Comprehensive Question Preview

Questions	Choices
Security and Privacy are less of an issue for devices in a _____ topology	1 Mesh 2 Tree 3 Bus 4 Star
Mail services are available to network users through the _____layer	1 Network 2 Datalink 3 Application 4 Session
A digital signal has a bit rate of 2000 bps. What is the duration of each bit?	1 500 ms 2 500 µs 3 490 ms 4 5000µs

A digital signal has a bit interval of 40μs. What is the bit rate?	1 25kbps 2 50kbps 3 45kbps 4 70kbps
A sin wave has a frequency of 8 KHz. What is the period?	1 125μs 2 100μs 3 45μs 4 130μs
Hamming code is a method of	1 Error detection 2 Error correction 3 Error encapsulation 4 Error manipulation
ARQ stands for	1 Automatic Repeat Quantization 2 Automatic Repeat Request 3 Acknowledgement Repeat Request 4

	Automatic Re-transmission Request
Which of the following is not an internetworking device?	1 Bridge 2 Gateway 3 Router 4 Filter
In ER- Relational Mapping, Binary 1:1 Relationship types are mapped to ----------	1 The primary key of one side as foreign key of the other side and other attributes of the relationship as attributes to the relation 2 The primary keys of both sides as primary key of the relations 3.No changes required , relation is kept as such with associations 4. No new relation is created for relationship types
	1 virtual circuit subnet

Each packet is routed independently in	2 short circuit subnet 3 datagram subnet 4 ATM subnet
Nested documents in the HTML can be done using	1 frame 2 nest 3 iframe 4 into
PSW is saved in stack when there is a	**1.Interrupt recognized** 2.Execution of RST instruction 3.Execution of CALL instruction 4.All of these
When process requests for a DMA transfer ,	1. Another process gets executed 2. Both a and c 3. The process continues execution 4. Then the process is temporarily suspended
What is the architecture on which RISC systems are based?	1.Jump 2.Exponential 3.Load and Store 4.Add, Subtract
	1 yes 2

Can floating point add/subtract operation be pipelined?	no 3 maybe sometimes 4 if the range is between 100 and 1000
Suggest one alternative method to perform multiplication in the computer ALU?	1.Repeated addition 2.logarithms 3.exponential calculations 4.reciprocal of division
Can approximate values concept be used for processor cache operation?	1 yes 2 no 3 not for processor caches 4 not for caches but for main memory
How do you normalize any given binary fraction number with leading zero(es)	1 remove leading zero(es) 2 subtract from non-zero constant 3 add non-zero constant 4 cannot be done
Creating a B Tree index for your database has to specify in _____.	1. TCL 2. SDL 3. VDL 4 DDL

Assume transaction A holds a shared lock R. If transaction B also requests for a shared lock on R.	1.It will result in a deadlock situation. 2.It will immediately be granted. 3.It will immediately be rejected. **4.It will be granted as soon as it is released by A .**
The term scheme means:	1.the relationship service bereau **2.a map of overall structure of a database** 3.a parent with no owners 4.two-dimentional table
The concept of locking can be used to solve the problem of	1.lost update 2.inconsistent data 3.uncommitted dependency **4.deadlock**
Consider the following relation Cinema (theater, address, capacity) Which of the following options will be needed at the end of the SQL query SELECT P1. address FROM Cinema P1 Such that it always finds the addresses of theaters with maximum capacity?	1. WHERE P1. Capacity> = All (select max(P2. Capacity) from Cinema P2) 2. WHERE P1. Capacity> = Any (select max (P2. Capacity) from Cinema P2) 3. WHERE P1. Capacity> = All (select P2. Capacity from Cinema P2) 4. WHERE P1. Capacity> = Any (select P2. Capacity from Cinema P2)
What is the RDBMS technology for the number of attributes in a relation?	1 Degree 2 Relation

What is the RDBMS technology for the number of attributes in a relation?	3 Attribute 4 cardinality
Which of the following is a disadvantage of file processing system? (I) Efficiency of high level programming, (II) Data Isolation (III) Integrity issues (IV) Storing of records as files	1. I only 2. III only 3. II and III only 4. II and IV only
A state that refers to the database when it is loaded is---------	1 valid state 2 instant 3 initial database state 4 Schema
Where does the swap space reside?	1 RAM 2 Disk 3 ROM 4 On-chip cache
The use of management accounting is	1.Optional 2.Compulsory **3.Legally obligatory** 4.Compulsory to some and optional to others
Determine Contribution if Fixed cost is Rs 50,000 and loss is Rs 20,000.	1.Rs 60,000 2.Rs.70,000 **3.Rs.30,000** 4.Rs.50,000

Which of the following statements are true?	**1.Contribution doesn't include fixed cost whereas profit includes fixed cost.** 2.Contribution is not based on the concept of marginal cost. 3.Contribution above breakeven point becomes profit.4.Contribution is above variable cost
Given fixed costs is Rs 1,00,000 selling price per unit is Rs 10 and variable cost per unit is Rs 6. If variable cost increase by 10% , B.E.P will	1.Decrease by 4,214 units 2. Increase by 4,214 units 3.Decrease by 4,412 units 4.Increase by 4,412 units
Gross margin is added to cost of sold goods to calculate	1.Revenues 2.Selling price 3.Unit price 4.Bundle price
The profit at the level of existing sales is computed as	**1.Sales - (Fixed cost + Variable cost)** 2.Sales + (Fixed cost + Variable cost) 3.Sales - Variable cost4.Sales - Fixed cost
During trade recession, the goods are sold at	**1. Depression price** 2.Normal price 3.Minimum price 4.Maximum price
While preparing sales budget, which of the following factors are considered?	**1.Non-operational factors** 2.Environmental factors 3.Operational factors 4.Non-environmental factors
On the basis of period, budgets may be classified into _____ groups.	1.Two 2.Three 3.Four **4.Five**

Which of the following statements are true?	1.Budget is prepared for an indefinite period 2.Budget can be expressed in form of physical units 3.It is no way related with the management plans and policies to be pursued in future **4.It provides a base for measuring the success of expected results**
An accounting approach, in which expected benefits exceed expected cost is classified as	1.Benefit approach **2.Cost approach** 3.cost-benefit approach 4.accounting approach
The inventory system in which ending inventory - recorded at cost - is measured by counting merchandise still in stock at the close of a selling period is called:	1.The physical inventory system 2.The book inventory system **3.The retail inventory system** 4.The profit and loss statement
Research design is a blue print, outline and a	1.Plan **2.System** 3.Strategy 4.Guide
In which sample population is divided into different strata and sample is taken from different strata?	1.Quota Sampling 2.Snow ball sampling **3.Stratified sampling** 4.Purposive sampling
Which of the following is the first step in starting the research process?	1. Searching sources of information to locate problem. 2.Survey of related literature **3. Identification of problem** 4.Searching for solutions to the problem

Sampling is advantageous as it _____	1. Saves time 2. Helps in capital-saving **3.Both (a) and (b)** 4.Increases accuracy
Type-I Error occurs if _____	**1. the null hypothesis is rejected even though it is true** 2.the null hypothesis is accepted even though it is false 3.both the null hypothesis as well as alternative hypothesis are rejected 4.Alternative hypothesis is rejected
Research can be conducted by a person who:	1. is a hard worker 2. holds a postgraduate degree 3.has studied research methodology **4.possesses thinking and reasoning ability**
In the process of conducting research 'Formulation of Hypothesis" is followed by	1.Statement of Objectives 2.Analysis of Data **3.Selection of Research Tools** 4.Collection of Data
Formulation of hypothesis may NOT be required in:	1. Survey method **2.Historical studies** 3. Normative studies 4.Experimental studies

We use Factorial Analysis:	1.To test the Hypothesis 2.To know the difference between two variables 3. To know the relationship between two variables **4.To know the difference among the many variables**
Good ‘research ethics’ means	**1.Assigning a particular research problem to one person only** 2. Submitting the same research manuscript for publishing in more than one journal 3.Not disclosing the findings of your research4.Discussing with your colleagues confidential data from a research paper that you are reviewing for an academic journal
Who is an effective communicator?	1.The one with histrionic talents **2.The one who is clear with what he says** 3.The one who is a humorous speaker 4.The one who can speak in many languages
Generally mutual funds are of	**1.High risk** 2.Low risk 3.Risk free 4.Any of these
..... is the oldest insurance	**1.Fire Insurance** 2.Life Insurance 3.Marine Insurance 4.Social Insurance

The first bank in India to start factoring business is	1.Canara Bank 2.SBI **3.Punjab National Bank** 4.Allahabad Bank
“Uberrimae Fidei” means	1.Indemnity **2.Good Faith** 3.Insurable Interest 4.Mitigation of loss
Except life insurance maximum term of other insurance is_____	1.12 months 2.24 months 3.6 months **4.36 months**
Principle of Indemnity does not apply to ---------	1.Fire Insurance 2.Marine Insurance **3.Life Insurance** 4.Social Insurance
Which of the following is /are example of primary or direct financial instrument	**1.Fixed Deposit receipt** 2.Insurance policies 3.Mutual fund unit 4.Debentures
This of the following not a type of marketing concept	1.The production concept 2.The selling concept 3.The societal marketing concept **4.The supplier concept**
"Get out of production, cut the price"- Philosophy of Henry Ford is an example of	1.Marketing concept 2.Selling concept **3.Production concept** 4.Product concept
Process of selecting segments to serve by offering product is referred as	**1.Market Segmentation** 2.Targeting 3.Marketing 4.Both a and b
Particular communication that must be achieve within definite target audience within specific time is classified as	1.Message decision 2.Media decision **3.Advertising objective** 4.Advertising evaluation
New product pricing strategy through which companies set lower prices to gain large market share is classified as	1.optional product pricing 2.Skimming pricing **3.Penetration pricing** 4.Captive product pricing

In business buying process, group who has formal authority of supplier selection is classified as	1.User 2.Influencer **3.Buyer** 4.Decider and gatekeeper
Person's own living or interacting and acting pattern is classified	**1.Life style** 2.personality 3.social class 4.Self concept
Step in personal selling process which consists of first meeting between customer and sales person is called	1.qualifying 2.prospecting 3.follow up **4.approach**
If company B sell its products through retailers and wholesalers then channel used by company B is classified as	1.Direct channe**l 2.Indirect channel** 3.Flexible channel 4.Static channel
---------- are an important instrument of short term borrowing by the Govt.	1.National saving certificate 2.Bonds 3.Treasury Bills 4.Public deposits
If firms earn normal profits:	1.They will aim to leave the industry 2.Other firms will join the firm **3.Total revenue is equal to total costs 4.**No profit is made in accounting terms
In the long run, a firm will produce profits provided the revenue covers	1.Fixed costs 2.Variable costs **3.Total costs** 4.Sales
Commercial Paper(CP) is an unsecured money market instrument issued in the form of which of the following ?	**1.Treasury Bills** 2.Certificate of deposit 3.Bills of exchange 4.Promissory Note
What is the maximum period upto which NBFcs can accept deposit from the date of receipt of such deposit ?	1.12 months 2.24 months 3.48 months 4.84 months
India’s first banking robot ‘Lakshmi’ to be launched by City Union Bank in which of the following Cities ?	1.Bangalore **2.Chennai** 3.Hyderabad 4.Mumbai

The RBI original share capital was divided into shares of 100 each fully paid, which were initially owned entirely by which of the following entities ?	1.British Government 2.Government of India 3.Public shareholders **4.Private shareholders**
The savings bank account which does not operate for more than 24 months, then the amount is known as ……	1.Inactive account **2.Dormant account** 3.inaccessible account 4.Demat account
The maximum limit for foreign investment in India as per the guidelines of 'on tap' licensing drafted by RBI ?	1.49% 2.71% 3.57% **4.74%**
Rabobank is a multinational banking and financial services company. It is headquartered in :	1.Germany **2.Netherland** 3.Switzerland 4.France
The term standard cost refers to the:	1. average unit cost of product produced in the previous period 2. budgeted unit cost of product produced in a particular period 3. average unit cost of product produced by other companies **4. average unit cost of product produced in the current period**

Which of the following statements are true about standard labour time?	1.Standard labour time indicates the time in hours needed for a specified process 2.It is standardized on the basis of past experience with no adjustments made for time and motion study 3.It is standardized on the basis of past experience with no adjustments made for time and motion study4.The Production manager does not provide any input in setting the labour time standards
Standard costing is the preparation of standard costs and their comparison with _____ and the analysis of _____.	1.Marginal costs, Variances 2.Variances, Marginal costs **3.Actual costs, Variances** 4. Variances, Actual costs
Systematic procedure in which people contribute in organizational goals achievement by acquiring capabilities is classified as	**1.Training** 2.Planning 3.Staffing 4.hiring
When the sales increase from Rs. 40,000 to Rs. 60,000 and profit increases by Rs. 5,000, the P/V ratio is —	1.20% **2.25%** 3.30% 4.40%
If credit sales for the year is Rs. 5,40,000 and Debtors at the end of year is Rs. 90,000 the Average Collection Period will be	1.30 days **2.61 days** 3.90 days 4.120 days

For the financial year ended as on March 31, 2013 the figures extracted from the balance sheet of Xerox Limited as under: Opening Stock Rs. 29,000; Purchases Rs. 2,42,000; Sales Rs. 3,20,000; Gross Profit 25% of Sales. Stock Turnover Ratio will be :	1.8 times 2.6 times 3.9 times 4.10 times
In 'make or buy' decision, it is profitable to buy from outside only when the supplier's price is below the firm's own _____.	**1.Fixed cost** 2.variable cost 3.Prime cost 4.Total costs
The cost per unit of a product manufactured in a factory amounts to Rs. 160 (75% variable) when the production is 10,000 units. When production increases by 25%, the cost of production will be Rs. per unit.	1.Rs. 145 2.Rs. 150 **3.Rs. 152** 4.Rs. 140
Capital gearing ratio is _____.	1.Market Test ratio **2.Long term solvency ratio** 3.Liquid ratio 4.Turnover ratio
A company makes a single product and incurs fixed costs of Rs. 30,000 per annum. Variable cost per unit is Rs. 5 and each unit sells for Rs. 15. Annual sales demand is 7,000 units. The breakeven point is:	1.2000 units **2.3000 units** 3.4000 units 4.6000 units
Step in recruitment process in which candidates are shortlisted fulfilling minimum requirements of job is classified as	1.Placement screening **2.Pre-employment screening** 3.Compensatory screening 4.Affirmative screening
Most flexible type of training in which employees are trained while performing tasks and responsibilities associated with job is classified as	1.Formal training 2.Informal training **3.On the job training** 4.Off the job training

The two dimensions of leadership which emerged from the Leader Behavior Description Questionnaire were 'consideration' and '_____'.	1.Energizing **2.Initiating structure** 3.Deliberate 4.Commanding
The philosophy that guides an organization's policies towards its employees and customers is an important part of	1.Management strategy 2.Organization behavior **3.Organizational culture** 4.Organization development
The management accounting can be stated an extension of A) Cost Accounting B) Financial Accounting C) Responsibility Accounting	1. Both A and B 2.Both A and c 3.Both B and C **4.A,B,C**
The dividend payout ratio is calculated by dividing total dividends by:	1.Operating income 2.Income before taxes 3.Income before interest and taxes **4.Net Income**
What financial ratio helps management evaluate profits available for dividends?	**1.Retention Rate** 2.Debt ratio 3.Debt service coverage ratio 4.Cash ratio
JAVA PROGRAMMING Java package is a grouping mechanism with the purpose of	1. Replacing header file used in C/C++ 2. Controlling the visibility of the classes, interfaces and methods 3. Providing the library for the Java program 4. An application framework
The servlet life cycle has the following cycle.	1. Service destroy 2. Init service destroy 3. Init service 4. Init destroy service
A system has 'n' processes and each process need 2 instances of a resource. There are n+1 instances of resource provided. This could:	1. lead to deadlock 2. lead to starvation & the deadlock

There are n+1 instances of resource provided. This could:	3. leads to inconsistency 4.leads to system crash
The term P in semaphores means----------	1. Mutual exclusion 2. wait 3. Lock 4. signal
Passing the request from one schema to another in DBMS architecture is called as _____	1 mapping 2 communication 3 relational 4 network
What is the output of following JavaScript code	1 n 2 Error 3 Software 4 SOFTWARE
Java package is a grouping mechanism with the purpose of	1 Providing the library for the Java program 2 Controlling the visibility of the classes, interfaces and methods 3

	Replacing header file used in C/C++ 4 An application framework

What will be printed as the output of the following program?
public class testincr
{
public static void main(String args[])
{
int i = 0;
i = i++ + i;
System.out.println(" I = " +i);
}
}
	1
	I = 0
	2
	I = 1
	3
	I = 2
	4
	I = 3

To prevent any method from overriding, the method has to declared as,	1 static 2 const 3 final 4 extends
Which one of the following is not true?	1 A class containing abstract methods is called an abstract class. 2 Abstract methods should be implemented in the derived class. 3

	An abstract class cannot have non-abstract methods. 4 A class must be qualified as ‘abstract’ class, if it contains one abstract method.
Consider the following four schedules due to three transactions (indicated by the subscript) using read and write on a data item x, denoted by r(x) and w(x) respectively. Which one of them is conflict serializable?	1.r1(x); r2(x); w1(x); r3(x); w2(x) 2.r2(x);r1(x);w2(x);r3(x);w1(x) **3.r2(x);w2(x);r3(x);r1(x);w1(x)**4.r3(x);r2(x);r1(x); w2(x);w1(x)
1. Inorder and postorder traversal sequences of a binary tree are 45 50 55 65 70 75 80 85 90 and 45 55 65 50 75 90 85 80 70. What are its leaf nodes?	1 55 90 2 45 55 90 3 75 55 45 90 4 55 65 75 90
1. The preorder traversal of the AVL tree obtained by inserting 17,7,20,10,8 is	1 7 8 10 17 20 2 17 8 7 10 20 3 7 10 8 17 20 4 17 10 7 8 20
Consider the following statement containing regular expressions	1

var text = "testing: 1, 2, 3"; var pattern = /\d+/g; In order to check if the pattern matches, the statement is	text= =pattern 2 text.equals(pattern) 3 text.test(pattern) 4 pattern.test(text)
What does /[^(]* regular expression indicate ?	1 Match one or more characters that are not open paranthesis 2 Match zero or more characters that are open paranthesis 3 Match zero or more characters that are not open paranthesis 4 Match one or more characters that are open paranthesis
When a user views a page containing a JavaScript program, which machine actually executes the script?	**1.The User's machine running a Web browser** 2.The Web server 3.A central machine deep within Netscape's corporate offices 4.both client and server
	1 Matches the letter b preceded by the fewest number of a's possible

What will be the result when non greedy repetition is used on the pattern /a+?b/ ?	2 Matches the letter b preceded by any number of a 3 Matches letter a preceded by letter b, in the stack order 4 None of the mentioned
What does the subexpression /java(script)?/ result in ?	1 **It matches “java” followed by the optional “script”** 2 It matches “java” followed by any number of “script” 3 It matches “java” followed by a minimum of one “script” 4 None of the mentioned
AJAX has become very commonly used because	1 it allows pages to be interactive without further communication with the server. 2 XML is a close relative of HTML. 3 it avoids the need for JavaScript. 4 it allows page content to be updated without requiring a full page reload.

