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தென் மாகாணக் கல்வித் திணைக்களம்

Southern Provincial Department of Education

අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) - 13 ශේෂිය - දෙවන වාර පරීක්ෂණය - 2020 මාර්තු

General Certificate of Education (Adv. Level) - Grade 13 - Second Term Test - March 2020

තොරතුරු හා සන්නිවේදන තාක්ෂණය
Information and Communication Technology

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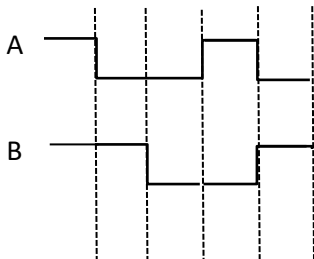
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පැය 02 යි
02 hours

- Answer all questions.
- In each of the question 1 to 50 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.

1. What is the validation method to use preventing missing essential data when filling a form?
(1) Type check (2) Range check (3) Black box test
(4) Presence check (5) White box test
2. Through which of the following, decode instructions according to the fetch execute cycle?
(1) Arithmetic and logical unit (2) Control unit
(3) Cache memory (4) Main memory
(5) Accumulator
3. Consider the following statements about computer memory?
A- Data and programs which frequently uses are retained in cache memory
B- Main memory (RAM) is a static a Random Access Memory and refresh frequently.
C- Data access speed on a compact disk is lower than USB flash drive and ideal for backing up data.
Which of the above statement/s is/are the correct?
(1) A Only (2) A and C only (3) B and C only
(4) A and B only (5) All A, B and C
4. The binary value 11101110_2 is in two's complement form and the corresponding representation of the sign magnitude is (in 8 bits)
(1) 00010010_2 (2) 10010010_2 (3) 01111111_2
(4) 010010_2 (5) 110010_2
5. Select the answer for $100110.10_2 - 11101.01_2$?
(1) 001001.11_2 (2) 011001.01_2 (3) 001001.01_2
(4) 111001.01_2 (5) 011001.11

6. When the following A and B inputs are sent through an XNOR gate, the binary value of the output is,



- (1) 11011
- (2) 10110
- (3) 10100
- (4) 10000
- (5) 01011

7. What is the minimum amount of NOR gates required to create the Boolean expression $A.\bar{B}$, using NOR logic gates?

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

8. Select the answer which contains carry out (C_{out}) bits, when adding 1101 and 1001 using full adder?

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

9. Consider the following statements regarding evolution of Operating Systems

A- The memory has partitioned in multi programmed batch system.

B- The ability of executing multi programs along with simple batch system were there.

C- Context switching is running with time sharing systems.

What is/are the correct statement/s?

- (1) A and B only (2) B and C only (3) A and C only
(4) A, B and C only (5) None of above

10. Which of the following is the correct statement?

- (1) A program partitions into equal size permanent parts in virtual memory, is Framing.
(2) A page of a program is located on the Physical memory.
(3) Data structure related to mapping a page and a frame is page table.
(4) Selecting processes which need to direct to processor is done by Memory management unit.
(5) The virtual memory is located on main memory of computer.

11. Consider the following statements about device management.

A- Device drivers are type of hardware.

B- Spooling buffers are maintained by secondary memory or main memory

C- Identifying new hardware connected to the computer is done when spooling.

What is/are the correct statement/s?

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

12. A process in running state is turned in to _____ state, on requirements of inputs and outputs, according to Seven State Process Transition diagram.

Fill in the blank.

- (1) Suspended ready (2) Ready (3) Blocked (4) Running (5) Exit

13. Consider the following statements regarding Process Control Block.

A- The relevant Process Control Block (PCB) is created immediate after a process get started

B- Each an every process has unique PCB

C- PCB is destroyed when Context switching happens

Which of the following is/are the correct statement/s?

- (1) A and B only (2) B and C only (3) A and C only
(4) All A,B and C (5) None of the above

14. Consider the following statements regarding Signals given below.

A - An analog signal is in continuous wave form in nature.

B- Digital signals stand for discrete value.

C- A physical transfer medium is need to transfer signals

Which of the following is/are the correct statement/s?

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

15. Consider the following statements given below regarding Parity Check

- A- Errors are detected using an extra bit of data along with the original data bits.
- B- Even parity and Odd parity are the two types of Parity Check.
- C- It is used to detect data changes while data transmit.

Which of the following is/are correct statement/s?

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

16. Consider the following statements regarding data broadcasting.

- A- Broadcasting means transmit data targeting only one recipient
- B- Data transmission only among a sender and a recipient is called as unicasting
- C- Data transmission to target recipients from large number of recipient is called as multicasting.

Which of the following is/are correct statement/s?

