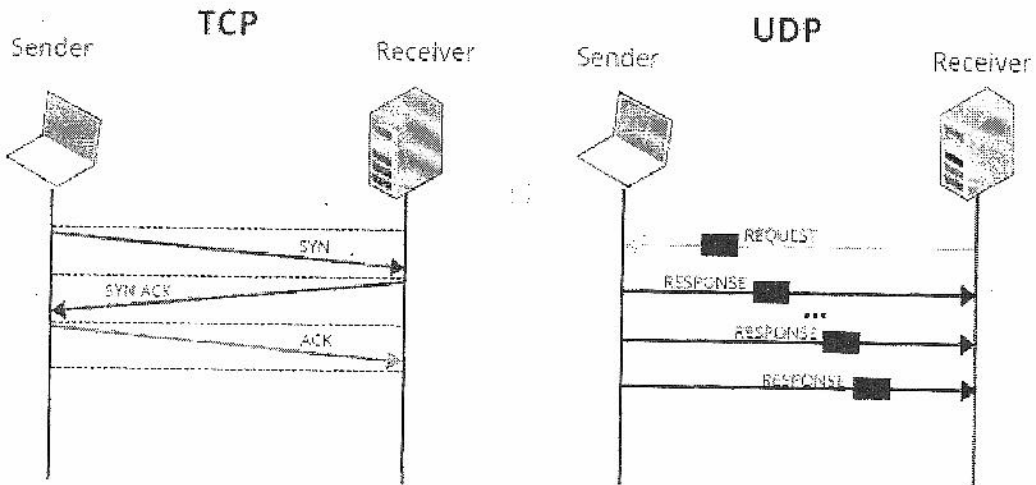


3. Which of the following is incorrect

- (1).NTP- Network Time Protocol
- (2).NetBIOS-Network Basic Input and Output
- (3).SMTP-Simple Mail Transfer Protocol
- (4).IMAP-Internet Message Access Protocol
- (5)POP3 Post Office Protocol version 3

4. Which of the following statement is/are correct



- A :-TCP and UDP both are in Transport layer of the OSI model
- B:- TCP is slower but reliable transfer , UDP fast but non-guaranteed transfer
- C:-TCP used in FTP and HTTP
- D:-UDP used in DNS DHCP
- E:-TCP keeps track of lost packets, it make sure that lost packets are resent but UDP does not keep track of lost packets.

(1).A,B,C& D are correct

(2).Only A is correct

(3)C&D correct

(4). Only E is correct

(5)A,B,C,D and E all correct

5. The function of the Dynamic Host Configuration Protocol (DHCP) server in an IP network is to.....

- (1).Translate Domain Names to IP addresses (2).Cache the web pages
(3).Dynamically allocate IP address (4).Filter IP packets
(5)Provide security

6. In the OSI seven layer reference model, IP protocol maps to thelayer.
(1).application (2).Session (3)Transport (4)network (5)physical

7. Which of the following is a valid subnet mask?

- (1) 255.255.255.192 (2) 255.0.255.0 (3)256.255.255.64 (4)255.256.255.96
(5)0.0.0.255

8. Which of the following is/are not speed up the processing speed of the CPU

- (1) Registers
(2)L1 Chache
(3)L2 Cache
(4)L3 Cache
(5)ROM

9. Which of the following is/are essential to function a computer

- (1)ROM
(2)DRAM
(3)L1 Cache
(4)Registers
(5)Hard disk

10.

The <dl> tag defines the description list

The <dt> tag defines the term(name)

The <dd> tag describes each term

<dl>

<dt>RAM</dt>

<dd>Random Access Memory</dd>

<dt>ROM</dt>

<dd>Read Only Memory</dd>

<dt>PROM</dt>

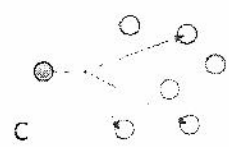
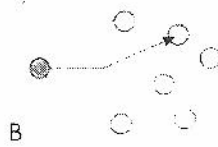
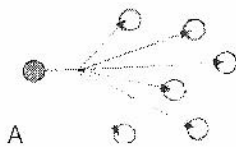
<dd>Programmable Read Only Memory</dd>

</dl>

Which of the following is correct output of the above HTML code?