What is the most essential purpose of parantheses in regular expressions ?	1 Define pattern matching techniques 2 Define subpatterns within the complete pattern 3 Define portion of strings in the regular expression 4 All of the mentioned
What would be the result of the following statement in JavaScript using regular expression methods ?	1 Returns [“123″”456″”789”] 2 Returns [“123″,”456″,”789”] 3 Returns [1,2,3,4,5,6,7,8,9] 4 Throws an exception
What is the result of the following code snippet? window.location === document.location	1 False 2 TRUE 3 0 4 1
Which of the following are the properties of a plug-in entry?	1 name 2 filename

Which of the following are the properties of a plug-in entry?	3 mimeTypes 4 All of the mentioned
What is the purpose of the mimeTypes property of a plug-in entry?	1 Contains MIME properties 2 Contains MIME sizes 3 Contains MIME types 4 None of the mentioned
Which of the following is not a reason XML gained popularity as a data interchange format for AJAX?	1 It has been around a while and libraries exist for many languages to work with it 2 It can be navigated using JavaScript DOM methods. 3 It is extensible, allowing it to be adapted to virtually any application. 4 It is concise and simple to use.
_____ operate at the network layer, connecting two or more network segments that use the same or different data link layer protocols, but the same network layer protocol.	1. Routers 2. Firewall 3. Bridges 4. Gateway
	1. Domain Constraint 2. Foreign Key Constraint

Foreign key is a subset of primary key is stated in ----------constraint	3. Referential Integrity Constraint 4. Semantic Constraint
The _____ is generally used to group hosts based on the physical network topology.	1. Subnet ID 2. NET ID 3. Host ID 4. Netmask
_____ operate at the network layer, connecting two or more network segments that use the same or different data link layer protocols, but the same network layer protocol.	1. Routers 2. Firewall 3. Bridges 4. Gateway
User Datagram Protocol adds no additional reliability mechanisms except one which is optional. Identify that.	1. Parity checking 2. Acknowledgement 3. Re-transmission 4. Checksum
For the IEEE 802.11 MAC protocol for wireless communication, which of the following statements is/are TRUE ? I. At least three non-overlapping channels are available for transmissions. II. The RTS-CTS mechanism is used for collision detection. III.Unicast frames are ACKed.	1. All I, II, and III 2. II only 3. II and III only 4. I and III only
The truth table X Y f(X,Y) 0 0 0 0 1 0 1 0 1 1 1 1 represents the Boolean function	1. X'Y' 2. X+Y 3. Y 4. X
The addressing mode used in an instruction of the form ADD R1, R2 is	1. Index 2. Absolute

The addressing mode used in an instruction of the form ADD R1, R2 is _____.	3. Indirect 4. Register
The load instruction is mostly used to designate a transfer from memory to a processor register known as	1. Instruction Register 2. Program counter 3. Accumulator 4. Memory address Register
The protocol data unit (PDU) for the application layer in the Internet stack is	1. Message 2. Frame 3. Datagram 4. Segment
Simplified form of the boolean expression (X + Y + XY) (X + Z) is	1. XY + YZ 2. X + YZ 3. X + Y + Z 4. XZ + Y
An Internet Service Provider (ISP) has the following chunk of CIDR-based IP addresses available with it: 245.248.128.0/20. The ISP wants to give half of this chunk of addresses to Organization A, and a quarter to Organization B, while retaining the remaining with itself. Which of the following is a valid allocation of address to A and B?	1. 245.248.128.0/21 and 245.248.128.0/22 2. 245.248.132.0/22 and 245.248.132.0/21 3. 245.248.136.0/24 and 245.248.132.0/21 4. 245.248.136.0/21 and 245.248.128.0/22
Which of the following logic expression is incorrect?	1. 1 ⊕ 1 ⊕ 1 = 1 2. 1 ⊕ 1 = 0 3. 1 ⊕ 0 = 1 4. 1 ⊕ 1 ⊕ 0 =1
The truth table X Y f(X,Y)	1. X+Y 2. Y

0 0 0 0 1 0 1 0 1 1 1 1 represents the Boolean function	3. X 4. X'Y'
Using 10's complement 72532- 3250 is	1. 69232 2. 69252 3. 69272 4. 69282
The 16-bit 2?s complement representation of an integer is 1111 1111 1111 0101, its decimal representation is	1. 2 2. -11 3. 3 4. 1
A circuit that converts n inputs to 2^n outputs is called	1. Decoder 2. Comparator 3. Encoder 4. Carry Look Ahead
The embedded c program is converted by cross compiler to	1. the machine code corresponding to the processor of the PC used for application development 2. the machine code coresponding to a processor which is different from the processor of the PC used for application development 3. the machine code for all the microcontrollers 4. assemble code of the PC used for application development
Decoder is a	1. complex circuit 2. combinational circuit 3. sequential circuit

	4. gate
To build a mod-19 counter the number of flip-flops required is	1. 9 2. 7 3. 5 4. 3
The smallest integer than can be represented by an 8-bit number in 2?s complement form is	1. -256 2. -127 3. 1 4. -128
Adjacent squares in a K-Map represents a	1. Circle 2. Variable 3. Literal 4. Minterm
Minterms are arranged in map in a sequence of	1. gray code 2. BCD code 3. binary sequence 4. binary variables
The jQuery AJAX methods .get(), .post(), and .ajax() all require which parameter to be supplied?	1 method 2 url 3 data 4 headers
The main difference between JK and RS flip-flop is that	1. JK flip flop needs a clock pulse 2. There is a feedback in JK flip-lop 3. JK flip-flop accepts both inputs as 1

	4. JK flip-flop is acronym of Junction cathode multi-vibrator
Which of the following unit will choose to transform decimal number to binary code ?	1. Decoder 2. Encoder 3. Multiplexer 4. Counter
Which of the following is/are example(s) of stateful application layer protocols? (i)HTTP (ii)FTP (iii)TCP (iv)POP3	1. (i) and (ii) only 2. (iv) only 3. (ii) and (iii) only 4. (ii) and (iv) only

What is the output of the following program?
 	
#include
using namespace std;
int main()
{
int x=20;
if(!(!x)&&x)
cout<<x;
 else
{
x=10;
cout<<x;
 return 0;
}}</x;
</x;
	1. 20
	2. 0
	3. 1
	4. 10

Which of the following boolean expressions is not logically equivalent to	1. bd' + c'd' + ab + cd 2. a (b + c) + cd

all of the rest ?	3. ab + ac + (cd)' 4. ab + (cd)' + cd + bd'
TCP manages a point-to-point and _____ connection for an application between two computers	1. half duplex 2. simple 3. full-duplex 4. multi point
Which of the following statements is true ?	1. (A + B) (A + C) = A + BC 2. (A + B) (A + C) = AC + BC 3. (A + B) (A + C)= AC + B 4. (A + B) (A + C) = AB + C
The minimum number of NAND gates required to implement the Boolean function. A + AB' + AB'C is equal to	1. 1 2. Zero 3. 7 4. 4
What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 255.255.255.224 subnet mask?	1. 30 2. 15 3. 14 4. 40

public class MyRunnable implements Runnable
{
public void run()
{
// some code here
}
}
 	
which of these will create and start this thread?
	1. new Thread(new MyRunnable()).start();
	2. new MyRunnable().start();
	3. new Runnable(MyRunnable).start();
	4. new Thread(MyRunnable).run();

	1. the result of subtraction

The 16 bit flag of 8086 microprocessor is responsible to indicate ----------	2. the result of addition 3. the condition of memory 4. the condition of result of ALU operation
The 16-bit 2?s complement representation of an integer is 1111 1111 1111 0101, its decimal representation is	1. 3 2. 2 3. 1 4. -11
Mutual exclusion problem occurs between	1. None of these 2. Processes that do not use the same resource 3. Processes that share resources 4. two disjoint processes that do not interact
With a single resource, deadlock occurs,	1. None of these 2. if there is a single process competing for that resource 3. if there are only two process completing for that resource 4. if there are more than two processes competing for that resource
	1. It allows more efficient use of memory 2. It reduces the need for relocatable code

Which of the following is not true of virtual memory?	3. It requires hardware support 4. It requires the use of a disk or other secondary storage

What does the code snippet given below do?
 	
`void fun1(struct node* head)`
 	
`{`
 	
`  if(head == NULL)`
 	
`    return;`
 	
`  fun1(head->next);`
`  printf("%d  ", head->data);`
`}`
	1. Prints alternate nodes of Linked List in reverse order
	2. Prints all nodes of linked lists in reverse order
	3. Prints all nodes of linked lists
	
	4. Prints alternate nodes of Linked List

For a C program accessing X[i][j][k], the following intermediate code is generated by a compiler. Assume that the size of an integer is 32 bits and the size of a character is 8 bits. t0 = i * 1024 t1 = j * 32 t2 = k * 4 t3 = t1 + t0 t4 = t3 + t2 t5 = X[t4]	1. X is declared as ?int X[32][32][8]?. 2. X is declared as ?int X[4][1024][32]?. 3. X is declared as ?char X[4][32][8]?. 4. X is declared as ?char X[32][16][2]?.

Which one of the following statements about the source code for the C program is CORRECT?	
DMA is useful for the operations	1. large and fast data transfers between memory and io devices 2. small data transfers between memory and cache 3. slow and small data trasfers between memory and io devices 4. fast and slow data transfers between memory and io devices
Eight minterms will be used for	1. three variables 2. six variables 3. five variables 4. four variables
ATM uses a ____ packet size	1. 48byte 2. Fixed 53byte 3. Randomized 4. Taken care by TCP fragmentation
The number of min-terms after minimizing the following Boolean expression is _____. [D'+AB'+A'C+AC'D+A'C'D]'	1. 1 2. 2 3. 3 4. 4
A queue data structure can be used for	1 expression parsing 2 recursion 3

	resource allocation 4 balancing symbols
In which addressing mode the operand is given explicitly in the instruction	1. Immediate. 2. Direct. 3. Absolute 4. Indirect.
Which of the following is not a part of instruction cycle?	1. Wait Phase 2. Fetch phase 3. Decode phase 4. Execute phase
After fetching the instruction from the memory, the binary code of the instruction goes to	1. Accumulator 2. Program counter 3. Instruction pointer 4. Instruction registers
Use of _____ allows for some processes to be waiting on I/O while another process executes.	1. multiprogramming 2. multiuser interfacing 3. Random scheduling 4. Variable cpu cycles
The performance of cache memory is frequently measured in terms of a quantity called	1. average ratio 2. miss ratio 3. hit ratio 4. ratio
_____ OS pays more attention on the meeting of the time limits.	1. Online 2. Real time 3. Distributed 4. Network
What is the software that runs a computer, including scheduling tasks, managing storage, and handling communication with peripherals?	1. bluetooth technology 2. driver 3. application suite

	4. operating system
Which of the following is not usually stored in a two-level page table?	1. Virtual page number 2. Physical page number 3. Reference bit 4. Dirty bit
The purpose of a TLB is	1. To hold register values while a process is waiting to be run 2. To hold the start and length of the page table 3. To cache page translation information 4. To cache frequently used data
----------is a description of the database	1. Schema Construct 2. Metadata 3. Relation State 4. Schema
System calls:	1. Often change dramatically between different releases of an operating system 2. Provide a rich and flexible API for software developers 3. Allow the operating system to optimize performance 4. Protect kernel data structures from user code
Class D in network is used for	1. Internet multicast communication 2. Organizations 3. Very large network 4. Reserved for future requirements

What is the main difference between traps and interrupts?	1. Whether or not the scheduler is called 2. The kind of code that's used to handle them 3. How they are initiated 4. How the operating system returns from them
Flip-flops can be constructed with two	1. NOT gates 2. NAND gates 3. OR gates 4. EXNOR gates
Buffering is useful because	1. It allows devices and thee CPU to operate asynchronously 2. It makes it seem like there's more memory in the computer 3. It allows all device drivers to use the same code 4. It reduces the number of memory copies required
Decimal digit in BCD can be represented by	1. 2 input lines 2. 1 input line 3. 4 input lines 4. 3 input lines
If two interrupts, one of higher priority and other of lower priority occur simultaneously, then the service provided is for	1. interrupt of higher priority 2. both the interrupts 3. none of the mentioned 4. interrupt of lower priority
Design procedure of combinational circuit involves	1. 8 steps 2. 5 steps 3. 4 steps 4. 6 steps
	1. 1's

In design procedure input output values are assigned with	2. Letter Symbols 3. Numeric Symbols 4. 0's
An optimal scheduling algorithm in terms of minimizing the average waiting time of a given set of processes is _____.	1. None of these 2. Round robin scheduling algorithm 3. FCFS scheduling algorithm 4. Shortest job - first scheduling algorithm
Mod-6 and mod-12 counters are most commonly used in	1. frequency counters 2. multiplexed displays 3. power consumption meters 4. digital clocks

Consider the following C function.
int fun (int n) {
int x =1, k;
if (n ==1) return x;
for (k=1; k < n; ++k)
x = x + fun (k)* fun (n - k); return x;
}
The return value of fun (5) is _____
	1. 51
	2. 52
	3. 53
	4. 42

Mod-6 and mod-12 counters are most commonly used in	1. frequency counters 2. multiplexed displays 3. power consumption meters 4. digital clocks

Consider the following C function.
int fun (int n) {
int x =1, k;	

if (n ==1) return x;
for (k=1; k < n; ++k)
x = x + fun (k)* fun (n - k); return x;
}
The return value of fun (5) is _____
	1.53 2.42 **3.51** 4.52

The following function computes the maximum value contained in an integer array
p[ ] of size n (n >= 1).
int max(int *p, int n) {
int a=0, b=n-1;
while (_____) {
if (p[a] <= p[b]) { a = a+1; }
else { b = b-1; }
}
return p[a];
}
The missing loop condition is
	1.b > (a + 1) 2.b != 0 3.a != n **4.b != a**

When a program tries to access a page that is mapped in address space but not loaded in physical memory, then	1. **no error occurs** 2. **segmentation fault occurs** 3. **page fault occurs** 4. **fatal error occurs**
. For computers based on three - address instruction formats, each address field can be used to specify which of the following: S1: A memory operand S2: A processor register S3: An implied accumulator registers	**1.Either S1 or S2** 2.Only S2 and S3 3.Either S2 or S3 4.All of S1, S2 and S3
	1. **least recently used algorithm**

Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?	2. additional reference bit algorithm 3. first in first out algorithm 4. counting based page replacement algorithm
The _____ translates a byte from one code to another code	1. POP 2. XCHNG 3. XLAT 4. PUSH
How many address bits are needed to select all memory locations in the 16K × 1 RAM?	1. 16 2. 8 3. 14 4. 10

The output of the following program is
main()
{
int a = 5;
int b = 10;
cout << (a>b?a:b);
}
	1.a 2.Syntax error 3.0 4.b

If the main memory is of 8K bytes and the cache memory is of 2K words. It uses associative mapping. Then each word of cache memory shall be_____.	1. 21 bits 2. 16 bits 3. 11 bits 4. 20 bits
Which amongst the following refers to Absolute addressing mode	1.move R1, R2 2.move LOC1, LOC2 3.move LOC1, R2 4.move LOC2, R1
NOP instruction introduces	1. delay 2. address 3. memory location 4. data

The addressing mode used in an instruction of the form ADD X Y, is _____.	1. Absolute 2. Indirect 3. None of these **4. Index**

What is the return value of f(p,p) if the value of p is initialized to 5 before the call? Note
 	
that the first parameter is passed by reference, whereas the second parameter is passed by value.
int f (int &x, int c) {
c=c-1;
if (c-0) return 1;
x=x+1;
return f (x,c)*x;}
	1. 3024 **2.6561** 3. 55440 4. 161051

1. The port that is used for the generation of handshake lines in mode 1 or mode 2 is	1. a) port A 2. b) port B 3. c) port C Lower 4. d) port C Upper
In 8257 register format, the selected channel is disabled after the terminal count condition is reached when	1. auto load is set 2. TC STOP bit is reset 3. TC STOP bit is set 4. auto load is reset
The effective address of the following instruction is , MUL 5(R1,R2)	1. 5+R1+R2 2. 5+(R1*R2) **3. 5+[R1]+[R2]** 4. 5*([R1]+[R2])
The effective address of the following instruction is , MUL 5(R1,R2)	1. 5+R1+R2 2. 5+(R1*R2) **3. 5+[R1]+[R2]** 4. 5*([R1]+[R2])
The instructions which copy information from one location to another either in the processor’s internal register set or in the external main memory are called	**1.Data transfer instructions** 2. Program control instructions 3. Logical instructions 4. Input-output instructions

What is a trap?	1. External interrupt **2. Internal Interrupt** 3. Software Interrupt 4. Error
General Purpose Software which creates and manipulates database is	1. NFS 2. DBMS 3. GIS 4. MIS
Computers use addressing mode techniques for _____.	1. Giving programming versatility to the user by providing facilities as pointers to memory counters for loop control 2. Specifying rules for modifying or interpreting address field of the instruction 3. To reduce no. of bits in the field of instruction **4. All the above**
Computers use addressing mode techniques for _____.	1. Giving programming versatility to the user by providing facilities as pointers to memory counters for loop control 2. To reduce no. of bits in the field of instruction **3. All the above** 4. Specifying rules for modifying or interpreting address field of the instruction
Which of the following address modes calculate the effective address as address part of the instruction) + (content of CPU register)	1. Relative address Mode or Indexed address Mode 2. Indirect Address mode. 3. none of these 4. Direct Address Mode

A group of bits that tell the computer to perform a specific operation is known as	1. Micro-operation **2. Instruction code** 3. Accumulator 4. Register
When we use auto increment or auto decrement, which of the following is/are true 1) In both, the address is used to retrieve the operand and then the address gets altered. 2) In auto increment the operand is retrieved first and then the address altered. 3) Both of them can be used on general purpose registers as well as memory locations.	**1. 1, 2, 3** 2. 2 3. 1, 3 4. 2, 3
One that is not type of flipflop is	1. RS 2. ST 3. T 4. JK
All the functions of the ports of 8255 are achieved by programming the bits of an internal register called	1. data bus control 2. status word control 3. control word register 4. read logic control
The number of counters that are present in the programmable timer device 8254 is	1. 4 2. 3 3. 2 4. 1
The data bus buffer is controlled by	1. read/write control logic 2. control word register 3. address bus 4. data bus
When an instruction is read from the memory, it is called	1. Memory write cycle 2. Fetch cycle 3. Instruction cycle