- (1) A and B only
- (2) B and C only
- (3) A and C only
- (4) All A, B and C
- (5) None of above

17. An institute is designed subnets for their 3 departments using IP address 192.168.10.0/24. What is the new subnet mask for subnets if, there are 40, 55, 60 computers for each departments respectively?

- (1) 255.255.255.252
- (2) 255.255.0.0
- (3) 255.255.255.192
- (4) 192.0.0.0
- (5) 255.255.255.0

18. Decrypting message using receiver's private key which encrypted using sender's public key is,

- (1) Symmetric Key Encryption
- (2) Synchronization
- (3) Private Encryption
- (4) Asymmetric Key Encryption
- (5) Decryption

19. Consider the following statements given below regarding Open System Interconnection Model

- A- In the network layer, Protocol Data Unit (PDU) is introduced as frame.
- B- Protocol data unit on the transport layer implements according to TCP or UDP
- C- Directing a data packet from sender to receiver in the network layer.

What is/are the correct statement/s?

- (1) A and B only
- (2) B and C only
- (3) A and C only
- (4) All A, B and C
- (5) None of above

20. Which of the following is the most suitable feasibility regarding how much the proposed system helps the organization strategic objectives and study the attitude of the management and staff on the proposed system?

- (1) Technical feasibility
- (2) Operational feasibility
- (3) Economic feasibility

- (4) Organizational feasibility
- (5) Initial feasibility

21. Consider the following statements

- A- When doing Black box testing, it doesn't require the examiner to be aware of the internal structure of software or programming
- B- Statement Coverage, Branch Coverage, Road Coverage are techniques of black box testing
- C-Examiner should have thorough awareness about program and have to spend time when doing white box testing.
- D- Black box testing method can also be used in unit, integrated and acceptance tastings

Which of the following is/are correct statement/s?

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

22. Select correct statement/s from given below regarding acceptance testing

- A- The test is performed before the system is taken over by the client.
- B- The test is performed after the system test.
- C-It can be divided in to two parts as internal (beta test) and external test (alpha test)

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

23. Select the most suitable statement/s from given below regarding Functional requirements and Non Functional requirements

- A- Essential requirements to be fulfilled by the system can be included in both on Functional requirements and Non Functional requirements
- B- Functional requirements are requirements which described what should be done by the system or given by the system
- C-Nonfunctional requirements are described about how the system performs at a given task either how the system works,

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

24. Choose the answer that contains the most accurate statement/s regarding off the shell packages and standard business applications

- A- Standard business applications are designed specifically to the needs of the relevant organization.
- B- The software can be considered an asset of the company in standard business applications.
- C- Off-the-shelf packages may contain many features that are never used.
- D- Off-the-shelf package software solutions are designed based on personal need of an individual or an institution.

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

- **Refer the following relations given below to answer question 25 to 29.**

Student(Student_no, Name, Address, Class_no, Class_name)

Subject(Subj_no, Subj_name)

StudentMarks(Student_no, Subj_no, Marks)

- Student_no is an unique attribute of Student and Subj_no is an unique attribute of Subject.
- Class_name attribute depends entirely on class_no attribute.