<p>(1)</p> <ul style="list-style-type: none"> • RAM Random Access Memory • ROM Read Only Memory • PROM Programmable Read Only Memory 	<p>(2)</p> <p>RAM Random Access Memory ROM Read Only Memory PROM Programmable Read Only Memory</p>
<p>3)</p> <p>RAM Random Access Memory ROM Read Only Memory PROM Programmable Read Only Memory</p>	<p>4)</p> <p>RAM</p> <ul style="list-style-type: none"> • Random Access Memory <p>ROM</p> <ul style="list-style-type: none"> • Read Only Memory <p>PROM</p> <ul style="list-style-type: none"> • Programmable Read Only Memory
<p>5)</p> <p>RAM Random Access Memory ROM Read Only Memory PROM Programmable Read Only Memory</p>	

11. Which of the following correctly explains, Unicast, Broadcast and multicasting according to correct order



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

12. In a public key cryptographic system ,the private key of a person X is given by the function $priv(x)$ and the public key is given by the function $pub(x)$. consider the following statements:

- A- $priv(x)$ and $pub(x)$ should be same for better security
- B-A message encrypted using $pub(x)$ and can be decrypted using $pub(x)$
- C-The person X knows both $priv(x)$ and $pub(x)$
- D-Any person can encrypt a message using the public key of the receiver
- E-Encrypted message can be decrypted only with the receiver's private key

Which of the following statements is/are correct?

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

13. What is the output of the following code?

```
>>> basket={'apple','orange','apple','pear','orange','banana'}
>>> print(basket)
```

- (1){'banana','orange','apple','pear','orange','banana'}
 (2){'banana','orange','apple','pear'}
 (3){'banana','orange','apple','pear','banana'}
 (4){'orange','apple','pear','orange','banana'}
 (5){'banana','orange','apple','pear','orange',''}

14. Identify the following output

```
1+0=1
2+1=3
3+3=6
4+6=10
5+10=15
6+15=21
7+21=28
8+28=36
9+36=45
10+45=55
11+55=66
66
```

Which of the following python program provides the following output?

<p>(1) #2001 mcq 20 total=0 for i in range(1,11): print (i,'+',total,'=',total+i) total=total+i print (total)</p>	<p>(2) #2001 mcq 20 total=0 for i in range(1,13): print (i,'+',total,'=',total+i) total=total+i print (total)</p>
<p>(3) #2001 mcq 20 ans3 total=0 for i in range(1,12): print (i-1,'+',total,'=',total+i) total=total+i print (total)</p>	<p>(4) #2001 mcq 20 ans3 total=0 for i in range(1,12): print (i+1,'+',total,'=',total+i) total=total+i print (total)</p>
<p>(5) #2001 mcq 20 ans3 total=0 for i in range(1,12): print (i,'+',total,'=',total+i) total=total+i print (total)</p>	

15. Which of the following shows the correct python program

<p>(1)</p> <pre>x=int(input("Enter Total number of subjects")) n=1 t=0 while n<=x: y=int(input("Enter subject marks:")) t=t+y n=n+1 print("The total is ",t) print("The average is ",t/x)</pre>	<p>(2)</p> <pre>x=int(input("Enter total number of subjects")) n=1 t=0 while n>=x: y=int(input("Enter subject marks:")) t=t+y n=n+1 print("The total is ",t) print("The average is ",t/x)</pre>
<p>(3)</p> <pre>n=1 t=0 x=int(input("Enter Total number of subjects")) while n<=x: y=int(input("Enter subject marks:")) t=t+y n=n+1 print("The total is ",t) print("The average is ",t/x)</pre>	<p>(4)</p> <pre>x=int(input("Enter Total number of subjects")) n=1 t=0 while n<=x: y=int(input("Enter subject marks:")) t=t+y n=n+1 print("The total is ",t) print("The average is ",t/x)</pre>
<p>(5)</p> <pre>x=int(input("Enter total number of subjects")) n=1 t=0 while n<=x: y=int(input("Enter subject marks:")) t=t+y n=n+1 print("The total is ",t) print("The average is ",t/x)</pre>	

16. (2017 MCQ26) Which of the following statement is true about e-business?

- (1) It is a business process which conducts partially on online.
- (2) It is consist of front-end and back-end online process.
- (3) All "Brick Vendors" Conduct their business on online,
- (4) Any e-commerce application is an e-business on application.
- (5) Any business application is an e-commerce application

17. . The transport layer protocol User Datagram Protocol (UDP) can be used for

- (1) reliable communication.
- (2) guaranteed delivery.
- (3) connection oriented communication.

- (4) ordered delivery.
- (5) exchanging state information among routers.

18. Which- of the following statements best describes a nice to have non-functional requirement of an Automated Teller Machine (ATM)?

- (1) System shall facilitate users to withdraw money.
- (2) System should let users to deposit money.
- (3) System shall use 256 bit encryption for all communications.
- (4) System should provide users a touch screen interface.
- (5) System shall dispense money within 5 seconds.