	4. Memory Read cycle
System catalogue is a system created database that describes	1 Database Objects 2 Data dictionary information 3 User access information 4 All of these
In control word register, if SC1=0 and SC0=1, then the counter selected is	1. counter 2 2. counter 1 3. counter 0 4. counter 3
The counter starts counting only if	1. CLK signal is low 2. GATE signal is high 3. GATE signal is low 4. CLK signal is high
A solution to the Dining Philosopher?s problem which avoids Deadlock can be:	1. Philosophers can select any fork randomly 2. Ensure that all the Philosophers except one pick up the left fork while that particular philosopher pick up right fork before left fork 3. Deadlock cannot be avoided 4. Ensure that all the Philosopher?s pick up the left fork before the right fork
The OS of a computer may periodically collect all the free memory space to form contiguous block of free space. This is called	1. Dynamic Memory Allocation 2. Concatenation 3. Garbage collection

	4. Collision
A computer system implements 8 kilobyte pages and a +32-bit physical address space. Each page table entry contains a valid bit, a dirty bit, three permission bits, and the translation. If the maximum size of the page table of a process is 24 megabytes, the length of the virtual address supported by the system is _____ bits.	1. 36 2. 35 3. 33 4. 34
Three concurrent processes X, Y, and Z execute three different code segments that access and update certain shared variables. Process X executes the P operation (i.e., wait) on semaphores a, b and c; Process Y executes the P operation on semaphores b, c and d; Process Z executes the P operation on semaphores c, d, and a before entering the respective code segments. After completing the execution of its code segment, each process invokes the V operation (i.e., signal) on its three semaphores. All semaphores are binary semaphores initialized to one. Which one of the following represents a deadlock-free order of invoking the P operations by the processes?	1. X:P(b)P(a)P(c) Y:P(b)P(c)P(d) Z:P(a)P(c)P(d) 2. X:P(d)P(b)P(c) Y:P(b)P(c)P(a) Z:P(c)P(d)P(b) 3. X:P(a)P(b)P(c) Y:P(b)P(c)P(d) Z:P(c)P(d)P(a) 4. X:P(b)P(a)P(c) Y:P(b)P(a)P(d) Z:P(c)P(c)P(a)
Suppose a disk has 201 cylinders, numbered from 0 to 200. At some time the disk arm is at cylinder	1. 5

100, and there is a queue of disk access requests for cylinders 30, 85, 90, 100, 105, 110, 135 and 145. If Shortest-Seek Time First (SSTF) is being used for scheduling the disk access, the request for cylinder 90 is serviced after servicing _____ number of requests.	2. 3 3. 4 4. 2
The father of relational database system is	1 Pascal 2 C.J.Date 3 Dr.Edgar F. Cord 4 Non of these
1024 bit is equal to how many byte	1. 64 Byte 2. 32 Byte 3. 1 Byte 4. 128 Byte
The address to the next instruction lies in	**1.Program Counter** 2.Instruction Register 3.Memory Buffer Register 4.Accumulator register
The average time required to reach a storage location in memory and obtain its contents is called the	1. access time 2. transfer time 3. seek time 4. turnaround time
What is a trap?	1.External interrupt **2.Internal Interrupt** 3.Software Interrupt 4.Error
	1. System mode

When CPU is executing a Program that is part of the Operating System, it is said to be in	2. Simplex mode 3. Interrupt mode 4. Half mode
Consider an arbitrary set of CPU-bound processes with unequal CPU burst lengths submitted at the same time to a computer system. Which one of the following process scheduling algorithms would minimize the average waiting time in the ready queue?	1. Uniform Random 2. Shortest remaining time first 3. Priority based 4. Round Robin
Consider a 4-way set associative cache (initially empty) with total 16 cache blocks. The main memory consists of 256 blocks and the request for memory blocks is in the following order: 0, 255, 1, 4, 3, 8, 133, 159, 216, 129, 63, 8, 48, 32, 73, 92, 155 Which one of the following memory block will NOT be in cache if LRU replacement policy is used?	1. 8 2. 216 3. 3 4. 129
What is the RDBMS terminology for a row	1 Tuple 2 Relation 3 Attribute 4 Domain
The relationship that exists within the same entity type is called as _____ relationship.	1. recursive 2. logical 3 Identifying 4. physical

Normalisation of database is used to	**1.Eliminate redundancy** 2.Improve security 3. Provide Database Tuning 4.None of the Above
Consider a disk queue with requests for I/O to blocks on cylinders 47, 38, 121, 191, 87, 11,92, 10. The C-LOOK scheduling algorithm is used. The head is initially at cylinder number 63, moving towards larger cylinder numbers on its servicing pass. The cylinders are numbered from 0 to 199. The total head movement (in number of cylinders) incurred while servicing these requests is	1. 324 2. 4819 3. 165 4. 431
A race condition occurs when	1. two concurrent activities interact to cause a processing error and two users of the DBMS are interacting with different files at the same time 2. two concurrent activities interact to cause a processing error 3. None of these 4. two users of the DBMS are interacting with different files at the same time
The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by	**1.the instruction set architecture** 2.page size 3.number of processes in memory 4.physical memory size
	1. 2^14

In the IPv4 addressing format, the number of networks allowed under Class C addresses is	2. 2^21 3. 2^24 4. 2^7
A Boolean function may be transformed into	1. logical graph 2. map 3. logical diagram 4. matrix
What is the RDBMS terminology for a set of legal values that an attribute can have ?	1 Tuple 2 Relation 3 Entity 4 Domain
Which of the following concurrency control mechanisms insist unlocking of all read and write locks of transactions at the end of commit?	**1.Strict 2 Phase Locking** 2.Simple 2 Phase Locking 3.Timestamp ordering 4.Rigorous 2 Phase Locking
In real time Operating System, which of the following is the most suitable scheduling scheme?	1. Random 2. Round Robin 3. FCFS 4. Scan
If a virtual memory system has 4 pages in real memory and the rest must be swapped to disk. Which of the following is the hit ratio for the following page address stream. Assume memory starts empty, use the FIFO algorithm	1. 31% 2. 25% 3. 15% 4. 10%

A computer system implements 8 kilobyte pages and a +32-bit physical address space. Each page table entry contains a valid bit, a dirty bit, three permission bits, and the translation. If the maximum size of the page table of a process is 24 megabytes, the length of the virtual address supported by the system is _____ bits.	1. 34 2. 33 3. 35 4. 36
Which of the following information is not part of Process Control Block? (i) Process State (ii) Process Page table (iii) List of Open files (iv) Stack Pointer	1. only 2 2. 3 & 4 3. Only 3 4. 2 and 4
Partial Degree of multiprogramming is controlled by	1. Depends on number of CPU's 2. Short term scheduler 3. Long term scheduler 4. Medium term scheduler
When several processes access the same data concurrently and the outcome of the execution depends on the particular order in which the access takes place, is called	1. Dynamic condition 2. essential condition 3. race condition 4. critical condition
State the type of multitasking supported by OS when process switched its state from 'Running' to 'Ready' due to scheduling act.	1.multithreading **2.Preemptive** 3.Non Preemptive 4.cooperative

Suppose that everyone in a group of N people wants to communicate secretly with N-1 others using symmetric key cryptographic system. The communication between any two persons should not be decodable by the others in the group. The number of keys required in the system as a whole to satisfy the confidentiality requirement is	1. N(N-1)/2 2. N(N-1) 3. 2N 4. (N-1)2
Which of the following is useful in implementing quick sort?	1 Stack 2 Set 3 List 4 Queue
..... is very useful in situation when data have to stored and then retrieved in reverse order.	1 Stack 2 Queue 3 List 4 Linked list
Consider the 3 process, P1, P2 and P3 shown in the table. Process Arrival time Time units Required P1 0 5 P2 1 7 P3 3 4	1.FCFS: P1, P2, P3 RR2: P1, P2, P3 2.FCFS: P1, P3, P2 RR2: P1, P3, P2 3.FCFS: P1, P3, P2 RR2: P1, P2, P3 **4.FCFS: P1, P2, P3 RR2: P1 P3 P2**

The completion order of the 3 processes under the policies FCFS and RR2 (round robin scheduling) with CPU quantum of 2 time units are	P1, P3, P2
When an instruction is read from the memory, it is called	1. Memory Read cycle 2. Instruction cycle 3. Fetch cycle 4. Memory write cycle
Consider six memory partitions of sizes 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250KB, where KB refers to kilobyte. These partitions need to be allotted to four processes of sizes 357 KB, 210KB, 468 KB and 491 KB in that order. If the best fit algorithm is used, which partitions are NOT allotted to any process?	**1.200KB and 300 KB** 2.200KB and 250 KB 3.250KB and 300 KB 4.300KB and 400 KB
Shift registers are used for	1. Rotating 2. Both a and b 3. Shifting 4. Adding
A system uses 3 page frames for storing process pages in main memory. It uses the Least Recently Used (LRU) page replacement policy. Assume that all the page frames are initially empty. What is the total number of page faults that will occur while processing the page reference string given below? 4, 7, 6, 1, 7, 6, 1, 2, 7, 2	1. 7 2. 4 3. 6 4. 2
Two variables will be represented by	1. six minterms 2. eight minterms

two variables will be represented by	3. four minterms 4. five minterms
Consider a computer system with 40-bit virtual addressing and page size of sixteen kilobytes. If the computer system has a one-level page table per process and each page table entry requires 48 bits, then the size of the per-process page table is _____ megabytes.	1.383 **2.384** 3.385 4.999
A scheduling algorithm assigns priority proportional to the waiting time of a process. Every process starts with priority zero(the lowest priority). The scheduler re-evaluates the process priorities every T time units and decides the next process to schedule. Which one of the following is TRUE if the processes have no I/O operations and all arrive at time zero?	1.This algorithm is equivalent to the first-come-first-serve algorithm 2.This algorithm is equivalent to the shortest-job-first algorithm **3.This algorithm is equivalent to the round-robin algorithm** 4.This algorithm is equivalent to the shortest-remaining-time-first algorithm
The process related to process control, file management, device management, information about system and communication that is requested by any higher level language can be performed by _____.	1. Caching 2. Editors 3. System Call 4. Compilers
The base (or radix) of the number system such that the equation 312/20=13.1 holds is	**1.5** 2.3 3.1 4.6
On simple paging system with 224 bytes of physical memory, 256 pages of logical address space, and a page size 210 bytes, how many bytes are in a page frame?	1. 256 bytes 2. 210 bytes 3. 224 bytes

	4. none
A 20-bit address bus allows access to a memory of capacity	1. 1 MB 2. 2 MB 3. 4 MB 4. 8 MB
Consider the following pseudo code fragment: printf (“Hello”); if(!fork( )) printf(“World”); Which of the following is the output of the code fragment?	1.Hello Hello World World **2.Hello World World** 3.Hello World Hello World 4.Hello World
7. There are ‘m’ processes and ‘n’ instances of a Resource provided. Each process needs ‘P’ instances of the resource. In which case deadlock will never occur?	1.(P - 1) m + 1 = n 2.(P - 1) m + 1 < n 3.(P - 1) m = n + 1 4.(P - 1) m = n + 1
Which of the process transition is invalid?	1.Run->Terminate **2.Wait/ Block->Run** 3.Suspend wait->Suspend ready 4.Run->Ready
The process in which of the following states will be in secondary memory?	1.New, Wait/Block, suspend wait, Suspend ready 2.New, Ready, Wait/Block 3.wait/Block, suspend wait, Suspend ready 4.New, suspend wait, Suspend ready
If the offset of the operand is stored in one of the index registers, then it is	1. based indexed addressing mode 2. indexed addressing mode 3. relative based indexed addressing mode 4. based addressing

The common register(s) for all the four channels of 8257 are	1. mode set register and status register 2. terminal count register 3. address register 4. DMA address register
Which of the following is not a data copy/transfer instruction?	1. POP 2. MOV 3. DAS 4. PUSH
In DMA transfers, the required signals and addresses are given by the_____	1. Processor 2. DMA controllers 3. Device drivers 4. The program itself
The minimum number of JK flip-flops required to construct a synchronous counter with the count sequence (0,0, 1, 1, 2, 2, 3, 3, 0, 0,…….) is	1.4 2.3 3.1 4.2
A half adder is implemented with XOR and AND gates. A full adder is implemented with two half adders and one OR gate. The propagation delay of an XOR gate is twice that of an AND/OR gate. The propagation delay of an AND/OR gate is 1.2 microseconds. A 4-bit ripple-carry binary adder is implemented by using four full adders. The total propagation time of this 4-bit binary adder in microseconds is _____.	1.20 2.21 3.22 4.19.2
The truth table X Y f(X,Y) 0 0 0 0 1 0	1 AND logic 2 OR logic

1 0 1 1 1 1 represents the Boolean function	3 NAND logic 4 XOR logic
We want to design a synchronous counter that counts the sequence 0-1-0-2-0-3 and then repeats. The minimum number of J-K flip-flops required to implement this counter is	1.1 2.2 3.3 **4.4**
How many address bits are needed to select all memory locations in the 16K × 1 RAM?	1 12 bits 2 10 bits 3 14 bits 4 one bit
1024 bit is equal to how many byte	1. 1 Byte 2. 32 Byte 3. 128 Byte 4. 64 Byte
ICMP is primarily used for	1 error and diagnostic functions 2 addressing 3 forwarding 4 Networking
	1 34 2

How many ways are present in 4-way set associative cache of 16 sets?	2 3 64 4 32
TCP manages a point-to-point and _____ connection for an application between two computers	1. half duplex 2. simple 3. full-duplex 4. multi point
Which standard TCP port is assigned for contacting SSH servers?	1. port 24 2. port 21 3. port 23 4. port 22
RS flip-flops are also called	1. TS Latch 2. SR Latch 3. RS Latch 4. ST Latch

The 1-address instructions for a=b*c + d is	1
	push b
	push c
	mul
	push d
	add
	
	2
	mul a, b, c
	add a, a, d
	
	3
	load b
	add d
	store a
	load c

	4 load b mul c add d store a
Let the size of congestion window of a TCP connection be 32 KB when a timeout occurs. The round trip time of the connection is 100 msec and the maximum segment size used is 2 KB. The time taken (in msec) by the TCP connection to get back to 32 KB congestion window is	1. 1200 2. 2221 3. 1100 4. 1300
The number of inputs, minterms in full adder is	1 3, 8 2 3, 6 3 4, 8 4 2, 4
UDP has a smaller overhead then TCP, especially when the total size of the messages is	1. sequenced 2. segmented 3. small 4. large
If a disk has a seek time of 20ms, rotates 20 revolutions per second, has 100 words per block, and each track has capacity of 300 words. Then the total time required to access one block is	1.40 2.25 **3.60** 4.30
Information about a process is maintained in a _____.	1.Translation Lookaside Buffer 2.Stack **3.Process Control Block** 4.Program Control Block

	block
The average time required to reach a storage location in memory and obtain its contents is called the	1. seek time 2. turnaround time 3. access time 4. transfer time
The major difference between a moore and mealy machine is that	1. output of former depends only on the present input 2. output of the former not depends only on the present state 3. output of the former depends on the present state and present input 4. output of the former depends only on the present state
Which of the following are used to generate a message digest by the network security protocols? (P) RSA (Q) SHA-1 (R) DES (S) MD5	1. R and S only 2. Q and S only 3. P and R only 4. Q and R only
X=1010100 and Y=1000011 using 2's complement X-Y is	1. 10111 2. 10001 3. 101101 4. 10011
Operating System 1. Assume that ?C? is a Counting Semaphore initialized to value ?10?. Consider the following program segment: P(C); V(C); P(C); P(C); P(C); V(C); V(C) V(C); V(C); V(C); P(C); V(C); V(C); P(C) What is the value of C?	1. 12 2. 6 3. 8 4. 10

Data security threats include	1.hardware failure **2.fraudulent manipulation of data** 3.privacy invasion 4.hardware failureall of these
What is the content of Stack Pointer (SP)?	1. Address of the top element of the stack 2. Address of the current instruction 3. Address of the next instruction 4. Size of the stack
The amount of time required to read a block of data from a disk into memory is composed of seek time, rotational latency, and transfer time. Rotational latency refers to _____.	1. **the time it takes for the read-write head to move into position over the appropriate track** 2. **the time its takes for the platter to make a full rotation** 3. **the time it takes for the platter to rotate the correct sector under the head** 4. **the time its takes for the platter to make a half rotation**
After fetching the instruction from the memory, the binary code of the instruction goes to	1. Instruction registers 2. Program counter 3. Instruction pointer 4. Accumulator
_____is the first schema to be designed when you are developing a DBMS	1 conceptual 2. hierarchical 3. physical

	4. relational
The removal of process from active contention of CPU and reintroduce them into memory later is known as _____.	1.Interrupt **2.Swapping** 3.Signal 4.Thread
The technique, for sharing the time of a computer among several jobs, which switches jobs so rapidly such that each job appears to have the computer to itself, is called	1. Time out 2. Multitasking 3. Time domain 4. Time Sharing
Which of the following transport layer protocols is used to support electronic mail?	1. IP 2. SMTP 3. UDP 4. TCP
Given the following schema:employees(emp-id, first-name, last-name, hire-date,dept-id, salary)departments(dept-id, dept-name, manager-id, location-id) You want to display the last names and hire dates of all latest hires in their respective departments in the location ID 1700. You issue the following query:SQL>SELECT last-name, hire-date FROM employees WHERE (dept-id, hire-date) IN (SELECT dept-id, MAX(hire-date) FROM employees JOIN departments USING(dept-id) WHERE location-id = 1700	1. It generates an error because the GROUP BY clause cannot be used with table joins in a subquery 2. It executes and gives the correct result 3. It generates an error because of pairwise comparison 4. It executes but does not give the correct result.

