Rajasthan Public Service Commission - 2016
Paper : VPITI-Information-and-Technology

Ques # :1

In a 5 variable K-Map the correct order of bits in horizontal directions is (assuming variables C,D,E along horizontal direction)
1) 000, 001, 011,010,110,111,101,100
2) 000, 001, 011,010,110,111,100,101
3) 000, 001, 010, 011, 110, 111, 100, 101
4) 000, 001, 010, 011, 111, 110, 100, 101

Ques # :2

The truth table shown below represents a

A	B	C	X
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

1) 3-Input Ex-or Gate
2) 3-Input Comparator
3) 3-Input NAND Gate
4) 3-Input NOR Gate

Ques # :3

Binary Equivalent of $(63.25)_{10}$ is

1) 111001.01
2) 111111.01
3) 111111.1
4) 11111.11

Ques # :4

$(35.1)_8 = (?)_{16}$

1) 17.4
2) 1D.2
3) D1.2
4) E8.1

Ques # :5

Given two binary numbers, X=1010100 an Y= 1000011, X-Y and Y-X respectively are
1) 0010001, (-)0010001
2) 0010001, (-)1101111
3) 1101111, 0010001
4) 0010111, 1010111

Ques # :6

Decimal Number 9 in 2421 codes will represented as

1) 1001
2) 1100
3) 1110
4) 1111
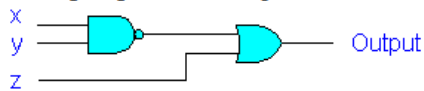
Ques # :7

If 24+17=40 is true, the numbers are represented in

1) Base 10
2) Base 16
3) Base 11
4) Base 8

Ques # :8

The figure given below implements the Boolean function

1) x'y'+z
2) (x'+y')z
3) x'y'z
4) x'+y'+z

Ques # :9

If the expression {[(AB)'C]'D}' is simplified, we get

1) (A'+B')C+D'
2) (A+B')C'+D'
3) A'+(B'+C')D
4) A'+B'+C'+D'

Ques # :10

Which of the following functions equals the function: f= (y+x)(z'+x)

1) x(y'+z)
2) x+yz'
3) (y+x')(x'+z')
4) x(y'+z`)

Ques # :11

If p:2+3>1, ~p is equal to

1) 2+3<1
2)

2+3≤1

3)
2+3≥1

4) 2+3=1

Ques # :12

Let
p: 2 is a positive integer
q: √2 is a rational number
then p∨q (disjunction) of p and q is:-

1) 2 is a positive integer and √2 is a rational number

2) 2 is not a positive integer and √2 is a rational number

3) 2 is a positive integer or 2 is not a rational number

4) 2 is a positive integer or √2 is a rational number

Ques # :13

A bookshelf is to be used to display six new books. Suppose there are eight computer science books and five French books from which to choose. If we decide to show 4 Computer Science books and two French books and we are required to keep books in each subject together, how many different display are possible:
1) 67200
2) 33600
3) 40320
4) 80640

Ques # :14

Suppose that an urn contains 15 balls of which eight are red and 7 are black. In how many ways can five balls be chosen so that at least two are red.
1) 2700
2) 2701
3) 2702
4) 1500

Ques # :15

A relation R on a set A is called an equivalence relation if it fulfils the properties of
1) Reflexive and Transitive
2) Reflexive and Symmetric
3) Symmetric and Transitive
4) Reflexive, Symmetric and Transitive

Ques # :16

How many relations are there on a set with n elements that are symmetric and a set with n elements that are reflexive and symmetric ?
1) 2n(n+1)/2 and 2n.3n(n–1)/2

2) 3n(n–1)/2 and 2n(n–1)
3) 2n(n+1)/2 and 3n(n–1)/2
4) 2n(n+1)/2 and 2n(n–1)/2

Ques # :17

Let A=B=Z, and C be the set of even integers. Let $f : A \rightarrow B$ and $g : B \rightarrow C$ be defined by $f(a) = a+1$, $g(b) = 2b$. Then the composition of f and g defined as $g \circ f$ will be equal to

1) 2a+1
2) 2b+1
3) 2(a+1)
4) 2(b+1)

Ques # :18

Consider an undirected random graph of eight vertices. The probability that there is an edge between a pair of vertices is 1/2. What is the expected number of unordered cycles of length three?