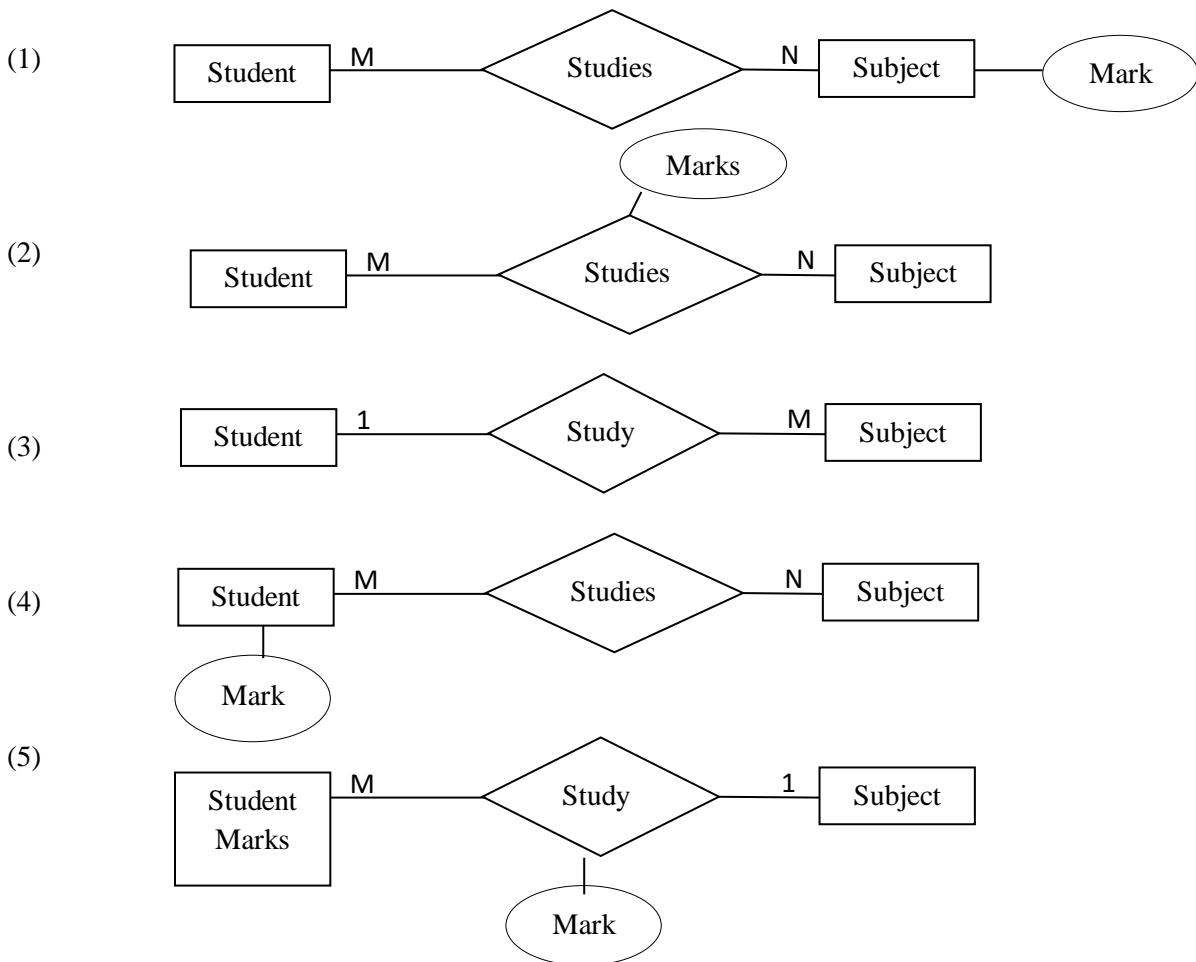
25. Select the correct answer

- (1) All three tables are in third normalization form
- (2) The Student table is unable to normalize further
- (3) StudentMarks table can be further normalized
- (4) The Student table is in second normalization form and Subject and StudentMark table are in the third normalization form.
- (5) All the three tables are in zero normalization form

26. Select the answer that the primary key of the StudentMarks table specified correctly.

- (1) Student_no
- (2) Subj_no
- (3) Student_no and Subj_no
- (4) Marks
- (5) Subj_no and Marks

27. Select the Entity Relationship Diagram (ERD) which represents above relation correctly.



28. If the above relation is converted in to tables in a database, select the correct statement regarding the output after execute following SQL query.

```
SELECT * FROM StudentMarks WHERE Student_no='S001';
```

- (1) It contains only the Student_no and Subj_no columns.
- (2) Only get values for marks attribute related to the student who has S001 as Student_no
- (3) Only get values for Student_no, Name and Marks attributes related to the student who has S001 as Student_no
- (4) Only get values for Student_no, Subj_no and Marks attributes related to the student who has S001 as Student_no
- (5) This SQL query is not executing correctly and an error message is received

29. Select the correct SQL code to select Student_no and Name, from the students those who are studding Subj_no 20 from given above relationships

- (1) SELECT Student_no, Name FROM Student;
- (2) SELECT Student_no, Name FROM Student, Subject WHERE Subj_no=20;
- (3) SELECT Student_no, Name FROM Student, StudentMarks WHERE Student.Student_no= StudentMarks.Student_no AND Subj_no=20;
- (4) SELECT Student.Student_no, Name FROM Student, StudentMarks WHERE Student.Student_no= StudentMarks.Student_no AND Subj_no=20;
- (5) SELECT Student.Student_no, Name FROM Student, Subject WHERE Student. Subj_no = Subject.Subj_no AND Subj_no=20;

30. Student table is used to store data of students in a school. SQL code for creating the student table is given below.

```
CREATE TABLE Student((insteas of:  
StIndex int(5),  
Name varchar(50),  
Address varchar(100),  
ClassId int(2),  
PRIMAR KEY(StIndex),  
FOREIGN KEY(ClassId) REFERENCES Sport (ClassId);
```

Consider the following statements regarding constraints contained in the SQL command above.

- A- There are domain constraints.
- B- There are entity constraints.
- C- There are reference constraints.