19. Consider the following statements on using NAND, NOR gates over NOT, AND, OR gates when constructing logic circuits:

- A - They make logic circuit design simpler.
 - B - They help to construct logic circuits that consume less electricity.
 - C - They make logic circuit construction more economical.
- Which of the above statements is/are correct?

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

20. Consider the following system implementation methods:

- A - Direct
- B - Pilot
- C - Parallel

Which of the above method(s) is/are generally used to implement a home security system?

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

21. Consider the following clauses:

- A - can response to relevant environment changes
 - B - always acts according to well-defined user instructions
 - C - performs only pre-defined'set of tasks
 - D - can make decisions under incomplete information
- Which of the above can be considered as properties of software agent system?

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

22. Which of the following statements is true about Artificial Intelligence?

- (1) Inference Engine in an Expert System completely mimics human decision making process.
- (2) Knowledge Base in an Expert System consists only the primary knowledge of an expert.
- (3) Expert systems are always implemented by using Genetic Algorithms.
- (4) Genetic Algorithms provide only one solution to a given problem.
- (5) Genetic Algorithm evolves a solution for a given problem over a number of iterations.

23. Which of the following is not an application of artificial intelligence?

- (1).Self-learning robots
- (2).Expert advisory systems for professionals
- (3).Smart Phones
- (4).Recommender system on e-commerce platforms
- (5). Handwriting recognition system

24. If main memory with 64bit address bus and byte addressable what will be the maximum size of accessible memory.

- (1)16Peta byte
- (2)16Exa byte
- (3)32 Tera bytes
- (4)16Teraytes
- (5)32Peta byte

25. If main memory with 32bit address bus and byte addressable what will be the maximum size of accessible memory.

- (1)4TBbyte
- (2)4EB
- (3)4GB
- (4)4bytes
- (5)8EB

26. A.....on motherboard is used to expand the process of a computer.

Which of the followings is the most appropriate to fill in the blanks in the above statement?

- (1)Bus
- (2)Clock
- (3) RAM
- (4)Slot
- (5)ROM

27. Consider the following data input devices:

A-On screen keyboard (virtual keyboard)

B-Bar code reader

C-Magnetic card reader

Which of the above devices can be used to input data more efficiently?

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

28. The first digital computer with a stored program is,

- (1) ENIAC
- (2) EDVAC
- (3) MARK 1
- (4) PASCALINE
- (5) ANALYTICAL ENGINE

29. What is the technology used in third generation computers?

- (1) Vacuum tubes
- (2) Transistors
- (3) Integrated circuits
- (4) VLSI (Very Large Scale Integrated Circuits)
- (5) Micro processor

30. Which of the following medical equipment uses radio waves?

- (1) CAT scanner
- (2) MRI scanner
- (3) CT scanner
- (4) X – Ray
- (5) ECG

Consider the following relation to answer questions 31 and 32;

Student(index_no, national_id_no, name, date_of_birth, gender, blod_group)

Where index_no is a unique attribute and the attribute fully depends on the index_no attribute.

31. Which of the following statements is correct with respect to the normal form of the above relation?
- (1) It is in the zero normal form.
 - (2) It is in the first normal form
 - (3) It is in the second normal form
 - (4) It is in the third normal form
 - (5) Its normal form cannot be decided
32. Which of the followings can be a candidate key of the above relation?
- (1) national_id_no (2) name (3) date_of_birth (4) gender (5) blood_groupk

*Consider the following relations to answer questions 33 to 36:

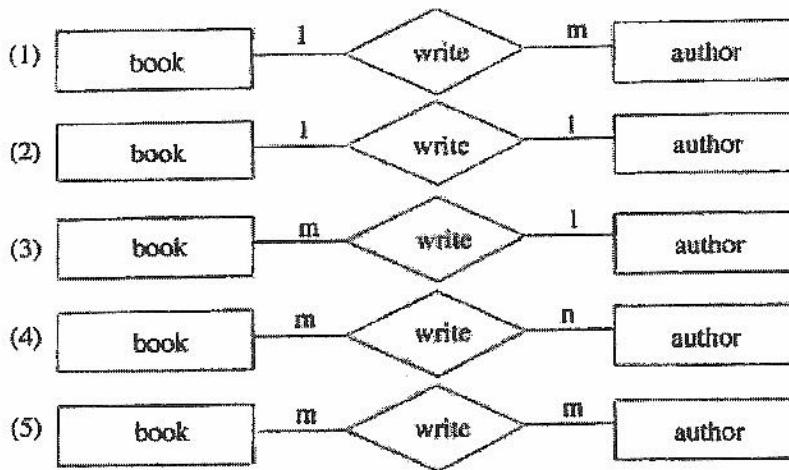
book(boo_no, title, publisher, edition)

author(author_id, name, email_address)

bookAuthor (book_no, author_id)

where book_no and author_id are unique attributes in the relations book and author respectively.