1) 1/8
2) 1
3) 7
4) 8

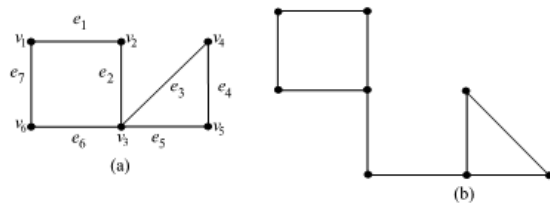Ques # :19

The number of leaf nodes in a complete binary tree of depth d is

1)

$$2^d$$

2)

$$2^{d-1}+1$$

3)

$$2^{d+1}+1$$

4)

$$2^d+1$$

Ques # :20

In the figure given below, two graphs are shown.

(a)

(b)

Which statement is TRUE about the graphs?

1) a is an Euler graph but b is not an Euler graph

2) Both a and b are Euler graphs.

3) None of the a and b are Euler graph

4) a is not an Euler graph but b is an Euler graph

Ques # :21

What does the following declaration mean?
int (*ptr)[10];

1) *ptr* is array of pointers to 10 integers

2) *ptr* is a pointer to an array of 10 integers

3) *ptr* is an array of 10 integers

4) *ptr* is an pointer to array

Ques # :22

What will be the output of the program ?

```
#include<stdio.h>

int main()
{
    int a[5] = {5, 1, 15, 20, 25};
    int i, j, m;
    i = ++a[1];
    j = a[1]++;
    m = a[i++];
    printf("%d, %d, %d", i, j, m);
    return 0;
}
```
1) 2, 1, 15
2) 1, 2, 5
3) 3, 2, 15
4) 2, 3, 20

Ques # :23

Which of the following is not a valid variable name declaration?
1) int _3a
2) int _a3;
3) int a_3;
4) int 3_a;

Ques # :24

Read the following statements for a program in C? A. Keyword "extern" is used to indicate the functions/ variables defined in another file but used in the current file. B. In case, an external variable and local (automatic) variables use the same identifier, the external variable will have precedence over the local variable if scope resolution operator is not used. Which is correct option with regard to the two statement ?

1) Both A and B are correct
2) Both A and B are incorrect
3) Only A is correct
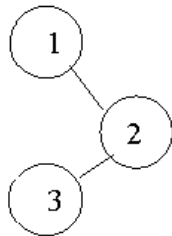4) Only B is correct.

Ques # :25

In a C program, one student writes *float a; a=5/3;*. The other student writes; *float a; a=5.0/3;*. What will be the value of "*a*" if printed using *printf* function ?

1) 1.6667 for both
2) 1.0 for both
3) 1.0 for first and 1.6667 for the second
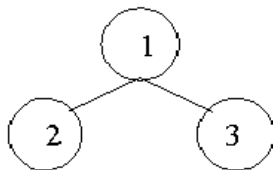4) 1.6667 for the first and 1.0 for the second

---

Ques # :26

Which of the following trees will produce preorder, postorder and inorder traversal of 123, 231, 213 respectively
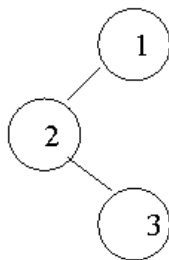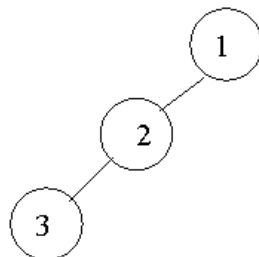
1)

2)

3)

4)

Ques # :27

Assume a singly linked list with a head and tail pointer (i.e., pointers to the first and last nodes in the list). Given that representation, which of the following operations could be implemented in O(1) time? I. Insert item at the front of the list II. Insert item at the rear of the list III. Delete front item from list IV. Delete item from rear of list

1) I and II
2) I and III
3) I, II, and III
4) I, II, and IV

Ques # :28

In which testing all the modules of the system are tested and integrated as complete system

1) Bottom up testing
2) Top-down testing
3) Sandwich testing
4) Big-Bang testing

Ques # :29

…………..model couples the iterative nature of the prototyping with the controlled and systematic aspects of the linear sequential model.