Select the correct statement from given above

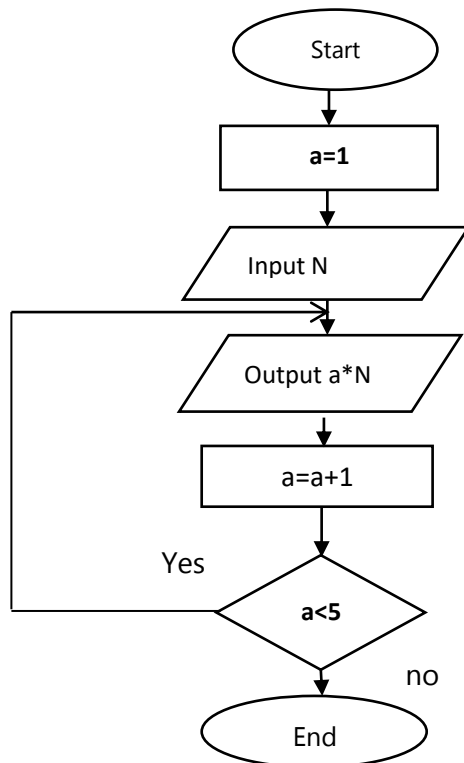
- (1) A is true. B and C are false.
- (2) A and B are true. C is false.
- (3) B and C are true. C is false.
- (4) All of the above are true.
- (5) All of the above are false

31. Select the answer which correctly describes steps to create a data store.

- (1) Logical schematic design, Conceptual, design, Physical design
- (2) Conceptual, design, Logical schematic design, Physical design
- (3) Logical schematic design, Logical schematic design, Logical schematic design
- (4) Conceptual, design, Physical design, Logical schematic design

(5) Logical schematic design, Conceptual, Physical design, Conceptual, design

32.



What are the control structures in this flow chart?

- (1) Iteration only
- (2) Sequence, Selection
- (3) Sequence, Iteration
- (4) Selection, Iteration
- (5) Selection, Selection, Iteration

33. Which of the following statement is true about the flowchart?

- (1) Iteration stops when value of a is 4
- (2) There is no output if 0 is inputted for N
- (3) There is no output if a negative value is entered.
- (4) The output is 5 10 15 20 if 5 is inputted for N
- (5) The output is 5 10 15 20 25 if 5 is inputted for N

34. What is the correct Python code for the above flow chart?

(1) a=1 n=int(input()) while a<5: print(a*n) a=a+1	(2) a=1 n=input() while a<5: print(a*n) a=a+1	(3) a=1 n=int(input()) while a<5: print(a*n) a=a+1	(4) a=1 n=int(input()) while a<5: print(a*n) a=a+1	(5) a=1 n=input() while a<5: print(a*n) a=a+1
---	--	---	---	--

35. Which is not valid statement in Python coding from values for variables below?

- (1) And='True'
- (2) NoOfStudent=50
- (3) or='false'
- (4) y=5
- (5) amount_pay=50.0

36. Which is the value of y variable after the following Python statements are executed?

```
y=5
x=3-4*6/2+18/3**2
y,x=x,y
```

- (1) 5 (2) 17 (3) -7 (4) -7.0 (5) -11

37. Which is the value of z after the following Python statements are executed?

```
x=y=5
z=x!=y
```

- (1) 0 (2) 1 (3) True (4) False (5) Null

38. Consider the following statements regarding programming translators.

A- Statements in the source program convert in to object program line by line when every time executes the program using interpreters.

B-The program runs until the error is declared when entire source program converts in to object program by the compiler.

C – Third generation language based programs do not need to be translated in to machine language by a translator.

Which of the above statement/s is/are true?

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

39. Consider the following statements on Python programming given below.

```
#python.py
list_a =[5,15,20,16,8]
def f(x):
    total=0
    for i in x:
        total=total+i
        if total>=50:
            break
    return (total)
print(f(list_a))
```

A- There is a function definition and a function call in the program

B- It contains a commentary.

C- The return value of this program is 40

D- The program doesn't include any iteration.

Which of the following is/are correct statement/s?

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

• **Questions from 40 to 42 are based on the Python code list**

```
Fruit=['Apple' , 'mango', 'banana', 'orange', 'pineapple']
```

40. What is the output of the following Python code segment?

```
print(fruit[2:] )
```


- (1) ['Apple', 'mango', 'banana']
- (2) ['banana', 'orange', 'pineapple']
- (3) ['banana']
- (4) ['Apple', 'mango',]
- (5) ['Apple', 'mango', 'banana', 'orange', 'pineapple']

41. What is the output of the following Python code segment?

```
Print(fruit[::-2])
```

- (1) ['Apple', 'mango', 'banana']
- (2) ['banana', 'orange', 'pineapple']
- (3) ['banana']
- (4) ['Apple', 'mango']
- (5) ['Apple', 'mango', 'banana', 'orange', 'pineapple']

42. What is the output of the following Python code segment?

```
'papaya' not in Fruit
```

- (1) False
- (2) True
- (3) []
- (4) ['papaya']
- (5) ['Apple', 'mango', 'banana', 'orange', 'pineapple', 'papaya']

43. Select the answer that contains tag/s to write description list in HTML

- A. <dl>
- B. <dt>
- C. <dd>
- D.