33. Which of the following statements is correct with respect to the relation bookAuthor?
- (1) book_no is the primary key.
 - (2) author_id is the primary key.
 - (3) Any single attribute can be a candidate key
 - (4) author_id is a candidate key
 - (5) book_no is part of the primary key
34. Which of the following Entity Relationship(ER)diagram correctly represents the relationship between the entities represented by the above relations?



35. Assume that above relations are converted into tables in a relational database. The following SQL query is executed on the database:

```
SELECT * FROM bookAuthor
```

Which of the following statements is correct regarding the above SQL query?

- (1) It cannot be an empty table
- (2) title column is in it
- (3) name column is in it
- (4) All the tables book, author and bookAuthor are used to produce the output.
- (5) All records in the bookAuthor table are in the output.

36. Consider the following statements regarding the Data Definition Language (DDL) used to create the table bookAuthor while maintaining data integrity.

A-It has a primary key constraint.

B-It has a foreign key constraint.

C-It has domain constraint.

Which of the above statement/s is/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

37. Consider the following memory types.

A - Dynamic Random Access Memory

B - Static Random Access Memory

C - Read Only Memory

D - Cache Memory

E - Register memory

Which of the above memory / memories is/are non volatile?

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

38. Consider the following steps.

A - Fetch next instruction .

B - Encode the instruction.

C - Decode the instruction.

D - Execute the instruction. Which of the following steps shows the sequence of the "fetch execution cycle"?

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

39. (2017-MCQ-38) Which of the following statements is correct?

(1) Application software load applications in to main memory.

(2).The programs stored in ROM are known as system software.

(3) System software support data communication between peripheral devices.

(4) Utility software is generally stored in ROM

(5) Utility software are incorporated in washing machines.

40. (2013MCQ) Sharing a single microprocessor among number of application programs using context switching is known as

(1) Multi-user processing.

(2) Multitasking.

(3) Multiprocessing.

(4) Batch processing.

(5) Online processing.

41. (2013MCQ-5) Typically the cache memory is used to store.

(1) a large volume of data temporarily.

(2) the least frequently accessed data permanently.

(3) the least frequently accessed data temporarily.

(4) the most frequently accessed data temporarily.

(5) the most frequently accessed data permanently.

42. Convert the $1CAD.F_{16}$ in to Octal,

(1) 6255.74

(2) 16255.74

(3) 17255.74

(4) 6355.74

(5) 6256.74

43. Convert 727.67_8 in to hexadecimal,

(1) 11D7.DC

(2) 1B7.BC

(3) 11B7.BC

(4) 1DB7.BC

(5) 1D7.DC

44. Convert 727.67_8 in to binary,

(1) 0011 1101 1111.1101 1100

(2) 0011 1101 0011.1101 1100

(3) 0011 1111 0111.1101 1100

(4) 0001 1101 0111.1101 1100₂

(5) 0011 1101 0111.1101 1100₂

45. Convert the $1CAD.E_{16}$ in to binary,
- (1) 1 110 010 101 101.111
 - (2) 0 110 010 101 101 111
 - (3) 1 111 010 101 101.111
 - (4) 0 110 011 101 101.111
 - (5) 0 110 011 101 110.111
46. Convert the $1CAD.F_{16}$ in to Octal,
- (1) 6255.74
 - (2) 16255.74
 - (3) 17255.74
 - (4) 6355.74
 - (5) 6256.74
47. A device that connect networks with different protocols
- (1) Switch
 - (2) HUB
 - (3) Gateway
 - (4) Proxy server
 - (5) Ethenet
48. Which of the following is/ are correct
- (1) All open systems are natural system
 - (2) All natural systems ate open system
 - (3) Most of the natural system are open system
 - (4) All closed system are natural systems
 - (5) Man cannot make closed system
49. 172.16.48.200/24 A is a
- (1) host address in a class B network.
 - (2) network address of a class C network.
 - (3) host address in 172.16.48.0/24 subnet.
 - (4) network address of a subnet with 255 hosts.
 - (5) host address with 8 network bits.
50. ~~21~~. In TCP/IP computer networks, Transport Protocol Data Unit (TPDU) is referred to as a
- (1) packet. (2) frame. (3) segment. (4) window. (5) message.

Name 3 types of buses and their functions

A.....Function.....

B.....Function.....