1) Spiral
2) Rapid Application Development (RAD)
3) Iterative Development
4) Incremental Development

Ques # :30

All activities lying on critical path have slack time equal to

1) 0
2) 1
3) 2
4) None of thses

Ques # :31

How Risk Exposure (RE) is computed if P and L corresponds to risk probability and loss respectively

1) RE = P/L
2) RE = P + L
3) RE = P*L
4) RE = 2* P *L

Ques # :32

How many test cases a boundary value analysis yields for a function of two variables.

1) 4n + 3
2) 4n + 1
3) n + 4
4) None of these

Ques # :33

The Incremental Model is a result of combination of elements of which two models?
1) Build & FIX Model and Waterfall Model
2) Linear Model and RAD Model
3) Linear Model and Prototyping Model
4) Waterfall Model and RAD Model

Ques # :34

A key concept of quality control is that all work products
1) are delivered on time and under budget
2) have complete documentation
3) have measurable specification for process outputs
4) are thoroughly tested before delivery to the customer

Ques # :35

Find out the correct order of activities corresponding to software testing
1) unit, integration, system, validation
2) system, integration, unit, validation
3) unit, integration, validation, system
4) none of these

Ques # :36

Which two of the following models will not be able to give the desired outcome if user's participation is not involved?
1) Waterfall and Spiral
2) RAD and Spiral
3) RAD and Waterfall
4) RAD and Prototyping

Ques # :37

Statistical testing is a software testing process in which the objective is to measure the …………….. of the software rather than to discover software faults.
1) availability
2) reliability
3) reusability
4) all of these

Ques # :38

Find odd one
1) K-means.
2) Hierarchical.
3) Partitional.
4) Splitting.

Ques # :39

The load and index is _____.

1) a process to upgrade the quality of data before it is moved into a data warehouse.

2) a process to upgrade the quality of data after it is moved into a data warehouse.

3) a process to reject data from the data warehouse and to create the necessary indexes.

4) a process to load the data in the data warehouse and to create the necessary indexes.

Ques # :40

In the daily running of the business which of the following information systems are used?

1) Operational planning systems.

2) Transaction Processing systems (TPS).

3) Process control systems.

4) Office automation systems (OAS).

Ques # :41

To include integrity constraint in an existing relation use :

1) Create table

2) Modify table

3) Alter table

4) Drop table

Ques # :42

Which of the following is true with respect to three-tier data warehouses

1) Once created, the data marts will keep on being updated from the data warehouse at periodic times.

2) Once created, the data marts will directly receive their new data from the operational databases.

3) The data marts are different groups of tables in the data warehouse.

4) A data mart becomes a data warehouse when it reaches a critical size.

Ques # :43

Which of the following statements is not true about refreshing a data warehouse

1) It is a process of managing timing differences between the updating of data sources and the related data warehouse objects.

2) Updates to dimension tables may occur at different times than the fact table.

3) The data warehouse administrator has more control over the load time lag than the valid time lag.

4) None of these

Ques # :44

Which type of following clustering computes augmented cluster ordering

1) OPTICS

2) CLIQUE

3) STING

4) CLUSTER

Ques # :45

The truth values of traditional set theory is _____ and that of fuzzy set is _____

1) Either 0 or 1, between 0 & 1

2) Between 0 & 1, either 0 or 1

3) Between 0 & 1, between 0 & 1

4) Either 0 or 1, either 0 or 1

Ques # :46

The _____ contains information that gives users an easy-to-understand perspective of the information stored in the data warehouse.

1) business metadata.

2) technical metadata

3) operational metadata

4) financial metadata

Ques # :47

"Which of the following php statement/statements will store 111 in variable num? i) int $num = 111; ii) int num = 111; iii) $num = 111; iv) 111 = $num;

1) Both i) and ii)

2) All of the mentioned

3) Only iii)

4) Only i)

Ques # :48

The four kinds of class members in Java Script are

1) Instance methods, Instance fields, Static method, Dynamic method

2) Instance fields, Instance methods, Class fields, Class methods

3) Instance fields, Non-instance fields, Dynamic methods, Global methods

4) Global methods, Local methods, Dynamic methods, Static methods

Ques # :49

Transaction processing is associated with everything below except

1) producing detail, summary, or exception reports.