GROUP BY dept-id); What is the outcome?	
This topology requires multipoint connection	1 star 2 Ring 3 Mesh 4 Bus
HTTP is _____ protocol	1 Network Layer 2 Transport layer 3 application layer 4 Session
The HTTP response message leaves out the requested object when _____ method is used	1. GET 2. HEAD 3. PUT 4. POST
The minimum number of JK flip-flops required to construct a synchronous counter with the count sequence (0,0, 1, 1, 2, 2, 3, 3, 0, 0,??.) is	1. 4 2. 2 3. 3 4. 1
Mnemonic codes and variable names are used in	1.All of these 2.a high-level language 3.a machine language **4.an assembly language**

_____ cryptography refers to encryption methods in which both the sender and receiver share the same key.	1.Ceazer key 2.Aizemetric key 3.Asymmetric **4.Symmetric**
_____ **register keeps track of the instructions stored in program stored in memory.**	1. AC(Accumulator) 2. PC(Program Counter) 3. AR(Address Register) 4. XR(Index Register)
Using public key cryptography, X adds a digital signature σ to message M, encrypts , and sends it to Y, where it is decrypted. Which one of the following sequences of keys is used for the operations?	1. Encryption: X' s private key followed by Y' s public key; Decryption: Y' s private key followed by X' s public key 2. Encryption: X' s private key followed by Y' s private key; Decryption: X' s public key followed by Y' s public key 3. Encryption: X' s public key followed by Y' s private key; Decryption: Y' s public key followed by X' s private key 4. Encryption: X' s private key followed by Y' s public key; Decryption: X' s public key followed by Y' s private key
Error correction and error detection happens in _____ layer.	1. Application layer 2. Session layer 3. Physical layer 4. Data link layer
One operation that is not given by magnitude comparator	1. addition 2. greater

One operation that is not given by magnitude comparator	3. equal 4. less
_____is used by network devices, like routers, to send error messages indicating, for example, that a requested service is not available or that a host or router could not be reached.	1.BGP **2.ICMP** 3.IGP 4.RIP
The best index for exact match query is	1. B Tree 2. Quad tree 3. Binary Tree 4. Bucket Hash
Consider the following schema as: Product_Master (prod_id, prod_name, rate) Purchase_details (prod_id, quantity, dept_no, purchase_date). Choose the suitable relational algebra expressionn for Get Product_id, Product_name & quantity for all purchased products.	1 , , ($\pi_{prod^{id}, prod^{name}, quantity}$ (Product_Master $\times$ Purchase_Details) $\sigma_{prod^{id} = prod^{id}}$ 2 , , ($\pi_{prod^{id}, prod^{name}, quantity}$ (Product_Master $\times$ Purchase_Details) 3

	$\sigma_{prod_{id},\ prod_{name},\ quantity}(\sigma_{Product.prod_{id} = Purchase\_Details.prod_{id}}(Product \times Purchase\_Master\_Details))$ 4 $\pi_{prod_{id},\ prod_{name},\ quantity}(\sigma_{Product.prod_{id} = Purchase\_Details.prod_{id}}(Product \times Purchase\_Master\_Details))$
In dynamic routing mechanism the route changes in response to _______	1. fragmentation size 2. sequence order 3. time 4. link cost changes
Table that is not a part of asynchronous analysis procedure	1. flow table 2. transition table 3. state table 4. excitation table
_______ is a set of networks sharing the same routing policy	1. Autonous system **2. Subnets** 3. Server Farm 4. Supernets
_________ register keeps track of the instructions stored in program stored in	1. PC (Program Counter)

memory.	2. AR (Address Register) 3. XR (Index Register) 4. AC (Accumulator)
A group of bits that tell the computer to perform a specific operation is known as	1. Instruction code 2. A collection of wires 3. A collection of shared communication wires 4. A software to transport data
_____, also known as "port forwarding," is the transmission of data intended for use only within a private, usually corporate network through a public network in such a way that the routing nodes in the public network are unaware that the transmission is part of a private network.	1.Switching **2.Tunneling** 3.Gateway 4.Forwarding
We want to design a synchronous counter that counts the sequence 0-1-0-2-0-3 and then repeats. The minimum number of J-K flip-flops required to implement this counter is	1. 3 2. 1 3. 4 4. 2
A circuit produces 1's complement of the input word, one application is binary subtraction. It is called	1. BCD Converter 2. Multiplexer 3. Register 4. Logic gate
In a digital counter circuit feedback loop is introduced to	1. Asynchronous input and output pulses 2. Reduce the number of input pulses to reset the counter 3. Improve stability 4. Improve distortion
	1. 1

How many illegitimate states has synchronous mod-6 counter ?	2. 6 3. 2 4. 3
Multiplexing is used in _____	1 Packet switching 2 Circuit switching 3 Data switching 4 Datagram switching
Loss in signal power as light travels down the fiber is called?	1 Attenuation 2 Propagation 3 Scattering 4 Interruption
A ring counter is same as	1. shift register 2. Ripple carry Counter 3. Parallel-counter 4. up-down counter
A sequential circuit outputs a ONE when an even number (> 0) of one's are input; otherwise the output is ZERO. The minimum number of states required is	1. 2 2. 0 and 1 3. 1 4. 0
To build a mod-19 counter the number of flip-flops required is	1. 3 2. 5 3. 7

	4. 9
The number of clock pulses needed to shift one byte of data from input to the output of a 4-bit shift register is	1. 10 2. 12 3. 16 4. 32
The main difference between JK and RS flip-flop is that	1. JK flip flop needs a clock pulse 2. JK flip-flop is acronym of Junction cathode multivibrator 3. JK flip-flop accepts both inputs as 1 4. There is a feedback in JK lip-lop
A binary search tree whose left subtree and right subtree differ in hight by at most 1 unit is called ……	1 Binary Tree 2 Red Black tree 3 Expression tree 4 AVL tree
_____is the description of the database	1. snapshot 2. schema evolution 3. schema construct 4. schema
The sign magnitude representation of binary number + 1101.011 is	1. 11101.011 2 110.1 3. 10010.100 4 1101.011

When an inverter is placed between both inputs of an SR flip-flop, then resulting flip-lop is	1. Master slave JK flip-flop 2. SR flip-flop 3. JK flip-flop 4. D flip-flop
A 2 MHz signal is applied to the input of a J-K lip-lop which is operating in the 'toggle' mode. The frequency of the signal at the output will be	1. 6 MHz 2. 8 MHz 3. 1 MHz 4. 2 MHz
The master slave JK lip-flop is effectively a combination of	1. A SR flip-flop and a T flip-flop 2. An SR flip-lfop and a D flip-flop 3. A T flip-flop and a D flip-flop 4 Two D flip-flops
Assume a relation ACCOUNT (acno, balance, type, branch, last_accessed) with 1 million records. If a SQL query "SELECT balance FROM account WHERE balance>5000" would produce 800000 records, which one of the following is the optimized version of relational algebra expressions that is equivalent to the given SQL query?	1. balance (balance>5000 (account)) 2. balance (balance<5000 (account)) 3. balance>5000 (balance (account))

	4. balance>5000 (balance (account))
General Purpose Software which creates and manipulates database is	1. NFS 2. DBMS 3. GIS 4. MIS
Consider a join (relation algebra operation) between relations r(R)and s(S) using the nested loop method. There are 3 buffers each of size equal to disk block size, out of which one buffer is reserved for intermediate results. Assuming size(r(R))	1. Join selection factor between r(R) and s(S) is more than 0.5. 2. Relation r(R) is in the outer loop. 3. Relation s(S) is in the outer loop. 4. Join selection factor between r(R) and s(S) is less than 0.5.
Which of the following is NOT a superkey in a relational schema with attributes V,W,X,Y,Z and primary key V Y?	1. VWXY 2. VWXYZ 3. VWYZ 4. VXYZ VWXZ
Congestion control and quality of service is qualities of the	1. Frame Relay 2. ATM 3. DH 4. SONET

SQl allows duplicates tuples in relations, and correspondingly defines the multiplicity of tuples in the result of joins. Which one of the following queries always gives the same answer as the nested query shown below: select * from R where a in (select S.a from S)	1. Select distinct R.* from R,S where R.a=S.a 2. select R.* from R,S where R.a=S.a and is unique R 3. Select R.* from R, S where R.a=S.a 4. Select R.* from R,(select distinct a from S) as S1 where R.a=S1.a
_____ detects loss of data errors in data, requests retransmission of lost data, rearranges out-of-order data, and even helps minimize network congestion to reduce the occurrence of the other problems	1.ICMP 2.IP 3.UDP **4.TCP**
The relation R={A,B,C,D,E,F} with FD A,B-> C, C-> D, C->E,F holds	1. MVD 2. Transitive dependency 3. Join dependency 4. Partial dependency
Let the size of congestion window of a TCP connection be 32 KB when a timeout occurs. The round trip time of the connection is 100 msec and the maximum segment size used is 2 KB. The time taken (in msec) by the TCP connection to get back to 32 KB congestion window is	1. 1100 2. 1300 3. 1200 4. 2221
A relation R(a,b,c,d,e,f) with the FDs { a -> b,c; c -> d, e, f } satisfies ----- normal form at the most where ?a? is the primary key.	1. 1NF 2. 3NF 3. BCNF

	4. 2NF
How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, two stop bits, and one parity bit?	1.600 **2.800** 3.1200 4.876
The relationship that exists within the same entity type is called as _____ relationship.	1. recursive 2. logical Identifying 4. physical 3
A receiving host has failed to receive all of the segments that it should acknowledge. What can the host do to improve the reliability of this communication session?	1. Send a different source port number. 2. Decrease the window size. 3. Restart the virtual circuit. 4. Decrease the sequence number.
If a hospital has to store the description of each visit of a patient according to date what attribute you will use in the patient entity type?	1. multi valued 2.Complex 3. Composite 4. weak entity
Which one of the following protocols is NOT used to resolve one form of address to another one?	1.DNS 2.ARP **3.DHCP** 4.RARP
_____gives the concepts to describe the structure of the database.	1. Data Model 2. Relational model 3. Domain model 4. Schema model
The Third stage in designing a database is when we analyze our tables more closely and create a _____ between tables.	1. Relationship 2. Query 3. Join 4.structure

End-to-end connectivity is provided from host-to-host in:	1 Network layer 2 **B.** Session layer 3 End-to-end connectivity is provided from host-to-host in: **A.** **C.** Data link layer 4 **D.** Transport layer
The protocol data unit (PDU) for the application layer in the Internet stack is	1. Message 2. Frame 3. Datagram 4. Segment
Passing the request from one schema to another in DBMS architecture is called as _____	1. network 2. Relational 3. Communication 4. Mapping
A relation schema R is said to be in 4NF if for every MVD x-->>y that holds over R	1. x is subset of y is true 2. x is subset of y is true (OR) x U y is R is true 3. x U y is R is true 4. x is subset of y is true (AND) x U y is R is true
The Snapshot of a table is called as	1. Schema construct 2. Extension 3. Intension 4. State

Course_Info{Course_no, Sec_no, Offering_dept, Credit_hours, Course_level, Instructor_ssn, Semester, Year, Days_hours, Room_no, No_of_students}. The Course_Info has following functional dependencies: {Course_no}→{Offering_dept, Credit_hours, Course_level} {Course_no, Sec_no, Semester, Year}→ {Days_hours, Room_no, No_of_students, Instructor_ssn } {Room_no, Days_hours, Semester, Year} →{Instructor_ssn, Course_no, Sec_no} Find the keys of the relation	1 Course no, Sec_no, Semester and Year 2 Course no 3 Course_no and Sec_no 4 Semester and Year
In ORDBMS, When an object *O* is brought into memory, they check each oid contained in *O* and replace oids of in-memory objects by in-memory pointers to those objects. This concept refers to:	1 Object Identity 2 Pointer Swizzling 3 Method Caching 4 Pointer reference
Consider the following transaction involving two bank account x and y. read (x) ; x : = x ? 50; write (x) ; read (y); y : = y + 50 ; write (y)	1. Consistency 2. Isolation

The constraint that the sum of the accounts x and y should remain constant is that of	3. Durability 4. Atomicity
____ users work on canned transactions	1. casual 2. naïve 3. DBA 4. sophisticated
Consider the following four schedules due to three transactions (indicated by the subscript) using read and write on a data item x, denoted by r(x) and w(x) respectively. Which one of them is conflict serializable?	1. r3(x);r2(x);r1(x);w2(x);w1(x) 2. r1(x); r2(x); w1(x); r3(x); w2(x) 3. r2(x);w2(x);r3(x);r1(x);w1(x) 4. r2(x);r1(x);w2(x);r3(x);w1(x)
Consider a schedule S1 given below; R1(A); W1(A); R2(B); R2(A); R1(B); W2(A+B); W1(B); where R1 and W1 are read and write operations of transaction T1 and R2 and W2 are read and write operations of transaction T2. Which of the following is correct regarding schedule S1?	1.S1 is a view serializable schedule 2.S1 is a serializable schedule 3.A deadlock will occur if 2PL is used **4.S1 is a conflict serializable schedule**
An index is clustered, if	1. The data records of the file are organized in the same order as the data entries of the index 2. The data records of the file are organized not in the same order as the data entries of the

	index 3. It is on a set of fields that form a candidate key 4. It is on a set of fields that include the primary key
Which level of RAID refers to disk mirroring with block striping?	1. RAID level 2 2. RAID level 0 3. RAID level 3 4. RAID level 1
Creating a B Tree index for your database has to be specified in _____.	1. TCL 2. SDL 3. VDL 4 DDL
Which of the following is not a function of a DBA?	1. Table creation 2. User creation 3. Index creation 4. Application creation
Which of the following operator in SQL would produce the following result if applied between two relations Employee and Department? Eno EName DeptNo DName 111 Kumar 100 Sales 222 Steve 200 Finance Null Null 300 Admn 244 Meera 400 Mktg	1. Projection Join 2. Natural Join 3. Outer Join 4. Cartesian Join
The data manipulation language used in SQL is a, (I) Procedural DML (II) Non-Procedural DML (III) Modification DML	1. I and IV only 2. I and II only 3. III and IV only 4. II and IV only

(IV) Declarative DML	
_____gives the concepts to describe the structure of the database.	1. Data Model 2. Relational model 3. Domain model 4. Schema model
Passing the request from one schema to another in DBMS architecture is called as _____	1. network 2. Relational 3. Communication 4. Mapping
What is the unique characteristic of RAID 6 ?	1. Mirroring 2. Distributed Parity 3. Striping 4. Two independent distributed parity
The best way to retrieve todays date in DBMS is	1. echo sysdate 2. select sysdate from emp 3. sysdate 4. select sysdate from dual
Given the basic ER and relational models, which of the following is INCORRECT?	1. In a row of a relational table, an attribute can have exactly one value or a NULL value 2. An attribute of an entity can be composite 3. An attribute of an entity can have more than one value 4. In a row of a relational table, an attribute can have more than one value
Which of the following is not a conversion function in SQL?	1. to_char( ) 2. to_number( ) 3. to_string( ) 4. to_date( )

Which of the following is NOT a superkey in a relational schema with attributes V,W,X,Y,Z and primary key V Y?	1. VXYZ 2. VWYZ 3. VWXY 4. VWXYZ VWXZ
R right outer join S on a=b gives	1. All rows from R and S 2. Rows from R and S where a=b 3. All rows from R and joined rows from S 4. All rows from S and joined rows from R
To change the access path programs are categorized under _____ data independence.	1. Physical 2. external 3. logical 4. internal
Error detection at the data link layer is achieved by?	1.Bit stuffing 2. Cyclic redundancy codes 3. Hamming codes 4. Equalization

#include
int main ()
{
static int a[]={10, 20, 30 40, 50};
static int *p[]= {a, a+3, a+4, a+1, a+2};
int **ptr=p;
ptr++;
printf ("%d%d", ptr p, **ptr);
}
The output of the program is _____.
	1.43 **2.140** 3.89 4.78

	1 Network layer

In OSI model dialogue control and token management are responsibilities of ?	2 Transport layer 3 Data link layer 4 Session Layer
Which protocol does Ping use?	1 TCP 2 ARP 3 ICMP 4 Bootp
A 2 km long brodcast LAN has 107 bps bandwidth and uses CSMA/ CD. The signal travels along the wire at 2 *10 ^8 m/s. What is the minimum packet size that can be used on this network ?	1 50 bytes 2 100 bytes 3 150 bytes 4 200 bytes 25 bytes
How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, and one parity bit ?	1 600 2 800 3 900 4 1200
	1

The address resolution protoc0l (ARP) is used for	Finding the IP address from the DNS 2 Finding the IP address of the default gateway 3 Finding the IP address that corresponds to a MAC address 4 Finding the MAC address that corresponds to an IP address
An organization has a class B network and wishes to form subnets for 64 departments. The subnet mask would be	1 255.255.0.0 2 255.255.64.0 3 255.255.128.0 4 255.255.255.0
In a packet switching network, packets are routed from source to	1 4 2

destination along a single path having two intermediate node. If the message size is 24 bytes and each packet contains a header of 3 bytes, then the optimum packet size is	6 3 7 4 9
Station A uses 32 byte packets to transmit messages to Station B using a sliding window protocol. The round trip delay between A and B is 80 milliseconds and the bottleneck bankwidth on the path between aA and B is 128 kbps. What is the optimal window size that A should use ?	1 20 2 30 3 40 4 160
Two computers C1 and C2 are configured as follows. C1 has IP address 203. 197.2.53 and netmask 255.255. 128.0. C2 has IP address 203.197.75.201 and netmask 255.255.192.0. Which one of the following statements is true?	1 C1 and C2 both assume they are on the same network 2 C2 assumes C1 is on same network, but C1 assumes C2 is on a different network 3 C1 assumes C2 is on same network, but C2 assumes C1 is on a different network 4 C1 and C2 both assume they are on different networks

Station A needs to send a message consisting of 9 packets to Station B using a siding window (window size 3) and go-back-n error control strategy. All packets are ready and immediately available for transmission. If every 5th packet that A transmits gets lost (but no acks from B ever get lost), then what is the number of packets that A will transmit for sending the message to B ?	1 12 2 14 3 16 4 20
In a token ring network the transmission speed is 10 bps and the propagation speed is 200 metres/ s μ . The 1-bit delay in this network is equivalent to;	1 500 metres of cable 2 200 metres of cable 3 20 metres of cable 4 50 metres of cable
The address of a class B host is to be split into subnets with a 6-bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet?	1 62 subnets and 262142 hosts 2 64 subnets and 262142 hosts 3 62 subnets and 1022 hosts 4 64 subnets and 1024 hosts

In the slow start phase of TCP congesting control algorithm, the size of the congestion window	1 Does not increase 2 Increases linearly 3 Increases quadratically 4 Increases exponentially
If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?	1 1022 2 1023 3 2046 4 2047
A computer on a 10Mbps network is regulated by atoken bucket. The token bucket is filled at a rate of 2Mbps. It is initially filled to capacity with 16Megabits. What is the maximum duration for which the computer can transmit at the full 10Mbps?	1 1.6 sec 2 2 sec 3 5 sec 4 8 sec
	1

For which one of the following reason: does Internet Protocol (IP) use the time-to-live (TTL) field in the IP datagram header?	Ensure packets reach destination within that time 2 Discard packets that reach later than that time 3 Prevent packets from looping indefinitely 4 Limit the time for which a packet gets queued in intermediate routers
Which of the following assertions is false about the internet Protocol (IP) ?	1 It is possible for a computer to have multiple IP addresses 2 IP packets from the same source to the same destination can take different routes in the network 3 IP ensures that a packet is farwarded if it is unable to reach its destination within a given number of hopes

	4 The packet source cannot set the route of an outgoing packets; the route is determined only by the routing tables in the routers on the way.
The operating system of a computer serves as a software interface between the user and the _____.	1. Hardware 2. Peripheral 3. Memory 4. Screen
The collection of processes on the disk that is waiting to be brought into memory for execution forms the _____	1. Input queue 2. Ready queue 3. Priority queue 4. Device queue
The part of the operating system that coordinates the activities of other program is called the	1. File manager 2. command processor 3. Input/output manager 4. Supervisor
Switching the CPU to another Process requires saving state of the old process and loading new process state is called as _____.	1. Context Switch 2. Process Blocking 3. Time Sharing 4.CPU Sharing