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

44. What is the output of the following HTML code?

```
<html>
  <table border=1>
    <tr>
      <th>Name</th>
    </tr>
  </table>
</html>
```

- (1)

Name

- (2)

Name

- (3)

Name

- (4)

Name

- (5)

Name

45. Which of the following HTML code is used to render H₂O?

- (1) <P> H ² O </P>
- (2) <P> H <emp> 2 </sub> O </P>
- (3) H <P align= "sub"> 2 </P> O
- (4) H <P align= "sup"> 2 </P> O
- (5) <P> H ₂ O </P>

46. Select the correct indication of comment in HTML

- (1) #This is a comment Green
- (2) /*This is a comment*/
- (3) < *This is a comment */>
- (4) <!-- This is a comment -->
- (5) <comment>This is a comment </comment>

47. Which of the following statement/s is/are true?

A- The word 'Paragraph' can be rendered in bold using Paragraph tag

B- The word 'Paragraph' can be rendered using <ABC> Paragraph<ABC> tag

C- The word 'Paragraph' can be rendered in bold using Paragraph tag

(1) B only

(2) B and C only

(3) A and B only

(4) A and C only

(5) All of the above

48. Which of the following answer consists correct HTML code for formatting word **Sri Lanka** as follows? Font color- blue, font style- Calibri and font size- 7

(1) Sri Lanka

(2) Sri Lanka

(3) Sri Lanka

(4) Sri Lanka

(5) Sri Lanka

49. Which is correct HTML code to enter audio file named song.mp4 among following answers given below?

(1) <embed href ="song.mp4" width="250" height= "200">

(2) <embed href ="song" width="250" height = "200">

(3) <embed src ="song.mp4" width="250" height = "200">

(4) Song

(5) Song

50. Select false statement regarding HTML from following statements given below.

(1) It runs on any operating system.

(2) HTML is a programming language.

(3) It can be rendered by any web browser.

(4) Code segment rejects if there are syntax errors in a HTML code segment.

(5) HTML is a markup language.

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தென் மாகாணக் கல்வித் திணைக்களம்
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අධ්‍යයන පොදු සහතික පත්‍ර (උසස් පෙළ) - 13 ශ්‍රේණිය - දෙවන වාර පරීක්ෂණය - 2020 මාර්තු
General Certificate of Education (Adv. Level) - Grade 13 - Second Term Test - March 2020

තොරතුරු හා සන්නිවේදන තාක්ෂණය
Information and Communication Technology

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02 hours

- Answer all questions in part A.
- Answer only selected four questions from part B.
- Write your answers given space below for questions in part A.

Part A (Structured essay)

1. (a) Fill in the blanks of the HTML code given below in the right side which produce list given below in the left side once it is rendered.

4. History
5. Technical subjects
- ICT
 - Agriculture
 - Home Science

```
<!DOCTYPE html>
<html>
<head> </head>
<body>
<_____type="l" _____="_____">
<li>History</li>
<_____>Technical subjects <_____> <_____
type="_____">
<li>ICT</li>
<li>Agriculture</li>
<li>Home Science</li>
<_____>
<_____>
</body>
</html>
```

(b) Draw the output of the HTML code given below.

```
<!DOCTYPE html>
<html>
<head>
<body>
<table border="1">
<tr><td colspan=2>Name</td><td>Saman</td></tr>
<tr><td rowspan=2>Marks</td><td>Science</td><td>78</td></tr>
<tr><td><u>Maths</u></td><td>ab</td></tr>
</table>
</body>
</head>
</html>
```

.....

.....

.....

.....

(c) (i) Write down the elements, attributes and values of the below code separately in the table below.

```
<!DOCTYPE html>
<html><head><style>
Body{background-color:green;}
h1{color:maroon; text-align:left}
</style></head></html>
```

Elements	Attributes	Value

(ii) Assume that the h2 element also requires the maroon color and the left align style. Write only the corresponding line of code if so, use the same code set in c (i) above to do it more efficiently.

.....

.....

.....

.....

(iii) The following code is used to connect to server before using data in a MYSQL database. The username and password used to login to the database are the ‘useradmin’ and abc@123. Fill in the blank with the PHP code given below.

.....

```
<?php
$servername = "localhost" ;
_____ = "useradmin" ;
_____ = "abc@123" ;
$conn = new _____ ($servername , _____ , $password) ;
If ($conn->connect_error)
{
die("connection failed: " . $conn->connect_error);
}
echo " connected successfully " ;
?>
```

2. (a) Integers of a particular digital device are represented by two's complement in 8 bits and the results of the computations are presented in decimal form.

(i) Illustrate the representation of $+12_{10}$ in the above device.