2) recording a business activity.

3) confirming an action or triggering a response.

4) maintaining data.

Ques # :50

Select emp_name from department where dept_name like ' _____ Computer Science'; Which one of the following has to be added into the blank to select the dept_name which has Computer Science as its ending string ?

1) %

2) _

3)
   ‖

4) $

Ques # :51

A lock that allows concurrent transactions to access different rows of the same table is known as a

1) Database-level lock

2) Table-level lock

3) Page-level lock

4) Row-level lock

Ques # :52

Using Relational Algebra, the query that finds customers, who have a balance of over 1000 is

1) PCustomer_name(s balance >1000(Deposit))

2) s Customer_name(Pbalance >1000(Deposit))

3) PCustomer_name(s balance >1000(Borrow))

4) s Customer_name(Pbalance >1000(Borrow))

Ques # :53

If an attribute of a composite key is dependent on an attribute of the other composite key, normalization called .... is needed.

1) DKNF

2) BCNF

3) Fourth

4) Third

Ques # :54

If several concurrent transactions are executed over the same data set and the second transaction updates the database before the first transaction is finished, the ____ property is violated and the database is no longer consistent.

1) Atomicity

2) consistency

3) isolation

4) Durability

Ques # :55

Which of the following protocols ensures conflict serializability and safety from deadlocks?

1) Two-phase locking protocol

2) Time-stamp ordering protocol

3) Graph based protocol

4) Both Two -phase locking protocol and Time-stamp ordering protocol

Ques # :56

If a transaction is performed in a database and committed, the changes are taken to the previous state of transaction by

1) Flashback

2) Rollback

3) Both Flashback and Rollback

4) Cannot be done

Ques # :57

………is a special type of integrity constraint that relates two relations & maintains consistency across the relations.

1) Entity Integrity Constraints

2) Referential Integrity Constraints

3) Domain Integrity Constraints

4) Key Constraints

Ques # :58

The DROP TABLE statement:
1) Deletes the table structure only
2) Deletes the table structure along with the table data
3) works whether or not referential integrity constraints would be violated
4) is not an SQL statement

Ques # :59

Consider the following statements: (I) HTTP runs over TCP (II) HTTP describes the structure of web pages (III) HTTP allows information to be stored in a URL (IV) HTTP can be used to test the validity of a hypertext link Which statements are true.
1) I and III are true
2) I, II, and III are true
3) I, II, and IV are true
4) I, II and IV are False

Ques # :60

Match the given commands in Group-I with the protocols in Group-II Group I Group I I (a)PROMPT 1.FTP (b)HEAD 2.HTTP (c)RCPT 3. SMTP
1) a-1, b-2, and c-3
2) a-2, b-1, and c-3
3) a-3, b-1, and c-2
4) a-2, b-3, and c-1

Ques # :61

In HTTP, for sending data to server which of the following command(s) is used
1) Only GET
2) Only POST
3) Either of GET or POST
4) Neither GET nor POST

Ques # :62

Implicit object(s) in JSP
1) Only SESSION
2) Only REQUEST
3) Both REQUEST and SESSION
4) Neither REQUEST nor SESSION

Ques # :63

Which of the following statement is false
1) HTTP is a vehicle for accessing the WWW
2) To access a site remotely SSH is used
3) TELNET is used to access a site remotely
4) None of them is true

Ques # :64

Which of the following statements are true (a) Today, hypertext changed to hypermedia (b) Each webpage is a file with name and address (c) A webpage correspond to hypermedia

1) a and b
2) a and c
3) b and c
4) all of them

Ques # :65

How many identifiers we need to define the webpage

1) 2
2) 3
3) 4
4) 5

Ques # :66

Which of the following is not a client/server application

1) Internet chat
2) Web Browsing
3) E-mail
4) Ping

Ques # :67

Which of the following is NOT an application layer protocol

1) telnet
2) ftp
3) http
4) ARP

Ques # :68

Which of the following is/are true with respect to "Augmented Humanity" (a) It is the next stage of human reliance on machine (b) Use of technology to both aid and replace human capability (c) It will join man and machine as one (d) Augmentation defines machinery used to replace and enhance the parts of the body