Consider six memory partitions of sizes 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250KB, where KB refers to kilobyte. These partitions need to be allotted to four processes of sizes 357 KB, 210KB, 468 KB and 491 KB in that order. If the best fit algorithm is used, which partitions are NOT allotted to any process?	1. 200KB and 300 KB 2. 300KB and 400 KB 3. 250KB and 300 KB 4. 200KB and 250 KB
Virtual memory is _____.	1. An extremely large main memory 2. An extremely large secondary memory 3. An illusion of extremely large main memory 4. A type of memory used in super computers.
_____ register keeps track of the instructions stored in program stored in memory.	1. AC(Accumulator) 2. PC(Program Counter) 3. AR(Address Register) 4. XR(Index Register)
The technique, for sharing the time of a computer among several jobs, which switches jobs so rapidly such that each job appears to have the computer to itself, is called	1. Time out 2. Multitasking 3. Time domain 4. Time Sharing
Mac Operating system is developed by which company	1. IBM 2. Apple 3. Samsung 4. Microsoft
	1. The most important part of the program

A critical region is	2. The part of the kernel that interfaces directly to the device controllers 3. The part of a program in which a bug would cause the program to exit 4. The part of a program in which shared data is accessed
Which of the following is not used for synchronization?	1. Busy waiting with test and set 2. Monitors 3. The banker’ s algorithm 4. The bakery algorithm
The main function of dispatcher is:	1. swapping a process to disk 2. assigning ready process to the CPU 3. bring processes from the disk to main memory 4. suspending some of the processes when CPU load is high
A heap memory area is used to store the	1. Memory of objects 2. Local variables declared in the method 3. Global variables 4. Static variables
Which of the following disk seek algorithms would be the best choice to implement in a system that services an average of 5 disk requests per second?	1. SSTF 2. FCFS 3. SCAN 4. C-SCAN
	1. C-SCAN

Which of the following disk seek algorithms has the most variability in response time?	2. SCAN 3. SSTF 4. FCFS
Which of the following instructions should be allowed only in Kernel Mode?	1. Disable all interrupts 2. Read the time-of-day clock 3. Set the time-of-day clock 4. Change the Memory Map
Supervisor call	1. Is a call made by the supervisor of the system 2. Is a call made by someone working in root director 3. Are privileged calls that are used to perform resource management functions, which are controlled by the operating systems 4. Is a call with control functions
Which of the following provides interface (UI) between user and OS	1. kernel 2. System call 3. Interrupt 4. Shell
What is a shell ?	1. It is a hardware component 2. It is a command interpreter 3. It is a part in compiler 4. It is a tool in CPU scheduling

In Multi-Processing Operating Systems:	1. Maximum throughput is achieved 2. Not suitable for Real Time Applications 3. Maximum security can be achieved 4. Maximum utilization of CPU can be achieved
In the running state	1. all the processes waiting for I/O to be completed are found 2. only the process which has control of the processor is found 3.all the processes in the job queue are found 4. all the processes waiting for the processor are found
Consider n processes sharing the CPU in a round robin fashion. Assume that the context switch takes s seconds. What must be the quantum q such that the overhead of context switching is minimized and at the same time each process is getting guaranteed execution on the CPU at least once in every t seconds?	1. q= (t - ns)/ (n-1) 2. q = (t - ns)/ (n+1) 3. q = (t - ns)/ (n*1) 4 q= (t - ns)/ n
_____ selects the jobs from the pool of jobs and loads into the ready queue.	1. Program counter 2. Medium term scheduler 3. Short term scheduler 4. Long term scheduler
Paging suffers from ……..	1. Internal fragmentation 2.segmentation fault 3. External fragmentation

	4. fatal error
A system has a resource ‘Z’ with 20 instances; each process needs 5 instances to complete its execution. What is the minimum number of processes in the system that may cause a deadlock?	1. 6 2. 10 3. 5 4. 4
Consider the virtual page reference string 1,2,3,2,4,1,3,2,4,1 on a demand paged virtual memory system running on a computer system that has main memory size of 3 page frames which are initially empty. Let LRU, FIFO and OPTIMAL denote the number of page faults under the corresponding page replacement policy. Then	1. OPTIMAL < FIFO < LRU 2. OPTIMAL = FIFO 3. OPTIMAL < LRU < FIFO 4. OPTIMAL = LRU
Which scheduling policy is most suitable for a time-shared operating system?	1. Elevator 2. First - come-first-serve 3. Round Robin 4. Shortest Job First
Round robin scheduling is essentially the preemptive version of _____	1. Longest time first 2. FIFO 3. Shortest job first 4. Shortest remaining
In the blocked state	1. the processes waiting for the processor are found 2. the process which is running is found 3. the processes waiting for I/O are found

	4. the process ready to execute
A page fault occurs	1. when the process enters the blocked state 2. when the page is in the memory 3. when the page is not in the memory 4. when the process is in the ready state
Routine is not loaded until it is called. All routines are kept on disk in a relocatable load format. The main program is loaded into memory & is executed. This type of loading is called _____	1. Static loading 2. Dynamic loading 3. Overlays 4. Dynamic linking
If the Disk head is located initially at 32, find the number of disk moves required with FCFS if the disk queue of I/O blocks requests are 98, 37, 14, 124, 65, 67.	1. 324 2. 315 3. 321 4. 310
The solution to Critical Section Problem is : Mutual Exclusion, Progress and Bounded Waiting.	1. The statement is partially valid 2. The statement is true. 3. The statement is false 4. The statement is contradictory.
The problem of thrashing is effected scientifically by _____.	1. Primary storage size 2. Program size 3. Program structure 4. Secondary storgae
Which module gives control of the CPU to the process selected by the short-term scheduler?	1. long - term scheduler 2. short-term scheduler 3. interrupt

	4. dispatcher
The mechanism that bring a page into memory only when it is needed is called _____	1. Page Replacement 2. Demand Paging 3. Segmentation 4. Fragmentation
Which directory implementation is used in most Operating System?	1. Single level directory structure 2. Acyclic directory structure 3. Two level directory structure 4. Tree directory structure
When two or more processes trying to execute a set of instructions and if the output depends on the order of execution of the process, this is termed as:	1. Progress 2. Synchronization 3. Race condition 4. Critical section
In priority scheduling algorithm, when a process arrives at the ready queue, its priority is compared with the priority of	1. parent process 2. init process 3. currently running process 4. all process

Consider the following program:
int f(int *p, int n)
{
if (n <= 1) return 0;
else return max (f (p+1, n-1),p[0]-p[1]);
}
int main()
{
int a[] = {3,5,2,6,4};
printf("%d", f(a,5));
}
The value printed by this program is
	1. 1
	2. 4
	3. 2
	4. 3

	1. final

To prevent any method from overriding, the method has to declared as,	2. extends 3. const 4. static
Consider a system with 'M' CPU processors and 'N' processes then how many processes can be present in ready, running and blocked state at maximum	1. M, N, M 2. N, N+M, M 3. N, M, M 4. N, M, N
What is the output of following JavaScript code	1 Error 2 TRUE 3 FALSE 4 null
For 3 page frames, the following is the reference string: 7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1. How many page faults does the FIFO page replacement algorithm produce?	1. 11 2. 12 3. 15 4. 10
Four jobs to be executed on a single processor system arrive at time 0 in order A, B, C, and D. Their burst time requirements are 4,1,8,1 time units respectively. Find the completion timeo f A under round robin scheduling with a time slice of one-time unit.	1. 9 2. 7 3. 10 4. 8
Let S and Q be two semaphores initialized to 1, where P0 and P1 processes the following statements wait(S);wait(Q); ---; signal(S);signal(Q) and wait(Q); wait(S);---;signal(Q);signal(S); respectively. The above situation depicts a	1. Semaphore 2. Signal

respectively. The above situation depicts a _____ . 3. Deadlock 4. Interrupt	

Consider the function func shown below:
int func(int num) {
int count = 0;
while (num) {
count++;
num>>= 1;
}
return (count);
}
The value returned by func(435)is
	1. 9
	2. 0
	3. 7
	4. 8

Which of the following is not true about segmented memory management?	1 Segment length must be a multiple of the page size 2 Segmentation allows multiple linear address space in one process 3 Segmentation can be used with paging to keep segments partially resident in memory 4

	A segment can be read-only for one process and read-write for another

Consider the following C program.
#include
int f1 (void) ;
int f 2 void ;
int x 10;
int main ()
{
int x=1;
x+=f1()+ f2()+f3()+f2() ;
printf("%d", x);
return 0;
}
int f1(){int x=25; x++; return x;}
int f2(){static int x =50; x++;return x;}
int f3(){x*=10; return x};
The output of the program is_____.
	1. 434
	2. 432
	3. 230
	4. 43

What is the main difference between traps and interrupts?	1 How they are initiated 2 The kind of code that's used to handle them 3 Whether or not the scheduler is called 4

	How the operating system returns from them
The main advantage of DMA is that it	1 Increases system performance by increasing concurrency 2 Allows the CPU to run faster 3 Reduces the traffic on the data bus 4 Removes the requirement that transfers be properly aligned
A typical hard drive has a peak throughput of about	1 2 x 105 bytes per second 2 2 x 106 bytes per second 3 2 x 107 bytes per second 4 2 x 108 bytes per second
	1 Increase hard drive latency and performance 2

RAID is a way to:	Increase hard drive performance and decrease cost 3 Increase hard drive reliability and performance 4 Increase hard drive reliability and decrease cost
Which of the following is not included in an inode in Linux?	1 File owner 2 File name 3 File modification date 4 Pointer to the first data block
What is the output of following JavaScript code?	1. %, !, {, [, !, ! 2 Q, u, a, l, i, t, y, 1, 0, 0 3 Quality 100 4 Error
In Binary trees nodes with no successor are called	1. End nodes 2. Terminal nodes 3. Final nodes 4. Last nodes

If every node u in G adjacent to every other node v in G, A graph is said to be	1. strongly connected 2. complete 3. isolated 4. finite
A binary tree in which all the leaves are on the same level is called as:	1. Complete binary tree 2. Binary search 3. Full binary tree 4. Strictly binary tree
A binary tree T has 20 leaves. The number of nodes in T having two children is	1. 99 2. 7 3. 19 4. 34
What happens when you push a new node onto a stack?	1. The new node is placed at the middle of the linked list 2. The new node is placed at the back of the linked list 3. The new node is placed at the front of the linked list 4. No Changes happens
The recurrence relation capturing the optimal execution time of the Towers of Hanoi problem with n discs is	1. T(n)=2T(n-1)+1 2. T(n) = 2T(n-2)+2 3. T(n)=2T(n-1)+n 4. T(n)=2T(n/2)+1
Which of the following is not true of virtual memory?	1. It allows more efficient use of memory 2. It reduces the need for relocatable code 3. It requires hardware support 4. It requires the use of a disk or other secondary storage
	1. None of these

With a single resource, deadlock occurs,	2. if there is a single process competing for that resource 3. if there are only two process completing for that resource 4. if there are more than two processes competing for that resource
If a , b , c, are three nodes connected in sequence in a singly linked list, what is the statement to be added to change this into a circular linked list?	1. a->next=b 2. c->next=a 3. all 4. b->next=c
What is the software that runs a computer, including scheduling tasks, managing storage, and handling communication with peripherals?	1. bluetooth technology 2. driver 3. application suite 4. operating system

Consider the following function written the C programming language.
void foo (char * a) {
if (* a & & * a ! =' '){
putchar (*a);
}
}
}
The output of the above function on input ?ABCD EFGH? is
	1. HGFE DCBA
	2. ABCD
	3. DCBA
	4. ABCD EFGH

The degree of a leaf node is:	1. -1 2. 1 3. 0 4. 2

Buffering is useful because	1. It allows devices and thee CPU to operate asynchronously 2. It makes it seem like there's more memory in the computer 3. It allows all device drivers to use the same code 4. It reduces the number of memory copies required
The post order traversal of binary tree is DEBFCA. Find out the pre order traversal.	1. ABDCEF 2. ABDECF 3. ADBFEC 4. ABFCDE
The performance of cache memory is frequently measured in terms of a quantity called	1. average ratio 2. miss ratio 3. hit ratio 4. ratio
What is the main difference between traps and interrupts?	1. Whether or not the scheduler is called 2. The kind of code that's used to handle them 3. How they are initiated 4. How the operating system returns from them
A 4-way set-associative cache memory unit with a capacity of 16 KB is built using a block size of 8 words. The word length is 32 bits. The size of the physical address space is 4 GB. The number of bits for the TAG field is	1. 22 2. 19 3. 20 4. 21
What is the postfix expression for the following infix expression? Infix = a+b%c>d	1 abc%+d>

	2. abc%d>+ 3. ab+c%d> 4. abcd>%+
A binary tree T has 20 leaves. The number of nodes in T having two children is	1. 99 2. 7 3. 19 4. 34
The <big> tag makes	1 Text to uppercase 2 Text to bold 3 Text to be bigger than the surrounding text 4 Text to be strong
What is the correct HTML for making a hyperlink?	1. http://mcqsets.com">ICT Trends Quiz 2. mcqsets.com" >ICT Trends Quiz 3. . http://mcqsets.com">ICT Trends Quiz 4. <http://mcqsets.com
If two interrupts, one of higher priority and other of lower priority occur simultaneously, then the service provided is for	1. interrupt of higher priority 2. both the interrupts 3. none of the mentioned 4. interrupt of lower priority
	1. None of these

An optimal scheduling algorithm in terms of minimizing the average waiting time of a given set of processes is _____.	2. Round robin scheduling algorithm 3. FCFS scheduling algorithm 4. Shortest job - first scheduling algorithm
When a program tries to access a page that is mapped in address space but not loaded in physical memory, then	1. no error occurs 2. segmentation fault occurs 3. page fault occurs 4. fatal error occurs
Which of following property returns the window object generated by a frame object	1 window 2 contentWindow 3 contentDocument 4 windowFrame
Which of the following is example of in-place algorithm?	1. Insertion Sort 2.selection sort 3. Merge Sort 4. Bubble Sort
The run time of the following algorithm is Procedure A(n) If(n<=2) return(1) Else return(A(sqrt(n))	1. O(n) 2. O(logn) 3. O(loglogn) 4. O(1)
Consider a dynamic queue with two pointers: front and rear. What is the time needed to insert an element in a queue of length of n?	1. O(n log2n). 2. O(1). 3. O(log2n) 4. O(n).

What is the unique characteristic of RAID 6 ?	1. Mirroring 2. Distributed Parity 3. Striping 4. Two independent distributed parity
How many address bits are needed to select all memory locations in the 16K × 1 RAM?	1. 16 2. 8 3. 14 4. 10
The DMA controller has _____ registers	1. 1 2. 4 3. 3 4. 2
A Program Counter contains a number 825 and address part of the instruction contains the number 24. The effective address in the relative address mode, when an instruction is read from the memory is	1. 850 2. 849 3. 802 4. 801
You can refresh the web page in javascript by using ..... method.	1 window.reload 2 location.Reload 3 window. Refresh 4 page.refresh
The load instruction is mostly used to designate a transfer from memory to a processor register known as	1. Instruction Register 2. Program counter 3. Accumulator 4. Memory address Register
	1

What is the output of following JavaScript code	Error 2 Chadha Software Technologies 3 Web Development 4 Web Developmnet,Application Development, Testing, Chadha Software Technologies
If CurrNode pointer points to the previous node in the list and NewNode points to the newly created Node, the address assignments to be done for inserting a node in the middle of a singly linked list is	1. CurrNode->Next = NewNode->Next; NewNode->Next = CurrNode; 2. CurrNode = NewNode 3. NewNode->Next = CurrNode->Next; CurrNode->Next = NewNode; 4. CurrNode->Next = NewNode; NewNode->Next = CurrNode->Next
The load instruction is mostly used to designate a transfer from memory to a processor register known as____.	1. Program counter 2. Memory address Register 3. Accumulator 4. Instruction Register
In RMI Architecture which layer Intercepts method calls made by the client/redirects these calls to a remote RMI service?	1. Stub & Skeleton Layer 2. Application Layer 3. Transport Layer 4. Remote Reference Layer
If the associativity of a processor cache is doubled while keeping the capacity and block size unchanged, which one of the following is	1. Width of way selection multiplexer 2. Width of tag comparator

capacity and block size unchanged, which one of the following is guaranteed to be NOT affected?	3. Width of set index decoder 4. Width of processor to main memory data bus
The time factor when determining the efficiency of algorithm is measured by	1.Counting microseconds 2.Counting the number of key operations 3.Counting the number of statements 4.Counting the kilobytes of algorithm
What is the correct JavaScript syntax to write "Hello World"	1 document.write("Hello World") 2 response.write("Hello World") 3 "Hello World" 4 ("Hello World")
Which of the following address modes calculate the effective address as address part of the instruction) + (content of CPU register)	1. none of these 2. Direct Address Mode 3. Indirect Address mode. 4. Relative address Mode or Indexed address Mode
If a node having two children is deleted from a BST, it is replaced by its	1.Inorder predecessor 2.Inorder successor 3.Preorder successor 4.Preorder predecessor

A computer system implements 8 kilobyte pages and a +32-bit physical address space. Each page table entry contains a valid bit, a dirty bit, three permission bits, and the translation. If the maximum size of the page table of a process is 24 megabytes, the length of the virtual address supported by the system is _____ bits.	1. 36 2. 35 3. 33 4. 34
Which of the following algorithm is not stable?	1.Merge Sort **2.Quick Sort** 3.Bubble Sort 4.Insertion Sort
What is the output of following JavaScript code	1 n 2 SOFTWARE 3 software 4 Error
What is the output of following JavaScript code?	1 8 2 4 3 44 4 Error
What is the output of following JavaScript code?	1 2 2 12 3 11

	4 13
Identify the sorting technique that supports divide and conquer strategy and has (n2) complexity in worst case	1. Quick 2. Merge 3. Insertion 4. Shell
The searching technique that takes O (1) time to find a data is	1.Linear Search 2.Binary Search **3.Hashing** 4.Tree Search
AVL trees have a faster _____	**1.Retrieval** 2.Updation 3.Insertion 4.Delation
The time required in worst case for search operation in binary tree is	1.O(1) 2.O(log n) **3.O(n)** 4.O(log 2n)
Identify the data structure which allows deletions at both ends of the list but insertion at only one end	1.queue 2.priority queue 3.output restricted deque **4.input restricted deque**
The ways to accessing html elements in java script	1 document.getElementName.value 2 document.getElementById(“fname”).value 3 document.form.fname.value 4 document.forms.fname.value
The number of outputs in n-input decoder is	1 2n 2 2^n 3

	n 4 4
The two's complement of 101011 is	1 101011 2 101011 3 10101 4 100001
The number of boolean functions in n-variables is	1 2n 2 2^(2^n) 3 2^n 4 4
The lifetime of flash memory is ----------	1 finite 2 infinite 3 5000 updations 4 one formatting
A _____ is often used if you want the user to verify or accept	1 Alert box 2 Confirm box 3 Dialog box

	4 Prompt box
A system of interlinked hypertext documents accessed via the Internet is known as	1 Internet 2 Intranet 3 World Wide Web 4 Extranet
What does isNaN function do in JavaScript?	1 Return true if the argument is not a number. 2 Return false if the argument is not a number. 3 Return true if the argument is a number. 4 None of the above

