

49. Which of the following statements is/are correct?

A – Quantum computing could be an alternative to overcome the limitations of the existing microprocessors.

B – Natural phenomena such as the behaviour of ant colonies could be used to develop new computing models to solve complex problems.

C – An inference engine of an expert system utilizes the facts in a knowledge base to support decision making.

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

50 Which of the following statements is/are correct?

A – E-Commerce encourages to minimize physical interactions between buyers and sellers.

B – The main purpose of sending a One Time Password (OTP) to a credit card holder's mobile phone during an online payment is to identify the current location of the card owner.

C – Bitcoin is a leading virtual currency.

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

2023

OTHER MCQ

2023

49. Saman's father is a carpenter. He wants to showcase his father's work on a website. Which of the following hosting options should Saman use in order to do it with a price that he can afford?

(1) Hosting it on a server that presents other websites also (shared hosting)
(2) Hosting it on a Virtual Private Server (VPS)
(3) Hosting it on a server dedicated to Saman (dedicated hosting)
(4) Using an e-Commerce website
(5) Using the services of a well known cloud service provider

50. What is the primary role of a sensor in an IoT device?

(1) To provide outputs and change a state of the environment
(2) To ensure interoperability of devices
(3) To detect a state change in the environment
(4) To make decisions based on predetermined rules
(5) To generate graphics for the user interface