1) a and b
2) a, c and d
3) a, b, and c
4) all of them

Ques # :69

Which of the following is/are true with respect to "Photonics" (a) It's a science of light generation, detection and manipulation (b) It will exploit high-speed silicon photonics to improve data transfer between core and memory exponentially (c) It would exponentially improve the power of microprocessor (d)It will replace the copper wire connectivity in processors

1) Only a
2) a, b, and c
3) a and d
4) all of them

Ques # :70

A type of cybercrime that occurs in pay per click online advertising when a person, automated script or computer program imitates a legitimate user of a web browser clicking on an ad, for the purpose of generating charge per click without having actual interest in the targets of the ad's link

1) Phishing
2) Zombie
3) Click fraud
4) None of these

Ques # :71

The Indian parliament passed the Information Technology Bill, which is regarded as the mother legislation regulating the use of computers, computer system and computer networks as also data and information in the electronic format, in the year

1) 2000
2) 2001
3) 2002
4) 2003

Ques # :72

Which of the following is a cybercrime

1) Hacking
2) Worm attack
3) Virus attack
4) All of them

Ques # :73

Which is not a function of data link layer

1) Framing
2) Flow Control
3) Signal encoding
4) Error control

Ques # :74

In Manchester Encoding, the data bit is represented by

1) 0 as high, 1 as low
2) Both 0 and 1 as transition in the middle of bit period
3) 0 as transition at the beginning of bit period, 1 as no transition
4) Both 0 and 1 as NO transition in the middle of bit period

Ques # :75

A ………… is used to interconnect two networks at data link layer

1) Hub
2) Repeater
3) Bridge
4) Router

Ques # :76

In TCP/IP, network layer and transport layer provides ……………….. Services respectively

1) Only Connectionless, Both Connectionless and Connection Oriented

2) Both Connectionless and Connection Oriented, Only Connectionless

3) Connectionless, Connection Oriented

4) Connection Oriented, Connectionless

Ques # :77

In ……………………….., the error free frames received following an erroneous frame are buffered and only the oldest unacknowledged frame is retransmitted by the sender.

1) Go Back N

2) Selective Repeat

3) One bit Sliding Window Protocol

4) All the above

Ques # :78

In Point-to-Point Protocol (PPP), network layer option are negotiated using

1) Link Control Protocol

2) Dynamic Host Control Protocol

3) Internet Protocol

4) Network Control Protocol

Ques # :79

In …………………, the sender starts transmitting the data as soon as it has data to send.

1) Pure ALOHA

2) Slotted ALOHA

3) Persistent CSMA

4) Nonpersistent CSMA

Ques # :80

In 100BaseFX, maximum distance between a station and a hub is limited to……

1) 100 mtrs.

2) 1000 mtrs.

3) 2000 mtrs.

4) 10000 mtrs.

Ques # :81

……………………………. routing algorithm suffers from count-to-infinity problem

1) Link State

2) Flooding

3) Distance Vector

4) Reverse Path Forwarding

Ques # :82

In Link State Routing, ………………….. is employed to distribute the link state packets.

1) Broadcasting

2) Hierarchical Routing

3) Distance Vector Routing

4) Flooding

Ques # :83

Ethernet uses an address of length………. bits for identifying stations.

1) 48 bits

2) 64 bits

3) 32 bits

4) 16 bits

Ques # :84

A process is I. a program in execution II. the entity that can be assigned to and executed on a processor III. a unit of activity characterized by a single sequential thread of execution, a current state, and an associated set of system resources Which of the statements are correct?

1) Only I is correct.

2) Only III is correct

3) All the three are correct

4) All the three are incorrect

Ques # :85

At any given point of time, while a program is executing, a number of elements together characterizes the program uniquely. These elements are stored in a data structure called

1) Program Counter

2) Stack

3) Heap

4) Process Control Block

Ques # :86

Which is not a valid activity for causing transition of a process state?

1) Release

2) Exit

3) Dispatch

4) Time-out

Ques # :87

Under which of the following situations, a process will be switched?

1) Clock Interrupt

2) I/O Interrupt

3) Memory Fault

4) All the above

Ques # :88

Which of the following refers to the associative memory?