How do you create a new object in JavaScript?	1
	var obj={ };
	2
	var obj=Object( );
	3
	var obj=new object( );
	4
	var obj = new obj( );

	1 Chadha 2

What is the output of following JavaScript code?	C, h, a, d, h, a, S, o, f, t, w, a, r, e, T, e, c, h, n, o, l, o, g, i, e, s 3 Chadha, Software, Technologies 4 Chadha Software Technologies
Which of the following object represents the HTML document loaded into a browser window?	1 window 2 document 3 image 4 form
Who invented the JavaScript programming language?	1 Tennis Ritchie 2 James Gosling 3 Brendan Eich 4 Mark crispin
	1 window.status("put your message here") 2

How do you put a message in the browser's status bar?	statusbar = "put your message here" 3 window.status = "put your message here" 4 status("put your message here")
Math. round(-20.5)=?	1 20 2 -20 3 21 4 -21

Which built-in method returns the length of the string?	1
	length();
	2
	size();
	3
	index();
	4
	None of the above

Which of the following function of Array object calls a function for each element in the array?	1
	concat();
	2
	every();
	3
	filter();
	4

	forEach(); 1
Dynamic web page	is same every time whenever it displays 2 generates on demand by a program or a request from browser 3 both (a) and (b) 4 None of the above
What is the code to be used to trim whitespaces ?	1.let trimmed = (l.trim() for (l in lines)); 2.let trimmed = (trim(l)); 3.let trimmed = l.trim(); 4.let trimmed = for(l in lines));
What are the desirable properties of a transaction?	1 Atomicity, consistency, isolation, deadlock 2 Atomicity, consistency, isolation, durability 3 Atomicity, concurrency, isolation, durability 4 Atomicity, concurrency, integrity, durability
If a transaction T has obtained an exclusive lock on item Q, then T can	1 read Q 2 write Q

If a transaction T has obtained an exclusive lock on item Q, then T can	3 read and write Q 4 write Q but not read Q
If two relations R and S are joined, then the non matching tuples of both R and S are ignored in	1 left outer join 2 right outer join 3 full outer join 4 inner join
The FD A → B , DB→ C implies	1 DA→ C 2 A → C 3 B → A 4 DB → A
Assume that a table R with 1000 records is to be joined with another table S with 10000 records. What is the maximum number of records that would result in if we join R with S and the equi-join attribute of S is the primary key?	1 1,000 2 10, 000 3 1,00,00,000 4 11, 000
	1 3NF

Consider a relation R (A, B). If A → B is a trivial functional dependency and A is the super key for R, then what is the maximum normal form R can be in?	2 2NF 3 BCNF 4 1NF
When determining the efficiency of algorithm the time factor is measured by	1. Counting microseconds 2. Counting the number of key operations 3. Counting the number of statements 4. Counting the kilobytes of algorithm
A relation R(A,B,C,D,E,H) has the following functional dependencies F= {{A→BC},{CD→E},{E→C}, {D→AEH}, {ABH→BD}, {DH→BC}}. Find the Normal form of the relation	1. 2NF 2. 3NF 3 BCNF 4 1NF
Which of the following is a disadvantage of file processing system? (I) Efficiency of high level programming, (II) Data Isolation (III) Integrity issues (IV) Storing of records as files	1 Efficiency of high level programming, 2 Integrity issues 3 Data Isolation and Integrity issues

	4 Data Isolation and Storing of records as files
The data manipulation language used in SQL is a,	1 Procedural DML and non-Procedural DML 2 Modification DML and Declarative DML 3 Non-Procedural DML and Declarative DML 4 Procedural DML and Declarative DML
Which of the following is not a function of a DBA?	1 Table creation 2 Index creation 3 User creation 4 Application creation
Assume a relation R with keys X, Y and Z, where X, Y, and Z are sets of one or more attributes. Also assume that Y is a subset or equal to X and Z is a subset of X and Y. Which of the following is true for this case?	1 X and Y are candidate keys of R 2 Y and Z are the candidate keys of R 3

is a subset of X and Y. Which of the following is true for this case?	X is the only candidate key of R 4 Z is the only candidate key of R
Assume relations R and S with the schemas R (A, B, C) and S (B, D). Which of the following is equivalent to r ⋈ s?	1 $\sigma r.B = s.B\ (r \bowtie s)$ 2 $\prod r.A, r.B, r.C, s.D\ (\sigma r.B = s.B\ (r \times s))$ 3 $\prod r.A, r.B, s.B, r.C, s.D\ (\sigma r.B = s.B\ (r \times s))$ 4 $\prod r.A, r.B, s.B, r.C, s.D\ (\sigma r.B = s.B\ (r \bowtie s))$
Consider a relational table with the schema R (A, B, C). Assume that the cardinality of attribute A is 10, B is 20, and C is 5. What is the maximum number of records R can have without duplicate?	1 35 2 100 3 1000 4 200

Which of the following operator in SQL would produce the following result if applied between two relations Employee and Department?

Eno	EName	DeptNo	DName
111	Kumar	100	Sales
222	Steve	200	Finance
Null	Null	300	Admn
244	Meera	400	Mktg

1. Natural Join
2. Outer Join
3. Cartesian Join
4. Projection Join

Consider a disk with following specification; sector size - 512 bytes, tracks per surface - 2000, sectors per track - 60, double-sided platters - 4, and average seek time - 20 msec. For a 5400 rpm hard disk for one revolution, if a single track of data can be transferred, then what is the transfer rate?

1. 2727 Kbytes/second
2. 2020 Kbytes/second
3. 5400 Kbytes/second
4. 2048 Kbytes/second

Assume that a table CUSTOMER has 10000 records. If the block size 1024 bytes and the record size is 80 bytes, how many records can be stored in each block to achieve maximum performance and how many blocks are required to store the entire table?

1. 12, 834
2. 13, 833
3. 24, 834
4. 23, 833

Consider a relation R (A, B, C, D, E) with set of functional dependencies F = {A→BC, CD→E, B→D, E→A}. Which of the following is one of the candidate keys of R?	1. ABC 2. B 3. ED 4. E
Given R = ABCDEFGH and set of functional dependencies F = {BH→C, BH→F, E→F, A→D, F→A, BH→E, C→E, F→D}, which of the following is redundant set of functional dependencies?	1 BH→C, F→D, F→A 2 BH→C, F→D, BH→E 3 BH→E, A→D, F→D 4 BH→C, A→D, BH→E
The conjunctive selection operation $\sigma\theta 1 \wedge \theta 2 (E)$ is equivalent to _____	1 $\sigma\theta 1(E) \cup \sigma\theta 2 (E)$ 2 $\sigma\theta 1(E) \cap \sigma\theta 2 (E)$ 3 *σθ1(σθ2(E))* 4 $\pi\theta 1(E) \cup \pi\theta 2 (E)$
Which of the following concurrency control mechanisms insist unlocking of all read and write locks of transactions at the end of commit?	1 Strict 2 Phase Locking 2 Simple 2 Phase Locking 3

	Timestamp ordering 4 Rigorous 2 Phase Locking
Consider the entities customer (customer-name, customer-city,customer-street) and account(account-no,balance) with following relationship If *depositor* is a one-to-many relationship from account to customer, then this ER diagram can be reduced to which of the following relational schemas?	1 Customer (customer-name, customer-street, customer-city, account-number) Account(account-number, balance, customer-name) Depositor (customer-name, account-number) 2 Customer (customer-name, customer-street, customer-city, account-number) Account(account-number, balance) 3 Customer (customer-name, customer-street, customer-city) Account(account-number, balance)

	Depositor (customer-name, account-number) 4 Customer (customer-name, customer-street, customer-city) Account(account-number, balance, customer-name)
The process of analyzing the given relation schemas based on their functional dependencies is known as	1 Dependency 2 Normalization 3 Concurrency 4 Cannot be determined
What operator performs pattern matching?	1 LIKE 2. NULL 3 NOT NULL 4 IS NULL
Identify the minimal key for relational scheme R(A, B, C, D, E) with functional dependencies F = {A → B, B → C, AC → D}	1 A 2 AE

	3 BE 4 CE
The best normal form of relation scheme R (A, B, C, D) along with the set of functional dependencies F = {AB →C, AB → D, C → A, D → B} is	1 BCNF 2 3NF 3 2NF 4 1NF
_____ mechanism is used for converting a weak entity set into strong entity set in entity-relationship diagram	1 Generalization 2 Aggregation 3 Specialization 4 Adding suitable attributes
Division operation is ideally suited to handle queries of the type:	1 customers who have no account in any of the branches in Melbourne 2 customers who have an account at all branches in Melbourne

Division operation is ideally suited to handle queries of the type:	3 customers who have an account in atleast one branch in Melbourne 4 customers who have only joint account in any one branch in Melbourne
A clustering index is created when _____.	1 primary key is declared and ordered 2 no key ordered 3 foreign key ordered 4 there is no key and no order
Consider a B+ tree in which the search Answer is 12 bytes long, block size is 1024 bytes,record pointer is 10 bytes long and block pointer is 8 bytes long. The maximum number of keys that can be accommodated in each non-leaf node of the tree is ____ .	1.40 **2.50** 3.60 4.70
If Human voice is required to be digitized what will be the bit rate at 16 bits per sample?	1 64 kbps 2 128 kbps 3 256 kbps 4 512 kbps
	1

Six channels, each with a 200 khz bandwidth are to be multiplexed together. what is the minimum bandwidth requirement if each guard band is 20Khz	1000 KHz 2 1100 KHz 3 1200 KHz 4 1300 KHz
which type of EM waves are used for unicast communication such as cellular telephones, satellite networks and wireless LANS.	1 Microwaves 2 Radiowaves 3 Infrared 4 Lightwaves
In stop and wait ARQ, the sequence numbers are generated using	1 Modulo-2 arithmetic 2 Modulo-4 arithmetic 3 Modulo-8 arithmetic 4 Modulo-16 arithmetic
Which of these is true for go-back-N protocol, if m is the size of sequence number field	1 size of send window must be less than 2m and size of receiver window must be 1 2 size of send window must be greater than 2m and size of receiver window must be 1 3

	size of send window must be less than 2m and size of receiver window must be 2m 4 size of send window must be greater than 2m and size of receiver window must be 2m
To guarantee the detection of up to s errors in all cases, the minimum Hamming distance in a block code must be	1 s+1 2 2s+1 3 3s+1 4 s
What is maximum throughput for slotted ALOHA ?	1 0.386 when G=1/2 2 0.386 when G=1 3 0.038 when G=1 4 0.038 when G=1/2
A complex low pass signal has a bandwidth of 100kHz. What is the minimum sampling rate for this signal	1 100,000 2 200,000 3 400,000 4 800,000
	1 frame transmission

What is the difference between CSMA/CD and ALOHA?	2 Addition of persistence process 3 Jamming signal 4 All of the above
If user A wants to send an encrypted message to user B. The plain text of A is encrypted with the _____.	1 Public Key of user A 2 Public Key of user B 3 Private Key of user A 4 Private Key of user B
Programs tend to make memory accesses that are in proximity of previous access this is called	1 spatial locality 2 temporal locality 3 reference locality 4 access locality
What happens to destination address in the header of a packet in a datagram network ?	1 Updated by every switching device on the way. 2 It remains same during the entire journey. 3 same till the gateway of the parent network and updated by gateway for the internet

	4 none of these.
Bayone-Neill-Concelman(BNC) connectors are used with which type of cables	1 UTP 2 STP 3 Coaxial cable 4 Optical Cables
In TDM Data rate management is done by which of these strategies	1 Multilevel multiplexing 2 Multi-slot allocation 3 Pulse stuffing 4 all of the above
Which of these is correct for synchronous Time Division Multiplexing	1 Data rate of link is n times faster and the unit duration is n times longer 2 Data rate of link is n times slower and the unit duration is n times shorter 3 Data rate of link is n times slower and the unit duration is n times longer 4

	Data rate of link is n times faster and the unit duration is n times shorter
What is the multiplexer used for?	1 To implement many to one function 2 To implement one to one function 3 To implement many to many function 4 To introduce delay
Identify the addressing mode of the following instruction Add R1, R2, R3 where R1, R2 are operands and R3 destination	1 Indirect addressing mode 2 Immediate addressing mode 3 Direct addressing mode 4 Indexed addressing mode
Which of the following addressing modes has minimum number of memory access to access the operands? A. Indirect B. Direct C. Indexed D. Immediate	1 D 2 B 3 C 4

	A
How many flip-flops are present in register of sixteen bits?	1 32 2 8 3 16 4 64
If a pipeline has five stages, assuming each stage is one cycle, the earliest time to receive an output from an instruction without any forwarding (not nop) is after which cycle?	1 first cycle 2 fifth cycle 3 third cycle 4 never
How many phases are present in the simplest pipeline system?	1 Two 2 Three 3 Four 4 Seven
Can any unsigned number be represented using one register in 64-bit processor	1 No 2 yes 3.signed number alone can be represented 4.

	Real numbers (positive and negative) can alone be represented
Which method is implemented in RAID 1?	1 Hamming code 2 distributed parity 3 mirroring 4 block parity
Given four frames in main memory, the following is the content of the page table. Assuming the frames are fetched at time instant 3, 4, 1, 2 which frame will be replaced to place the page 46 using first in first out replacement algorithm? 23 34 10 4	1.Third frame starting from first 2.second frame starting from first 3.first frame starting from first 4.Last frame starting from first
Error detection at the data link layer is achieved by?	1 Bit stuffing 2 Cyclic redundancy codes 3 Hamming codes

	4 Equalization
The number of distinct symbols in radix-r is	1 r 2 r-1 3 r+1 4 10
The daisy chaining prioirty gives least priority to which device?	1 The device accessed last in the chain 2 The first device in the chain 3 The device present at end of chain but inaccessible 4 The device in the middle of the chain
Baud means?	1 The number of bits transmitted per unit time 2 The number of byted transmitted per unit time 3 The rate at which the signal changes 4 None of above

You have 10 users plugged into a hub running 10Mbps half-duplex. There is a server connected to the switch running 10Mbps half-duplex as well. How much bandwidth does each host have to the server?	1 100 kbps 2 10 kbps 3 10 Mbps 4 2 Mbps
A station in a network forwards incoming packets by placing them on its shortest output queue. What routing algorithm is being used?	1 hot potato routing 2 flooding 3 static routing 4 delta routing
In which part does the form validation should occur?	1 Client 2 Server 3 Both a and b 4 None of the mentioned
	1 a technique used in best-effort delivery systems to avoid endlessly looping packets 2

Which of the following technique is used for fragment?	a technique used by protocols in which a lower level protocol accepts a message from a higher level protocol and places it in the data portion of the low level frame 3 one of the pieces that results when an IP gateway divides an IP datagram into smaller pieces for transmission across a network that cannot handle the original datagram size 4 All of the above
When you ping the loopback address, a packet is sent where?	1 On the network 2 Down through the layers of the IP architecture and then up the layers again 3 Across the wire 4 through the loopback dongle
Which of the following devices assigns IP address to devices connected to a network that uses TCP/IP?	1 DHCP Server 2 NIC 3

	Gateway 4 Hub
Which of the following technique is used for Time-To-Line (TTL)?	1 a technique used in best-effort delivery system to avoid endlessly looping packets. 2 a technique used by protocols in which a lower level protocol accepts a message from a higher level protocol and places it in the data portion of the low level frame 3 One of the pieces that results when an IP gateway divides an IP datagram into smaller pieces for transmission across a network that cannot handle the original datagram size. 4 All of the above
A processor can support a maximum memory of 4 GB, where the memory is word-addressable (a word consists of two bytes). The size of the address bus of the processor is at least _____ bits	1. 33 2. 31 3. 32 4. 30

RAM type is justified as	1.SRAM is faster than DRAM **2.RAM consumes less power than DRAM** 3.SRAM values must be periodically refreshed 4.DRAM is used for cache memory
The time required in worst case for search operation in binary tree is	1.O(1) 2.O(log n) **3.O(n)** 4.O(log 2n)
The size of the data count register of a DMA controller is 16 bits. The processor needs to transfer a file of 29,154 kilobytes from disk to main memory. The memory is byte addressable. The minimum number of times the DMA controller needs to get the control of the system bus from the processor to transfer the file from the disk to main memory is	1. 455 2. 457 3. 456 4. 454
CSMA (Carrier Sense Multiple Access) is	1 a method of determining which device has access to the transmission medium at any time 2 a method access control technique for multiple-access transmission media. 3 a very common bit-oriented data link protocol issued by ISO. 4

	network access standard for connecting stations to a circuit-switched network
If the offset of the operand is stored in one of the index registers, then it is	1. based indexed addressing mode 2. indexed addressing mode 3. relative based indexed addressing mode 4. based addressing
A binary tree in which every non-leaf node has non-empty left and right subtrees is called a strictly binary tree. Such a tree with 10 leaves	1.cannot have more than 19 nodes **2.has exactly 19 nodes** 3.cannot have more than 17 nodes 4.has exactly 17 nodes
Which of the following are sufficient conditions for deadlock?	1. Non-Preemption 2. Circular wait 3. M.E 4. Hold and wait ALL
The main difference between synchronous and asynchronous transmission is	1. the clocking is derived from the data in synchronous transmission 2. the clocking is mixed with the data in asynchronous transmission 3. the pulse height is different. 4. the bandwidth required is different
When an instruction is read from the memory, it is called	1. Memory Read cycle 2. Instruction cycle 3. Fetch cycle 4. Memory write cycle

ARP (Address Resolution Protocol) is	1 a TCP/IP protocol used to dynamically bind a high level IP Address to a low-level physical hardware address 2 a TCP/IP high level protocol for transferring files from one machine to another 3 a protocol used to monitor computers 4 a protocol that handles error and control messages
A process executes the code fork(); fork(); fork(); The total number of child process created is	1. 7 2. 3 3. 8 4. 4
Which of the following raid levels provides maximum usable disk space?	1.RAID 1 **2.RAID 0** 3.RAID 5 4.RAID 6
What are the states of the Auxiliary Carry (AC) and Carry Flag (CF) after executing the following 8085 program? MVI H, 5DH; MIV L, 6BH; MOV A, H; ADD L	1. AC=1 and CY=0 2. AC=0 and CY=1 3. AC=0 and CY=0 4. AC=1 and CY=1
The performance of cache memory is frequently measured in terms of a quantity called	1. hit ratio 2. average ratio 3. ratio 4. miss ratio

DMA is useful for the operations	1. large and fast data transfers between memory and io devices 2. small data transfers between memory and cache 3. slow and small data trasfers between memory and io devices 4. fast and slow data transfers between memory and io devices
You are trying to decide which type of network you will use at your office, and you want the type that will provide communication and avoid collisions on the cable. Which of the following is the best choice?	1 Token-Ring 2 CSMA/CD 3 Ethernet 4 CSMA/CA
Computers use addressing mode techniques for _____.	1.Giving programming versatility to the user by providing facilities as pointers to memory counters for loop control 2.Specifying rules for modifying or interpreting address field of the instruction 3.To reduce no. of bits in the field of instruction **4.All the above**