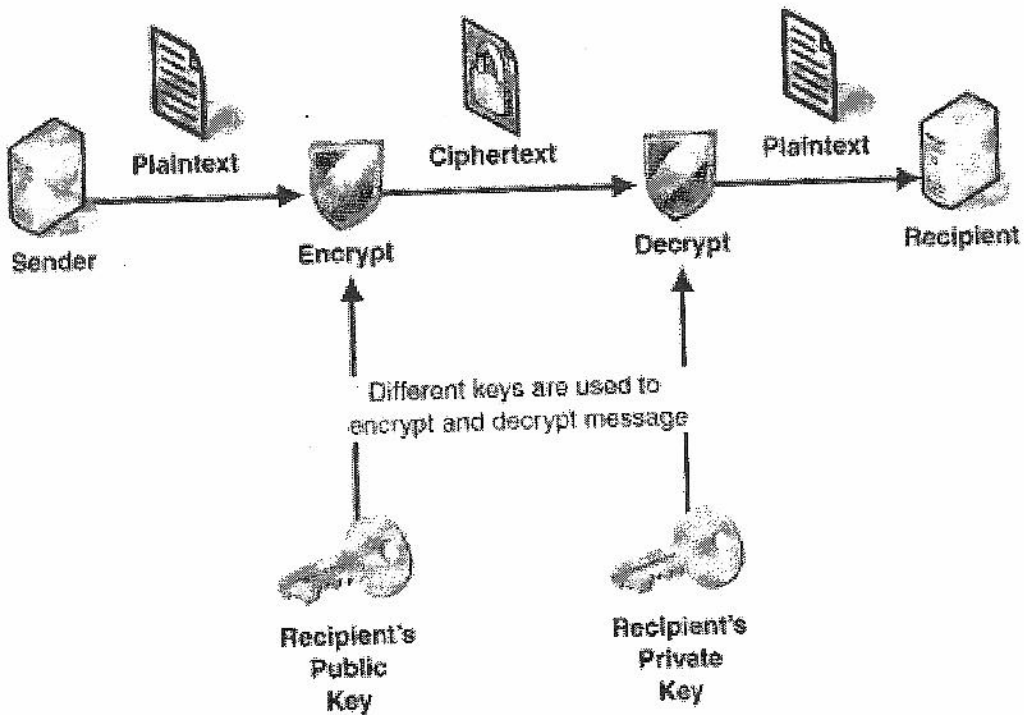
C.....Function.....

(4 marks)

(iii) What are the differences between SRAM and DRAM

.....
.....

(iv) Identify the following diagram and answer the questions given below.



a. Briefly explain what is encryption

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

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13



b. Encryption and decryption are belongs to which layer according to Open System Interconnection model

2. (a) In an operating system, what are the events that change that state of process in the "running" state?

- (i).....
- (ii).....
- (iii).....

(b) Explain the main actions performed by an operating system during context switching

- (i).....
- (ii).....
- (iii).....

(c) Explain what will happen during the booting process of a computer.

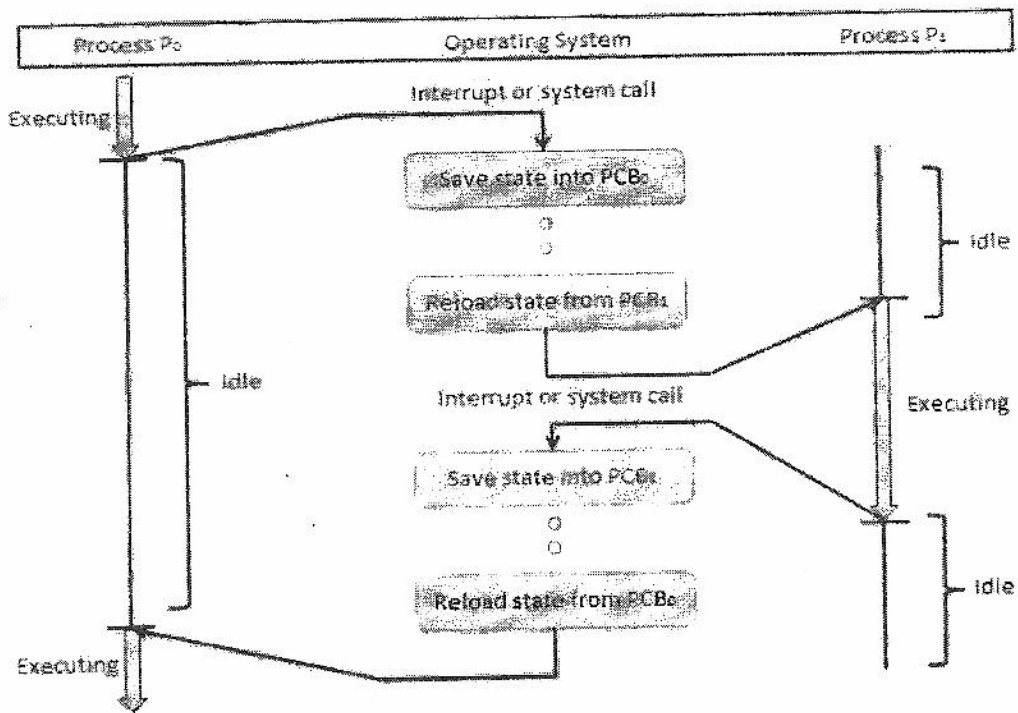
- (i).....
- (ii).....
- (iii).....