.....
.....

(ii) Illustrate the representation of -30_{10} in the above device.

.....
.....

(iii) Compute the answer of $+12-30$ using the illustrations given in (i) and (ii) above.

.....
.....
.....
.....

(b) You can get the sum of one to ten odd numbers using the following Python program.

```
total=0
i=1
while i<=10:
    total=total + i
    i=i+2
print (total)
```

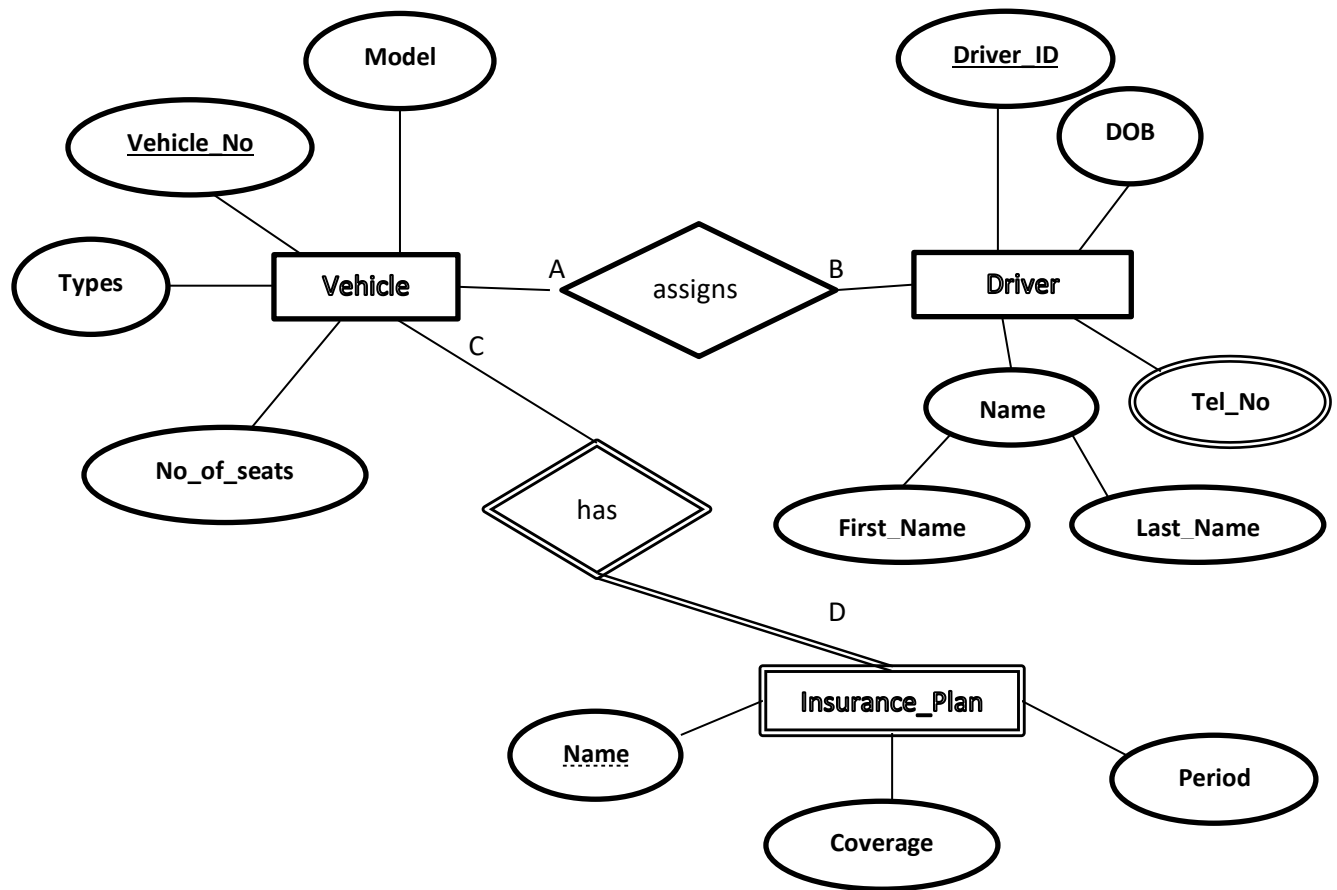
(i) Write a Python program using the 'for' iteration structure to get the above output.

.....
.....
.....
.....
.....

(ii) Modify the above Python program, by adding only one statement to the program given in the problem, to print the even numbers between two and ten, and sum of those numbers.

.....
.....
.....
.....
.....

3. (A) An ER diagram about vehicles and drivers found in an organization as well as insurance coverage is given below



Several drivers are worked to a vehicle in different days and one driver is attached to any vehicle. There may be several insurance plans for a car and one insurance plan only applies to one vehicle.