A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller. Each cache tag directory entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit. The size of the cache tag directory is	1. 40 2. 160 3. 136 4. 32
To represent hierarchical relationship between elements, which data structure is suitable?	1.Deque 2.stack **3.tree** 4.list
You are working with a network that has the network ID 172.16.0.0, and you require 25 subnets for your company and an additional 30 for the company that will merge with you within a month. Each network will contain approximately 600 nodes. What subnet mask should you assign?	1 255.255.192.0 2 255.255.224.0 3 255,255.248.0 4 255.255.252.0
	1 an error-detecting code based on a summation operation performed on the bits to be checked. 2 a check bit appended to an array of binary digits to make the sum of all the binary digits. 3

Parity bit is	a code in which each expression conforms to specific rules of construction, so that if certain errors occur in an expression, the resulting expression will not conform to the rules of construction and thus the presence of the errors in detected 4 the ratio of the number of data units in error to the total number of data units
How many 8-bit characters can be transmitted per second over a 9600 baud serial communication link using asynchronous mode of transmission with one start bit, eight data bits, two stop bits, and one parity bit?	1.600 **2.800** 3.1200 4.876
Ethernet and Token-Ring are the two most commonly used network architectures in the world. Jim has heard of the different topologies for networks and wants to choose the architecture that will provide him with the most options. Which of the following would that be? Choose the most correct answer.	1 Token-Ring because it currently can run at both 4Mbps and 16Mbps. This means that it can be used in any topology 2 Ethernet, because it is cabled using fiber-optic cable 3 Token-Ring, because it uses a MAU 4

	Ethernet, because it can be set up with most topologies and can use multiple transfer speeds
A binary search tree is generated by inserting in order the following integers 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24. The number of nodes in the left subtree and right subtree of the root respectively are	**1. (7, 4)** 2. (4, 7) 3. (8, 3) 4. (3, 8)
The recurrence relation that arises in relation with the complexity of binary search is	1. T(n)=T(n/2)+K **2. T(n)=2T(n/2)+K** 3. T(n)=T(n/2)+log n 4. T(n)=T(n/2)+n
Which two RAID types use parity for data protection?	1. RAID 1 **2. RAID 4** 3. RAID 1+0 **4. RAID 5**
The algorithm design technique used in the quick sort algorithm is	**1. Divide and Conquer** 2. Backtracking 3. Dynamic Programming 4. Greedy Method
Generally Dynamic RAM is used as main memory in a computer system as it_____.	1. Consumes less power 2. Needs refreshing circuitry 3. Has lower cell density 4. Has higher speed
Consider the tree arcs of a BFS traversal from a source node W in an unweighted, connected, undirected graph. The tree T formed by the tree arcs is a data structure for computing	1. The shortest paths from W to only those nodes that are leaves of T. 2. The shortest path between every pair of vertices. 3. The shortest path from W to every vertex in the graph. 4. The longest path in the graph.

A full binary tree with n leaves contains .	1. log 2 n nodes. 2. 2n nodes 3. n nodes. 4. 2n - 1 nodes.
The complexity of multiplying two matrices of order m*n and n*p is	1. mp 2. np 3. mnp 4. mn
A binary tree T has 20 leaves. The number of nodes in T having two children is	1. 34 2. 19 3. 99 4. 7
A RAM chip has a capacity of 1024 words of 8 bits each (1K*8). The number of 2*4 decoders with enable line needed to construct a 16K*6 RAM from 1K*8 RAM is	1. 7 2. 6 3. 4 4. 5
. For computers based on three - address instruction formats, each address field can be used to specify which of the following: S1: A memory operand S2: A processor register S3: An implied accumulator registers	**1.Either S1 or S2** 2.Only S2 and S3 3.Either S2 or S3 4.All of S1, S2 and S3
Which of the following are sufficient conditions for deadlock?	1. Non-Preemption 2. Circular wait 3. M.E 4. Hold and wait ALL

Consider a computer system with 40-bit virtual addressing and page size of sixteen kilobytes. If the computer system has a one-level page table per process and each page table entry requires 48 bits, then the size of the per-process page table is _____ megabytes.	1.383 **2.384** 3.385 4.999
DMA is useful for the operations	**1.large and fast data transfers between memory and io devices** 2.small data transfers between memory and cache 3.slow and small data trasfers between memory and io devices 4.fast and slow data transfers between memory and io devices
Memory mapped displays	1.stores the display data as individual bits **2.uses ordinary memory to store the display data in character form** 3.are utilised for high resolution graphics such as maps 4.are associated with electromechanical teleprinters
A RAM chip has a capacity of 1024 words of 8 bits each (1K*8). The number of 2*4 decoders with enable line needed to construct a 16K*6 RAM from 1K*8 RAM is	1. 7 2. 6 3. 4 4. 5

A 20-bit address bus allows access to a memory of capacity	1. 1 MB 2. 2 MB 3. 4 MB 4. 8 MB
Which of the folloiwng is fully functional ?	1 NAND 2 AND, OR 3 NOT 4 AND
The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by	1.the instruction set architecture 2.page size 3.physical memory size 4.number of processes in memory
The function f(x) = ab + a can be simplified as	1 ab 2 a 3 a+b 4 ab+bc
A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 01111100101, then the input bit-string is	1 111110100

	2 111110101 3 111111101 4 111111111
How switching is performed in the internet?	1 Datagram approach to circuit switching at data link layer 2 Virtual circuit approach to message switching at network layer 3 Datagram approach to message switching at datalink layer 4 Datagram approach to packet switching at network layer.
A telephone switch is a good example of which of the following types of switches.	1 packet 2 buffer 3 fabric 4 circuit

the following pairs of OSI protocol layer/sub-layer and its functionality, the **INCORRECT** pair is	1 Network layer and Routing 2 Data Link Layer and Bit synchronization 3 Transport layer and End-to end process communication 4 Medium Access Control sub-layer and Channel sharing
Which one of the following protocols is NOT used to resolve one form of address to another one?	1 DNS 2 ARP 3 DHCP 4 RARP
The transport layer protocols used for real time multimedia, file transfer, DNS and email, respectively are	1 TCP, UDP, UDP and TCP 2 UDP, TCP, TCP and UDP 3 UDP, TCP, UDP and TCP 4 TCP, UDP, TCP and UDP
	1 O (n) + 9378

Which of the following asymptotic notation is the worst among all?	2 O(n ^3) 3 n^O(1) 4 2^O(n)
The output of combinational circuit depends on	1 inputs only 2 inputs and previous states 3 previous states only 4 logic one only
Which of the following transport layer protocols is used to support electronic mail?	1 SMTP 2 IP 3 TCP 4 UDP
The postfix expression of the given infix expression a+b*c+(d*e+f)*g is	1 abc*+de*f+g*+ 2 ab+c*de*fg+*+ 3 a+bc*de*f+g*+ 4 abc+*def*+g*+
	1

In one of the pairs of protocols given below, both the protocols can use multiple TCP connections between the same client and the server. Which one is that?	HTTP,FTP 2 HTTP,TELNET 3 FTP,SMTP 4 HTTP,SMTP
For non-negative functions, f(n) and g(n), f(n) is theta of g(n) if and only if	1 f(n) = O(g(n)) and f(n) = Ω(g(n)) 2 f(n) = O(g(n)) and f(n) = o((g(n)) 3 f(n) = O(g(n)) and f(n) = ω (g(n)) 4 f(n) = Q(g(n)) and f(n) = Ω(g(n))
The protocol data unit (PDU) for the application layer in the Internet stack is	1 Segment 2 Datagram 3 Message 4 Frame
	1 A station stops to sense the channel once it starts transmitting a frame

In an Ethernet local area network, which one of the following statements isTRUE?	2 The purpose of the jamming signal is to pad the frames that are smaller than the minimum frame size 3 A station continues to transmit the packet even after the collision is detected. 4 The exponential backoff mechanism reduces the probability of collision on retransmissions.
The output after second iteration of the sorting technique is given below. Identify the technique used 23 45 78 8 32 56	1 Insertion 2 Selection 3 Bubble 4 none
In the IPv4 addressing format, the number of networks allowed under Class C addresses is	1 2^14 2 2^7 3 2^21 4 2^24

The alpahbet are represented in which format inside the computer?	1 ASCII format 2 binary number 3 hexadecimal number 4 decimal number
IEEE 802.5 is a _____	1 Token Ring 2 Ethernet 3 Token Bus 4 FDDI
Which one of the following fields of an IP header is NOT modified by a typical IP router?	1 Checksum 2 Source address 3 Time to Live (TTL) 4 Length
A method which creates the problem of secondary clustering is	1 Quadratic probing 2 Random probing 3 Seperate chaining

	4 Double hashing
If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?	1 1022 2 1023 3 2046 4 2047
The number of bits to represent 128 sets in direct mapped cache is	1 6 2 7 3 4 4 2
Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet hasto visit the network layer and the data link layer during a transmission from S to D.	1 Network layer – 4 times and Data link layer-4 times 2 Network layer – 4 times and Data link layer-3 times 3 Network layer – 4 times and Data link layer-6 times 4 Network layer – 2 times and Data link layer-6 times

Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted.	1 HTTP GET request, DNS query, TCP SYN 2 DNS query, HTTP GET request, TCP SYN 3 DNS query, TCP SYN, HTTP GET request 4 TCP SYN, DNS query, HTTP GET request

Find the time complexity of given code snippet
for(int i=1;i<=n;i++)
for(int j=1;j<=n;j*=2)
Printf(“*”);
	1
	O(nlogn)
	2
	O(n^2)
	3
	O(n^2logn)
	4
	O(n)

An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IPpacket of size 4404 bytes with an IP header of length 20 bytes. The values of the relevant fields in the header of the third IP fragment generated by the router for this packet are	1 MF bit: 0, Datagram Length: 1444; Offset: 370 2 MF bit: 1, Datagram Length: 1424; Offset: 185 3 MF bit: 1, Datagram Length: 1500; Offset: 370

	4 MF bit: 0, Datagram Length: 1424; Offset: 2960
One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field?	1 It can be used to priortize packets 2 It can be used to reduce delays 3 It can be used to optimize throughput 4 It can be used to prevent packet looping
The interrupts are serviced using which of the folloiwng	1 Interrupt service subroutine 2 hardware circuits 3 microprocessor 4 gates
	1 Datagram approach to circuit switching at data link layer 2

How switching is performed in the internet?	Virtual circuit approach to message switching at network layer 3 Datagram approach to message switching at datalink layer 4 Datagram approach to packet switching at network layer.
What is the data structure used for executing interrupt service subroutine ?	1 queue 2 array 3 stack 4 dummy variables
A layer -4 firewall (a device that can look at all protocol headers up to the transport layer) CANNOT	1 block entire HTTP traffic during 9:00PM and 5:00AM 2 block all ICMP traffic 3 stop incoming traffic from a specific IP address but allow outgoing traffic to the same IP address 4

	block TCP traffic from a specific user on a multi-user system during 9:00PM and 5:00AM

void Function(int n)
{
int i, count =0;;
for(i=1; i*i<=n; i++)
count++;
}
The time complexity of the above code snippet is
	1
	0(n)
	2
	0(logn)
	3
	0(sqrt(n))
	4
	0(n^2)

A telephone switch is a good example of which of the following types of switches.	1 packet 2 buffer 3 fabric 4 circuit
If message in Segmentation and Reassembly (SAR) sub layer of Application Adaptation Layer 3/4 has value of Segment type is 11 then it is called a	1 Beginning message 2 Ending message 3 Single-segment message 4 Middle message
	1 inputs only

The output in sequential circuit depends on which of the folloiwng?	2 logic zero 3 inputs and current state 4 current state only
Consider this binary search tree: 14 / \ 2 16 / \ 1 5 / 4 Suppose we remove the root, replacing it with something from the left	1 5 2 1 3 4 4 2
In Circuit Switching, resources need to be reserved during the	1 Data transfer phase 2 Teardown phase 3 Setup phase 4 Propagation phase
A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is	1 0111110100 2 111110101

pattern of 01111110. If the output bit string after stuffing is 01111100101, then the input bit-string is	3 111111101 4 111111111
Congestion control and quality of service is qualities of the	1 ATM 2 DH 3 Frame Relay 4 SONET
In the following pairs of OSI protocol layer/sub-layer and its functionality, the **INCORRECT** pair is	1 Network layer and Routing 2 Data Link Layer and Bit synchronization 3 Transport layer and End-to end process communication 4 Medium Access Control sub-layer and Channel sharing
The local host and the remote host are defined using IP addresses. To define the processes, we need second identifiers called.....	1 UDP addresses 2 transport addresses 3 Port addresses

	4 TCP addresses
Which one of the following protocols is NOT used to resolve one form of address to another one?	1 DNS 2 ARP 3 DHCP 4 RARP
UDP uses..... to handle outgoing user datagrams from multiple processes on one host.	1 Flow Control 2 Multiplexing 3 Demultiplexing 4 Data Control
The power consumed by full adder can be reduced by using which of the following?	1 Multiplexers 2 logic one 3 logic zero 4 adding another full adder circuit
The transport layer protocols used for real time multimedia, file transfer, DNS and	1 TCP, UDP, UDP and TCP 2 UDP, TCP, TCP and UDP

email, respectively are	3 UDP, TCP, UDP and TCP 4 TCP, UDP, TCP and UDP
The ..... protocol defines a set of messages sent over either User Datagram Protocol (UDP) port53 or Transmission Control Protocol(TCP) port53.	1 Name space 2 DNS 3 Domain space 4 Zone transfer
Which of the following transport layer protocols is used to support electronic mail?	1 SMTP 2 IP 3 TCP 4 UDP
While inserting the elements 71,65,84,69,67,83 in an empty binary search tree (BST) in the sequence shown, the element in the lowest level is	1. 34 2. 78 3. 45 4. 67
Which of the following sorting algorithms has the lowest worst-case complexity?	1 Merge sort 2 Bubble sort

	3 Quick sort 4 Selection sort
When a network interface has a failure in its circuitry, it sends a continuous stream of frames causing the Ethernet LAN to enter a Collapse state. This condition is known as _____.	1 Scattering 2 Blocking 3 Jabbering 4 Refreshing
Can a system have multiple DMA controllers?	1 yes 2 no 3 only two 4 not more than five
A subnet has been assigned a subnet mask of 255.255.255.192. What is the maximum number of hosts that can belong to this subnet?	1 14 2 30 3 62 4 126
	1 De-fragmentation

Value of checksum must be recalculated regardless of	2 Fragmentation 3 Transferred 4 Shared
In Circuit Switching, resources need to be reserved during the	1 Data transfer phase 2 Teardown phase 3 Setup phase 4 Propagation phase
The protocol data unit (PDU) for the application layer in the Internet stack is	1 Segment 2 Datagram 3 Message 4 Frame
Which one of the following is the recurrence equation for the worst case time complexity of the Quicksort algorithm for sorting n(≥ 2) numbers? In the recurrence equations given in the options below, c is a constant.	1 T(n) = 2T (n/2) + cn 2 T(n) = T(n – 1) + T(0) + cn 3 T(n) = 2T (n – 2) + cn 4 T(n) = T(n/2) + cn
	1. 5

Suppose T is a binary tree with 14 nodes. What is the minimum possible depth of T?	2. 3 3. 0 4. 4
In an Ethernet local area network, which one of the following statements isTRUE?	1 A station stops to sense the channel once it starts transmitting a frame. 2 The purpose of the jamming signal is to pad the frames that are smaller than theminimum frame size. 3 A station continues to transmit the packet even after the collision is detected. 4 The exponential backoff mechanism reduces the probability of collision on retransmissions.
Consider the following message M = 1010001101. The cyclic redundancy check (CRC) for this message using the divisor polynomial x5+ x4 + x2 + 1 is :	1 1110 2 1011 3 10101 4 10110
Dotted-decimal notation of 10000001 00001011 00001011 11101111 would be	1 193.131.27.255 2 129.11.11.239

Dotted-decimal notation of 10000001 00001011 00001011 11101111 would be	3 192.168.10.9 4 172.16.11.3
In the IPv4 addressing format, the number of networks allowed under Class C addresses is	1 2^14 2 2^7 3 2^21 4 2^24
Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?	1 HTTP 2 FTP 3 Telnet 4 Sonet
The resources needed for communication between end systems are reserved for the duration of session between end systems in	1. Packet switching 2. Circuit switching 3. Line switching 4. Frequency switching
	1 ATM 2

Congestion control and quality of service is qualities of the	DH 3 Frame Relay 4 SONET
Which one of the following fields of an IP header is NOT modified by a typical IP router?	1 Checksum 2 Source address 3 Time to Live (TTL) 4 Length
These networking classes encapsulate the "socket" paradigm pioneered in the (BSD) Give the abbreviation of BSD?	1 Berkeley Software Distribution 2 Berkeley Socket Distribution 3 Berkeley System Data 4 Berkeley SynchronizationData
For an undirected graph with n vertices and e edges, the sum of the degree of each vertex isequal to	1. 2n 2. pow(e,2)/2 3. (2n-1)/2 4. 2e
	1 Beginning message 2

If message in Segmentation and Reassembly (SAR) sub layer of Application Adaptation Layer 3/4 has value of Segment type is 11 then it is called a	Ending message 3 Single-segment message 4 Middle message
Digital signature envelope is decrypted by using _____.	1 a) Merchant Private Key. 2 **a)** Payment's Private Key. 3 a) Payment Public Key. 4 a) Merchant's Public Key.
----------index has an entry for every search key value (and hence every record) in the data file	1 Sparse 2 cluster 3 dense 4 no indicies will have like that
If a class B network on the Internet has a subnet mask of 255.255.248.0, what is the maximum number of hosts per subnet?	1 1022 2 1023 3 2046 4 2047

In ……. Mode, the authentication header is inserted immediately after the IP header.	1 **a)** Tunnel 2 Transport 3 a) Packet switching 4 a) Payload of the header
Time required to merge two sorted lists of size m and n, is	1 O (m| n) 2 O (m + n) 3 O (mlogn) 4 O (nlogm)
Which of the following statements is FALSE regarding a bridge	1 Bridge is a layer 2 device 2 Bridge reduces collision domain 3 Bridge is used to connect two or more LAN segments 4 Bridge reduces broadcast domain
	1

Assume that source S and destination D are connected through two intermediate routers labeled R. Determine how many times each packet hasto visit the network layer and the data link layer during a transmission from S to D.	Network layer – 4 times and Data link layer-4 times 2 Network layer – 4 times and Data link layer-3 times 3 Network layer – 4 times and Data link layer-6 times 4 Network layer – 2 times and Data link layer-6 times
How many output lines are present in an encoder with 2^n input lines?	1 n+1 2 n-1 3 n 4 2n
Identify the correct sequence in which the following packets are transmitted on the network by a host when a browser requests a webpage from a remote server, assuming that the host has just been restarted.	1 HTTP GET request, DNS query, TCP SYN 2 DNS query, HTTP GET request, TCP SYN 3 DNS query, TCP SYN, HTTP GET request 4 TCP SYN, DNS query, HTTP GET request
	1