(iii). A Process Control Block is a data structure maintained by the Operating System for every process. The PCB is identified by an integer process ID (PID). A PCB keeps all the information needed to keep track of a process as listed below in the table. B stores process state information on register. The architecture of a PCB is completely dependent on Operating System. The PCB is maintained for a process throughout its lifetime, and is deleted once the process terminates.

Process ID
State
Pointer
Priority
Program Counter
CPU Register
I/O Information
Accounting Information
etc

Following diagram used two PCB's such as PCB1 and PCB2 for Process P1 and process P 2 process state diagram. When an interrupt occurs PCB keeps the process state's information until it run and terminates.

A. What does the following diagram explain.....



B. What are the two types of interrupts.....

C. What is an interrupt

D. What is multitasking?

E. How des context switching helps to multitasking

3. (a) *Provide a suitable definition for a system* (6marks)
 In an operating system, what are the events that change that state of process in the "running" state?

- (i)
- (ii)

(b) Using the definition suggested in (a) above, show that smart phone is "a system"

© State whether a smart phone is a close system or an open system. Justify your answer.

6.04, 2018

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9

Give 2 functional requirements & non functional requirements of a smart phone

(b) Explain the main actions performed by an operating system during context switching

(i)

(ii)

(iii)

(c) Explain what will happen during the booting process of a computer.

(i) Give 2 nice to have ^{non} functional requirements of smart phone

(ii)

(iii)

4 Environmental Institute of Colombo intends to develop a website to provide information on an art competition for students. A web page from this website and another web page with the entry form to register for the competition are shown in the Figure 6.1 and Figure 6.2 respectively.

Using appropriate HTML tags, create an HTML file required to render the web page as shown in Figure 6.1.

Your code should satisfy the following requirements. It is required to format the text of the list in 'Calibri' font, 14 points high, in red color. The list should be bulleted with squares. Format the list by using internal or external style sheets only. Further, when a user clicks on the hypertext 'online entry form' on the web page, the entry form given in Figure 6.2 should be rendered on a new tab/page. Assume that the name of the HTML file of the web page with the form is 'form.html'

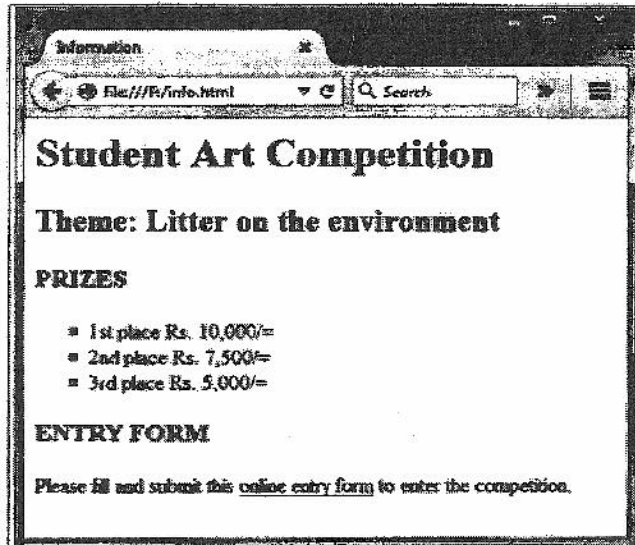


Figure 6.1: A web page of the website

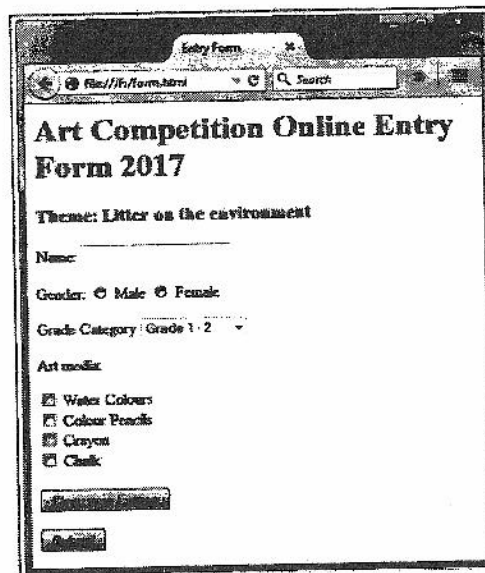
Complete the following HTML codes to create above webpage.

```

<html><head><meta charset="utf-8">
    <title> .....</title>
    <style>
    .....{
        .....;
        .....;
        .....;
        .....;
    }
</.....>
</.....>
<body>
<h1>Student Art Competition</h1>
<h2>Theme: Litter on the environment </h2>
<h3>PRIZES </h3>
<.....>
<li>1st place Rs. 10,000/= </li>
<li>2nd place Rs. 7,500/= </li>
<li>3rd place Rs. 5000/= </li>
<.....>
<h3>ENTRY FORM</h3>
<p>Please fill and submit this
<a href = "form.html" target = _blank> online entry form</a>
to enter the competition. </P>
</body></html>