1) The address of the data is generated by the CPU

2) The address of the data is supplied by the users

3) There is no need for an address i.e. the data is used as an address

4) The data are accessed sequentially

Ques # :89

A system program that combines the separately compiled modules of a program into a form suitable for execution

1) assembler
2) linker
3) compiler
4) Parser

Ques # :90

Message passing system allows processes to :

1) share data
2) communicate with one another without resorting to shared data.
3) Synchronize with one another without resorting to shared data.
4) communicate with one another by resorting to shared data

Ques # :91

………………………… strategy allows processes that are logically runnable to be temporarily suspended.

1) preemptive scheduling
2) non preemptive scheduling
3) shortest job first
4) first come first served

Ques # :92

Which of the following is not TRUE for storage compaction?

1) Technique of storage compaction involves moving all occupied areas of storage to one end or other of main storage
2) compaction does not involve relocation of programs
3) compaction is also known as garbage collection
4) the system must stop everything while it performs the compaction

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Ques # :93

Optimal Asymmetric Encryption Padding is employed in RSA to counter

1) Known Ciphertext Attack
2) Chosen Ciphertext Attack
3) Known Plaintext Attack
4) Chosen Plaintext Attack

Ques # :94

In Digital Signature Schemes, ………….. is used for .... whereas ………….. is used for……………….

1) Private Key, Encryption, Public Key, Decryption
2) Private Key, Decryption, Public Key, Encryption
3) DES, Encryption, DES, Decryption
4) None of the above is correct sequence of words

Ques # :95

What is the correct ordering of attacks on the basis of difficulty level (High to low)

1) known plaintext, chosen plaintext , chosen ciphertext, ciphertext only

2) known plaintext, chosen ciphertext, chosen plaintext, ciphertext only

3) ciphertext only, known plaintext, chosen plaintext, chosen ciphertext

4) ciphertext only, chosen plaintext, known plaintext, , chosen ciphertext,

Ques # :96

Which security service is not provided by IPSec

1) Access control

2) Connectionless integrity

3) User authentication

4) Rejection of replayed packets

Ques # :97

………………… is a method of attacking a challenge-response authentication system that uses the same protocol in both directions.

1) Replay Attack

2) Denial of Service Attack

3) Masquerading

4) Reflection Attack

Ques # :98

Encryption is primarily used to provide ………………. security service.

1) Confidentiality

2) Access Control

3) Non-repudiation

4) User Authentication

Ques # :99

An ATM cell has the payload field of

1) 53 bytes

2) 48 bytes

3) 64 bytes

4) 56 bytes

Ques # :100

Frame Relay's throughput is lower than that of ATM because

1) Frame Relaying have error control (ARQ) functionality but not ATM.

2) ATM does not need to have CRC checking/generation or bit stuffing functionality in the packets as in Frame Relay.

3) Frame Relaying needs to do multiplexing of logical channels but not ATM.

4) Although both Frame relay and ATM have frame boundary recognition(flags), ATM doesn't have bit stuffing as in frame Relaying.

Vice Principal (Information Tech.) Exam 2012				
Exam Date 14-02-2016				
Key Issue Date 23-02-2016				
SET_A	RES		SET_A	RES
1	1		51	4
2	3		52	1
3	2		53	2
4	2		54	3
5	1		55	2
6	4		56	4
7	3		57	2
8	4		58	2
9	1		59	3
10	2		60	1
11	2		61	3
12	4		62	3
13	1		63	4
14	3		64	4
15	4		65	3
16	4		66	4
17	3		67	4
18	3		68	4
19	1		69	4
20	1		70	3
21	2		71	4
22	3		72	4
23	4		73	3
24	3		74	2
25	3		75	3
26	2		76	1
27	3		77	2
28	4		78	4
29	1		79	1
30	1		80	3
31	3		81	3
32	2		82	4
33	3		83	1
34	3		84	3
35	1		85	4
36	4		86	2
37	2		87	4
38	4		88	3
39	4		89	2
40	1		90	2
41	3		91	1
42	1		92	2
43	4		93	2
44	1		94	1
45	1		95	3
46	1		96	3
47	3		97	4
48	2		98	1
49	3		99	2
50	1		100	2

* Means deleted