(i) Write the cardinality of entities using the labels A, B, C, D.

- A-
 B-
 C-
 D-

(ii) (a) Age of a driver is counted using his DOB. According to it, draw how to indicate Age of a driver on the ER diagram.

(b) Draw No_of_hours and date on the above ER diagram.

(iii) Briefly explain why insurance Plan is presented with a special symbol.

.....
.....

(iv) Reserved words related to list of constraints used in a database management system are given below. Write the suitable constraint for each instance from the list

(a) Controls the skipping of data entered into a field.

(b) Controls the deletion of records in the parent table that attached to a record in the child table

(c) Controls the duplication of records into a table.

(c) Check whether data which entered complies with the conditions assigned

(Default, Not Null , Primary Key , Check , Foreign Key)

(B) (i) Fill in the blanks using the list given below.

Ashen and Dasuni share data securely over a computer network with encryption.

..... key ofis use when encoding the message forwarded by Ashen and Dasuni'skey is use toonce that message reaches Dasuni.

(Ashen, Private Key, Public Key, Encoding, Dasuni, Decoding)

(ii) Briefly explain two key objectives of using digital signature in data communication.

4. (a) Name two information stored in Process Control Block (PCB) regarding a process

(b) Write two reasons why the short term scheduler changes the working state of running process, in case of context switching.

(c) Write down the objectives of multi programmed operating systems and time sharing operating systems separately.

(d) Write down the next two conditions in which a running process may occur

(e) Write down the duty (role) of memory management unit- MMU which uses by the operating system in executing programs.

(f) Write a reason for external fragmentation in physical memory.

(g) When an application execute running on a computer, it is connected to virtual memory address 010111001010101000. 8 bits are used for page address.

i. Calculate the maximum amount of virtual memory space this computer can access in kilobytes (KB).

ii. Find the total number of pages that can exist in the above memory address.

iii. Calculate the size of a page

Part B

1. A system has been designed to automatically dim the intensity of the head lamps of a car when a vehicle comes in front of the car at night.

System can be operated manually or automatically using switch A. the lever B can increase the intensity of the headlamp of the car. When the system operates automatically, the intensity of main lamp is increased by lever B, when a vehicle comes in front of the car with front lamp is turned on (C), the intensity of the main lamp will automatically decrease.

The intensity of the main lamp remains the same value as B in all other cases. The intensity (Z) of the main lamp indicates an automatically decrease of 1 and increase of 0.

Cases	logical values
A- Switch on(The system will automatically run)	1
Switch off (the system will manually run)	0
B- Reduce intensity by lever (Dim)	1
Increase intensity by lever (head)	0
C- Arrival of a vehicle with lights on in front of the car	1
No vehicle with lights on	0
i. Construct the truth table for above system.	
ii. Implement a SOP expression using above truth table.	
iii. Simplify the above Boolean expression only using karaugh map.	
iv. Implement the logic circuit only using NAND gates for the simplified expression.	

2. Consider the following scenario.

There are three faculties in an state university namely Technology, Science and Commerce and two units named Library and faculty office. Each faculty has a computer lab with 34, 18 and 10 computers respectively. It is proposed to keep separate LAN for each faculty of Technology, Science and Commerce. The network administrator received the IP address block 192.250.25.0 / 24

It has been proposed to establish two computer networks for the library and office. However the number of computers expected to be used for that purpose is not determined yet.

- (i) Consider all of the conditions and fill in the table below so that IP addresses can be used effectively.

Faculty	Network address	Valid Host Range	Broadcast address	subnet mask
Technology(34)				
Science(18)				
Commerce(10)				

- (ii) Write the IP addresses which can be used to proposed computer network, after giving relevant IP addresses for Technology, Science and Commerce faculties.
- (iii) Computer network has created using three switches each of the faculty. Other subnets are given facility to use the Internet via a router which is connected to the Faculty of IT. There is a Proxy Server, a firewall, a Domain Name Server (DNS) on the above network and draw the diagram to show the logical arrangement for the network by placing it in the correct location. Name devices used there.
- (iv) Write down the functions of following applications.
 - a) firewall
 - b) DHCP protocol
 - c) DNS server
 - d) Proxy server
 - e) Router

3. (a) Convert SOP expression $\bar{A}\bar{C} + \bar{B} + \bar{A}B$ in to POS expression.

(b) The pure Aloha protocol allows for the transmission of data between two devices in a network at any time, so there is no conflict in between data packet. The slotted Aloha protocol is improved to control this some extent. Explain how the conflict is managed by this method to some extent.

(c) Feasibility study of a system is done mainly based on several factors. What are they?

(d) An operating system uses the adjacent partitioning to free up disk space for files. Write an advantage and a disadvantage of it.

(e) What is Plagiarism?