```

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ICT-A
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Entry Form

file:///f:/forms.html

Search

Art Competition Online Entry Form 2017

Theme: Litter on the environment

Name: _____

Gender: Male Female

Grade Category: Grade 1 - 2

Art media:

Water Colours

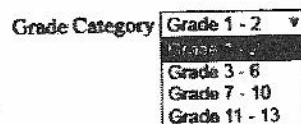
Colour Pencils

Crayon

Chalk

Figure 6.2: Entry form

(b) Using appropriate HTML tags, create an HTML file to render the entry form given in Figure 6.2. The options for 'Grade Category' are given in the Figure 6.3. Your code should satisfy the following requirements. When the 'Clear your Entries' button is clicked, all the entries of the form should be cleared. Similarly, when the 'Submit' button is clicked, the form should be submitted to the server.



Grade Category: Grade 1 - 2

- Grade 1 - 2
- Grade 3 - 6
- Grade 7 - 10
- Grade 11 - 13

Figure 6.3: Options for Grade Category

Complete the following HTML tag to create above form

```
<html>  
  
<head>  
  
<meta charset="utf-8">  
  
<title>Entry form</title>  
  
</head>  
  
<body>  
  
<h1>Art Competition Online Entry Form 2017</h1>  
  
<h3>Theme:Litter on the environment</h3>
```

```
<form method = "get" action = "script.php">
```

```
Name: <.....>
```

```
<p>Gender:
```

```
<.....>Male
```

```
<.....>Female
```

```
</p>
```

```
<.....>
```

```
<option value = "g1">Grade 1 - 2</option>
```

```
<option value = "g2">Grade 3 - 6</option>
```

```
<option value = "g3">Grade 7 - 10</option>
```

```
<option value = "g4">Grade 11 - 13</option>
```

```
</select></p>
```

```
<p>Art media:</p>
```

```
<.....>Water Colors<br/>
```

```
<.....>Colour Pencils<br/>
```

```
<.....>Crayon<br/>
```

```
<.....>Chalk<br/>
```

```
<p><.....value = "Clear your Entries"></p>
```

```
<p><.....value = "submit"></p>
```

```
</form>
```

```
</body> Poly
```

```
</html>
```

6-04-2018

De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT



Information and Communication Technology



2nd Term Test 6th April 2018 Grade 13 Essay Time: 2Hours

Name:.....

Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT De Mazenod College Kandana A/L ICT

Essay Part B

Answer only 4 questions

1. An electric Self-driving AI ROBOT CAR consist of 4 security lockers such as face recognition security locker (S), Irish matching locker (I), Finger print matching locker (F) and voice password locker(V). When the AI ROBOT CAR is powered on user should unlock at least 3 lockers out of 4 lockers. Then the AI ROBOT CAR system start functioning (A). locker on and off states detect as 1 and 0

- a. Draw the correct truth table to find out the functioning state (A) of AI ROBOT CAR
- b. Write a Boolean expression to represent functioning state (A) of AI ROBOT CAR
- c. Simplify using **only Boolean algebraic rules**.
- d. Construct the logic circuit using only NOR gates and one OR gate find out the functioning state (A) of AI ROBOT .

* Assume that the electricity is always supplied to the AI ROBOT CAR .

2. A.

Saudi Arabia issues the first non-human citizenship to expert AI Robot Sophia

- a. What is expert system?
- b. What is AI
- c. Compare 3 differences(input, process & output) between Regular Programming and AI



B. Briefly explain following terms

- a. Ubiquitous Computing
- b. Augmented Reality

B.

- a. What is software agent?
- b. What are the characteristics of software agent
- c. Write 3 applications of software agent

C.

- a. What is virtual Storefront?
- b. What are the two main components of the E-market place?
- c. What is SCM?



3. The candidates who have been selected for university entrance should register for the given academic year with the university given to them. Candidates who do not register before the 'last date' announced by each university will lose their university entrance. Once a candidate registers with the given university, the candidate becomes a registered student of that university. Registered students can apply for financial support, such as Mahapola scholarships and Bursary, separately. These financial supports could be either full or partial. All registered students will receive a laptop. However, its ownership cannot be transferred to another student. The user requirements of the above system are listed below. A user shall be able to obtain:

- (a) A list of students registered for a given academic year with a given university.
- (b) Information (such as model, serial number and warranty period) about the laptops given to each student.
- (c) list of students who applied for financial support.

Draw an Entity Relationship (ER) diagram required to design a database to represent the above system description and to satisfy the user requirements. State all your assumptions clearly.

4. Draw the activity diagram, Document Flow Diagram and level 0 DFD of the sales information system of a company called Bookland, only by using the words in **Boldface** in the description given below.

Bookland is a book store that specialized in selling rare books, which are usually not available from other sources. As a practice, Bookland maintains just a one copy of any book at a time due to the higher price of rare books.

Typically, a customer makes a **book enquiry** over the phone from the **Sales Assistant** at Bookland. She then goes through **book details** in the **Inventory** file to check whether such a book is in their stock. If the details of the book is found in the Inventory file, the Sales Assistant then refers to the **Hold-on Requests** tray to make sure that the **book status** is 'available' and makes a **reply to the enquiry**. If the book status is 'available' and the customer wishes to reserve the book, she then takes customer's **personal details** and places a **hold-on request** against that book in the Hold-on Requests tray making the book no longer available.

When the customer comes to make the payment and collect the book, the Cashier at Bookland refers to the Hold-on Requests tray and finds the relevant hold-on request made by the customer. If there is a valid hold-on request, she then accepts the payment from the customer, issues a **payment receipt** to the customer and finalizes the sales. The customer is then allowed to take away the book. The cashier also files the **copy of the payment receipt** in the **Sales** file, uses it at the end of the day to compile a **sales report** and sends it to the **Owner** of the Bookland. After every sale, the Cashier updates the book details in the Inventory file and keeps the stock up to date. When the Owner supplies books to Bookland, he sends **details of books** to Cashier and the Cashier adds them one by one to the Inventory file.

G. 04. 2018
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5. Storage compaction is needed to bring all used storage to one end of the storage in order to claim unused/usable storage space for efficient use. If a hard disk consist of 8 read/write headers , 1024x1024 tracks, 1024 sectors per track and 512 bytes per sectors.

- a. Find out the capacity of hard disk
- b. For a file of size 20800 bits , calculate the wastage in file space due to incomplete filling of the last cluster (Assume that a cluster has a size of 512 bytes)
- c. Create python program to calculate the capacity of the hard disk. (The program could be able to calculate the capacity according to input values and information should store as hard disk.txt file) each hard disk has named with index number.
- d. Create python program to find out the wastage according to question (b)

6.

A)

A DMC school has two network Zones. DMC-Office-Zone is located at DMC office it uses Public IP address, that contains and exposes school's external-facing services such as a web server (Public IP address) to the Internet while hiding away the rest of the network behind a firewall (using local IP address)

A network with a DMC-Office-Zone has been assigned the public IP address range 123.45.67.0 with subnet mask 255.255.255.224. DMC-Office-Zone contains the web server and mail server.

Educational

DMC-Student-Zone use only private IP. DMC-Educational-Zone has 4 subnets for internal use having the private IP address range 10.0.0.0 with the subnet mask 255.0.0.0. as follows,

Subnet 1	A/L ICT lab
Subnet 2	O/L ICT Lab
Subnet 3	Library
Subnet 4	Primary IT Lab

Computers in each subnet can access resources in all other subnets. The school decided to connect the 4 subnets to the internet through a proxy server. There is also an application server for its internal client computers. Application server contains term test exam passed papers, sport news, ebooks , home works, encyclopedia's and etc. *Assume that the entire private address range is used .

Note:-When the packet goes to the proxy server, its source IP address is rewritten with the public IP address of proxy

- II. Complete the network diagram by labeling A, B, C, D, E, Z, Y and Z
- III. Identify the devices required to establish this network
- IV. When accessing internet how does private IP communicate with public IP?
- V. Draw the web server, mail server, proxy server and application server in the network diagram.

- VI. What is the IP range with (CIDR) in DMC-Educational-Zone...../.....
- VII. Find out the Broadcast IP and Network IP of each subnet

- D. Sri Lankan government has blocked the access of social media for certain period of time.
- Briefly explain how did the government block the social media?
After few days of blocking, most of them could be able to access social media via VPN.
 - Explain how people could be able to access blocked websites through VPN (Draw a network diagram and explain it)