4. Customers are given a special card by a supermarket, when purchasing goods, cashier inputs the customer number on this card and the bill of goods purchased by the customer bonus points are awarded according to below list.

The value of the bill is 10,000 or more - 100 bonus points

The value of the bill is 5,000 or more - 50 bonus points

The value of the bill is 2,000 or more - 20 bonus points

One bonus point is valued 5 rupees.

Customer no	Bonus points	Values
1000	100	500.00
1001	50	250.00
1008	100	500.00
1009	100	500.00
1001	20	100.00

- i. Draw a flow chart to illustrate an algorithm that can be used to write in points.txt file as shown above bonus points and the corresponding value in rupees, when every time a customer buys a product and input the customer number and the value of the bill of goods purchased .
- ii. Encrypt the presented algorithm in the Python programming language.

5.

A particular grocery store purchases goods from suppliers and sells them to customers. Every supplier must be registered with the shop. Suppliers provide multiple items and only one supplier provides one item. Customers buy items. Consider the following following links to the above grocery store

Supplier (Sup_Id, Sup_Name, Sup_Tel, Sup_Address)

ItemSupplier (Sup_Id ,Item_No, Item_Name, Item_Price, QTY)

Customer (Cus_Name, Cus_Address, Cus_Tel)

- Sup_Id is a unique attribute in the Supplier (supplier) connection. Contains the attributes Sup_Name , Sup_Tel and Sup_Address
- Each provider has multiple phone numbers.
- In the ItemSupplier connection, it is unique when both Sup_Id and Item_No attributes are connect together and there are Item_Name, Item_Price, QTY also.
- Item_Name and Item_Price attributes are bias on attribute of Item_No
- In the Customer connection, Cus_Name is not unique and Contains Cus_Address and Cus_Tel

When customers buy items, they receive a bill. Every bill has a date and time. A single bill may contain several items and one item may contain in several bills. The bill also contains quantities purchased from each item (QTY).

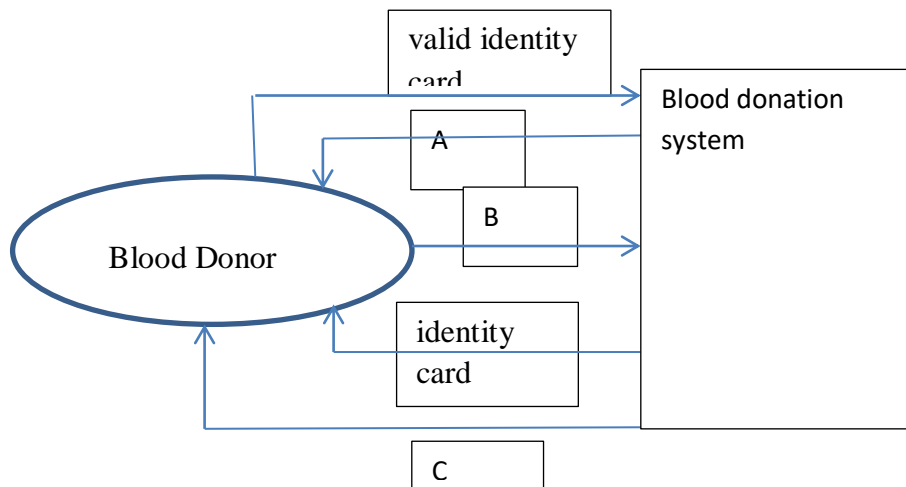
- (i) In what normalization form do Supplier and ItemSupplier relations are in? give reasons on your answer.
- (ii) Turn the above relations from the current normalization form to the next normalization form.
- (iii) Draw the Entity Relationship Diagram represent to above relationships.
- (iv) Write the corresponding SQL code to get Item_No, Item_Name ,Item_Price of the items provided by the provider Kamal.

6.

(a) Donors who donate blood once or more at a donation camp have following activities.

Once the blood donor has provided the valid identity card to the receptionist, the identity card is checked and an application with the blood donor number is issued. The blood donor's identity card and application number are sent to the first inspection by the receptionist.

Once blood Donor Completion Application and Blood Donor Report File are given to the first inspector, check the application and obtains a blood donation report with basic data to computer database containing blood donation information. An application form certified by the first examiner, blood donation report file and blood donation report are given to the doctor and the identity card to the donor. Blood donor test and blood donation report file after transfusion are sent to host officer by the doctor. A thank you letter and a photo along with a certified blood donation report file will be provided to the donor by the host officer.



(i) The context diagram for the above activities is given below. Identify and write the unnamed data flows A, B and C in the above description.

(ii) Write down the database required and its inputs and outputs

(iii) Draw first level Data Flow Diagram (DFD) to the scenario given here.

(b) (i) Name the database types.

(ii) Two parties who conduct external acceptance testing during the acceptance test



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