Which one of the following is a cryptographic protocol used to secure HTTP connection?	Stream Control Transmission Protocol (SCTP) 2 Transport Layer Security (TSL) 3 Explicit Congestion Notification (ECN) 4 Resource Reservation Protocol
The local host and the remote host are defined using IP addresses. To define the processes, we need second identifiers called	1 UDP addresses 2 transport addresses 3 Port addresses 4 TCP addresses
One of the header fields in an IP datagram is the Time to Live (TTL) field. Which of the following statements best explains the need for this field?	1 It can be used to priortize packets 2 It can be used to reduce delays 3 It can be used to optimize throughput 4 It can be used to prevent packet looping
	1

What data structure is used for depth first traversal of a graph?	queue 2 Stack 3 list 4 graph
UDP uses..... to handle outgoing user datagrams from multiple processes on one host.	1 Flow Control 2 Multiplexing 3 Demultiplexing 4 Data Control
The ..... protocol defines a set of messages sent over either User Datagram Protocol (UDP) port53 or Transmission Control Protocol(TCP) port53.	1 Name space 2 DNS 3 Domain space 4 Zone transfer
Re-balancing of AVL tree costs	1 O(1) 2 **O(logn)** 3 O(n) 4

	O(n2)
How many swaps are required to sort the given array using bubble sort - { 2, 5, 1, 3, 4}	1 4 2 5 3 6 4 7
The O notation in asymptotic evaluation represents	1. Best case 2. Average case 3. Worst case 4. tight bound
Recursion uses more memory space than iteration because	1. it uses stack instead of queue. 2. every recursive call has to be stored. 3. both A & B are true. 4. None of the above are true.
These networking classes encapsulate the "socket" paradigm pioneered in the (BSD) Give the abbreviation of BSD?	1 Berkeley Software Distribution 2 Berkeley Socket Distribution 3 Berkeley System Data 4 Berkeley SynchronizationData

Using public key cryptography, X adds a digital signature σ to message M, encrypts <M, σ >, and sends it to Y, where it is d ecrypted. Which one of the following sequences of keys is used for the operations?	1 Encryption: X's private key followed by Y's private key; Decryption: X's public key followed by Y's public key 2 Encryption: X's private key followed by Y's public key; Decryption: X's public key followed by Y's private key 3 Encryption: X's public key followed by Y's private key; Decryption: Y's public key followed by X's private key 4 Encryption: X's private key followed by Y's public key; Decryption: Y's private key followed by X's public key
Suppose that everyone in a group of N people wants to communicate secretly with N-1 others using symmetric key cryptographic system. The communication between any two persons should not be decodable by the others in the group. The number of keys required in the system as a whole to satisfy the confidentiality requirement is	1 2N 2 N(N-1) 3 N(N-1)/2 4

	(N-1)2
A layer -4 firewall (a device that can look at all protocol headers up to the transport layer) CANNOT	1 block entire HTTP traffic during 9:00PM and 5:00AM 2 block all ICMP traffic 3 stop incoming traffic from a specific IP address but allow outgoing traffic to the same IP address 4 block TCP traffic from a specific user on a multi-user system during 9:00PM and 5:00AM
Which type of error detection uses binary division?	1 Parity 2 Longitudinal redundancy checking 3 Checksum checking 4 Cyclic redundancy checking
When a network interface has a failure in its circuitry, it sends a continuous stream of frames causing the Ethernet LAN to enter a Collapse state. This condition is known as _____.	1 Scattering 2 Blocking 3 Jabbering

	4 Refreshing
Value of checksum must be recalculated regardless of	1 De-fragmentation 2 Fragmentation 3 Transferred 4 Shared
Dotted-decimal notation of 10000001 00001011 00001011 11101111 would be	1 193.131.27.255 2 129.11.11.239 3 192.168.10.9 4 172.16.11.3
Which one of the following allows a user at one site to establish a connection to another site and then pass keystrokes from local host to remote host?	1 HTTP 2 FTP 3 Telnet 4 Sonet
	1

The processed S/MIME along with security related data is called as _____.	Public Key Cryptography Standard 2 Private Key Cryptography Standard 3 S/MIME 4 MIME
_____ Substitution is a process that accepts 48 bits from the XOR operation.	1 S-box 2 P-box 3 Expansion permutations 4 Key transformation
In ……. Mode, the authentication header is inserted immediately after the IP header.	1 Tunnel 2 Transport 3 Packet switching 4 Payload of the header
_____ uniquely identifies the MIME entities uniquely with reference to multiple contexts.	1 Content description 2 Content-id 3 Content type

	4 Content transfer encoding
Which one of the following is a cryptographic protocol used to secure HTTP connection?	1 Stream Control Transmission Protocol (SCTP) 2 Transport Layer Security (TSL) 3 Explicit Congestion Notification (ECN) 4 Resource Reservation Protocol
is a mode of operation for a block cipher, with the characteristic that each possible block of plaintext has a defined corresponding ciphertext value and vice versa.	1. Foot printing 2 Hash Function 3 WaterMark 4 Electronic Code Book
In one of the pairs of protocols given below, both the protocols can use multiple TCP connections between the same client and the server. Which one is that?	1. HTTP, FTP 2 HTTP, TELNET 3. FTP, SMTP 4 HTTP, SMTP
	1 10000 bits

A network with CSMA/CD protocol in the MAC layer is running at 1 Gbps over a 1 km cable with no repeaters. The signal speed in the cable is 2 x 108 m/sec. The minimum frame size for this network should be	2 10000 bytes 3 5000 bits 4 5000 bytes
What is the access point (AP) in wireless LAN?	1 device that allows wireless devices to connect to a wired network 2 wireless devices itself 3 both (a) and (b) 4 none of the mentioned
Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?	1 CDMA 2 CSMA/CA 3 ALOHA 4 none of the mentioned
A 20 Kbps satellite link has a propagation delay of 400 ms. The transmitter employs the "go back **n** ARQ" scheme with n set to 10. Assuming that each frame is 100 bytes long, what is the maximum data rate possible?	1 5kbps 2 10kbps 3 15kbps

	4 20kbps
A wireless network interface controller can work in	1 infrastructure mode 2 ad-hoc mode 3 both (a) and (b) 4 none of the mentioned
Which one of the following event is not possible in wireless LAN.	1 collision detection 2 Acknowledgement of data frames 3 multi-mode data transmission 4 none of the mentioned
What is Wired Equivalent Privacy (WEP) ?	1 security algorithm for ethernet 2 security algorithm for wireless networks 3 security algorithm for usb communication 4 none of the mentioned
	1

What is the number of maxterms in a function of n variables?	n 2 2n 3 2^n 4 2+n
Which flip flop has the characterstic function Q(next) = input	1 JK flipflop 2 RS flipflop 3 D flipflop 4 all flipflops
The performance of cache memories is measured by	1 access time 2 hit time 3 average memory access time 4 miss penalty
A priority queue is implemented as a Max-Heap. Initially, it has 5 elements. The level-order traversal of the heap is: 10, 8, 5, 3, 2. Two new elements 1 and 7 are inserted into the heap in that order. The level-order traversal of the heap after the insertion of the elements is:	1. 10, 8, 7, 1, 2, 3, 5 2. 10, 8, 7, 2, 3, 1, 5 3. 10, 8, 7, 5, 3, 2, 1

	4. 10, 8, 7, 3, 2, 1, 5
Assume that a mergesort algorithm in the worst case takes 30 second for an input of size 64. Which of the following most closely approximates the maximum input size of a problem that can be solved in 6 minutes?	1. 43 2. 43 3. 256 4. 512
In negative edge triggered flip flop, the transitions happen at	1 rising clock edge 2 falling clock edge 3 both rising and falling clock edge 4 never
If a , b , c, are three nodes connected in sequence in a singly linked list, what is the statement to be added to change this into a circular linked list?	1. a->next=b 2. c->next=a 3. all 4. b->next=c
Which of these is asymptotically bigger?	1. 6*2n 2. 79n2+43n 3. 65n3+34n 4. none
The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, 42. Which one of the following is the postorder traversal sequence of the same tree?	1. 15, 10, 25, 23, 20, 42, 35, 39, 30 2. 10, 20, 15, 23, 25, 35, 42, 39, 30 3. 15, 20, 10, 23, 25, 42, 35, 39, 30

	4. 15,10,23,25,20,35,42,39,30
What is 8254 used for?	1 programmable peripheral interface 2 programmable interval timer 3 coprocessor 4 to solve numerical problems
The race condition in RS flip flop is rectified in which flip flop	1 D flip flop 2 T flip flop 3 JK flip flop 4 Master slave flip flop
Minimum number of moves required to solve a Tower of Hanoi puzzle is	1. 2 n^ 2 2. 2^ n - 1 3. 2n ^ 1 4. 2^ n+1
What does the command XCHG in 8085 do?	1 Exchange AB with CD 2 Exchange A with B

What does the command XCHG in 8085 do?	3 Exchage D wtih E 4 Exchange H-L with D-E
A sort which relatively passes through a list to exchange the first element with any element less than it and then repeats with a new first element is called	1. Insertion sort 2. selection sort 3. heap sort **4. quick sort**
The searching technique that takes 0 (1) time to find a data is	1. Linear Search 2. Binary Search **3. Hashing** 4. Tree Search
In 8085 subtraction is performed using which method?	1 Direct subtraction using full subtractor 2 one's complement method 3 two's complement method 4 convert to decimal, perform the subtraction, convert the result to binary
What is the number of distinct symbols in base-16 ?	1 8 2 4 3 6 4 16

Which of the following is a Non-linear data structure	1.List **2.Priority queue** 3.Linked list 4.Circular Queue
1. If a sequence of push(1), push(2), pop,push(1),push(2),pop,pop,pop, push(2) pop operations are performed in a stack , the sequence of popped out values are	1 2,2,1,1,2 2 2,2,1,2,2 3 2,1,2,2,1 4 2,1,2,2,2

1. You are given pointer p that points to the last node in a circular list and another singly linked list whose first node is pointed to by 'head' and last node is pointed to by 'tail' has to be appended to the end of the circular list. Which of the following is correct?	1
	p->next=head; tail->next=p;
	2
	p->next=head; tail->next=p->next;
	3
	tail->next=p->next; p->next=head;
	4
	tail->next=p; p->next=head;

The 8255 chip is an example of	1 Programmable peripheral interface 2 co-processor 3

	substitute for 8085 processor 4 multimedia chip
1. Among the following which is not the application of a stack?	1 Postponing data usage 2 Job scheduling 3 Backtracking 4 none
You are given pointers to first and last nodes of a singly linked list, which of the following operations are dependent on the length of the linked list?	1 Delete the first element 2 Insert a new element as a first element 3 Delete the last element of the list 4 Add a new element at the end of the list

1. If a , b , c, are three nodes connected in sequence in a singly linked list
struct node *temp=a;
while(temp!=NULL) {
temp=temp->next; printf(“$”);
}
	1
	$$$
	2
	$$

Assuming ‘c’ to be the last node, the output is	3 NULL 4 Error
Lock manager uses ---------- to store the identify of transaction locking a data item, the data item, lock mode and pointer to the next data item locked.	1 Lock table 2 Database Schema 3 System Catalog 4 Transaction Schedule

What does the code snippet given below do?
void fun1(struct node *head)
{ if(head==NULL) return;
fun1(head->next);
printf("%d",head->data);
}
	1
	Prints all nodes of linked lists
	2
	Prints all nodes of linked list in reverse order
	3
	Prints alternate nodes of Linked List
	4
	Prints alternate nodes in reverse order

Which of the following is termed as reverse polish notation?	1 Big-O notation 2 Little-Oh notation 3

	Prefix notation 4 none
For the given infix expression a+bˆc*(d-e) where ‘ˆ’ denotes the EX-OR operator, the corresponding prefix expression is	1 -+a^b*cde 2 +a*^bc-de 3. ^+ab*c-de 4 +-aˆbc*de
How many possible outcome values are present in boolean algebra?	1 one 2 twp 3 three 4 none
Which of the following is two way list?	1 grounded header list 2 circular list 3 linked list with pointers to first and last nodes 4 none of the above
	1

1. A circularly linked list is used to represent a Queue. A single variable p is used to access the Queue. To which node should p point such that both the operations enQueue and deQueue can be performed in constant time?	rear 2 front 3 not possible with single variable 4 node next to front
1. If a sequence of enque(1), enque (2), deque, enque (1), enque (2), deque, deque, deque, enque (2) operations are performed in a queue , the list of elements that **would have been processed** are	1 1,2,1,2,2 2 1,2,1,2 3 1,2,2,1,2 4 1, 2, 2, 1
----------is used to summarize information from multiple tuples into a single-tuple summary	1 Aggregate function 2 Joins 3 Division 4 cartesian product

1. In a circular list with 5 nodes, let 'temp' point to the 4th node at present.
int i;
for(i=0;i<4;i++)
temp=temp->next;
	1
	5th node
	2
	3rd node

The above code will make ‘temp’ point to	3 4th node itself 4 error
For what value of c1 and c2 , the theta notation of f(n)=5n2+3n+2 is n2?	1 5,5 2 5,6 3 6,5 4 7,6
1. Consider a dynamic queue with two pointers: front and rear. What is the time needed to insert an element in a queue of length of n?	1 O(log2n) 2 O(n). 3 O(1) 4 O(n log2n).
1. Which sorting technique uses a data structure similar to the one used in bucket hashing?	1 Quick 2 Merge 3 Heap 4

	Radix
1. On adopting shell sort technique, the output of the array (21,62,14,9,30,77,80,25) after a pass with increment size =3, is	1 9 30 14 21 25 77 80 62 2 9 25 14 21 30 77 80 62 3 9 14 21 25 30 62 77 80 4 the same array
1. For the array , (77 ,62,114,80,9,30,99), write the order of the elements after two passes using the Radix sort.	1 80 30 62 114 77 9 99 2 114 30 62 77 9 99 3 9 114 30 62 77 80 99 4 9 30 62 77 80 99 114
Which of the following is not a function of a DBA?	1. Table creation 2. User creation 3. Index creation 4. Application creation
Assume a relation R with keys X, Y and Z, where X, Y, and Z are sets of one or more attributes. Also assume that Y is a subset or equal to X and Z is a subset of X and Y. Which of the following is true for this case? -- **X & Z**	1. X and Y are candidate keys of R 2. Y and Z are the candidate keys of R 3. X is the only candidate key of R

	4. Z is the only candidate key of R
1. While applying Quick sort technique for the array 5 4 3 8 12 6 10 1 7 9, if pivot =5, after the first traversal on both sides, ‘l’ and ‘r’ will be	1 1&9 2 3&7 3 7&3 4 9&1
The constraint ?primary key cannot be null? is called as?	1. Entity Integrity 2. Primary key 3. Key 4. Referential integrity
The cartesian product ,followed by select is equivalent to	1. Project 2. Query 3. Join 4. Union
1. If a[] is the array containing the elements to be sorted using radix sort, during the second iteration in which the second Least Significant Digit is considered, row number in 2D array to which an element has to be stored is given by	1 a[i]/10%10 2 a[i]%10/10 3 a[i]%10 4 a[i]/100%10
	1. Where data is located 2. The size of the storage disk

A data dictionary does not provide information about	3. Who owns or is responsible for the data 4. How the data is used
Which of the following RDBMS does not incorporate relational algebra	1. Oracle 2. DB2 3. MS SQL 4. QBE
If a , b , c, d are four nodes connected in sequence in a doubly-linked list Struct node *temp=a; Temp=temp->next; (Temp->next)->prev=temp->prev; (Temp->prev)->next=temp->next; Which of the following is true?	1 'c' is made the predecessor node for 'a' 2 b' s predecessor is made to point to NULL. 3 'b' is the made the predecessor of node 'd' 4 'a' is made the predecessor node for 'c'
Which of the following is not a property of DBMS?	1. concurrent access is not possible 2. Authorized access 3. Redundancy control 4. Integrity check
The max-heap for the array (4, 3, 1, 5, 9, 2, 8) is	1 9,8,5,4,3,2,1 2 9,5,8,4,3,2,1

The max-heap for the array { 4, 3, 1, 3, 9, 2, 8 } is	3 1,5,8,4,3,2,9 4 1,8,5,4,3,2,9
In which category does the discrepancy between duplicate records belong?	1. Invalid 2. Inconsistent 3. Incomplete 4. Noisy
Among the following ,which has the highest time complexity O(n2) in all the three cases.(Worst,average and best) and cannot be improved?	1 Insertion sort 2 Bubble sort 3 Selection sort 4 Selection sort and Bubble sort
The cartesian product ,followed by select is equivalent to	1. Project 2. Query 3. Join 4. Union
Which of the following is not a property of DBMS?	1. concurrent access is not possible 2. Authorized access 3. Redundancy control 4. Integrity check
	1 Complexity is O(n2)

For an algorithm whose step-count is 45n3+34n , choose the correct statement.	2 Complexity is Omega(n) 3 Complexity is Theta(n2) 4 All three.
_____ constraint is specified between two relations and is used to maintain the consistency among tuples of the two relations	1. primary 2. referential 3. secondary 4. check
Changing the conceptual schema without having to change the external schema is called as _____	1 physical data independence 2. logical data independence 3. data model 4. relational model
If the element 12 has to be searched in the array (2,4,8, 9,14,16, 18), using binary search, the result can be obtained within _____ comparisons.	1 2 2 3 3 4 4 no comparison made as '12' is not in the array.

Update operation will violate	1.unique constraint 2. domain constraint 3. EIC 4. RIC
----------is data about data	1. Relation State 2. Metadata 3. Schema Construct 4. Schema
This user makes canned transaction	1.Casual **2.Naive** 3.DBA 4.Sophisticated
This Key Uniquely Identifies Each Record	**1.Primary Key** 2.Key Record 3.Field Name 4.Unique Key
1. For the array , (77 ,62,14,80,9,30,99) , if Quick sort technique is followed,what will be the array status after placing the **first** pivot element in its appropriate place?	1 9 14 30 62 77 80 99 2 30 62 14 77 9 80 99 3 30 62 14 9 77 80 99 4 none
	1. R is symmetric but not reflexive and not transitive

Let R be the relation on the set of positive integers such that a aRb if and only if a and b are distinct and have a common divisor other than 1. Which one of the following statements about R is true?	2. R is transitive but not reflexive and not symmetric 3. R is reflexive but not symmetric and not transitive 4. R is symmetric and reflexive but not transitive
A heap memory area is used to store the	1.Local variables declared in the method 2.Global variables Memory of objects 4 Static variables
Which of the following is true for the given tree?	1 a complete binary tree 2 Strict Binary tree 3 Full binary tree 4 none
Consider the following code snippet. What purpose does exec() solve in the above code ?	1

var pattern = /Java/g;
 	
var text = "JavaScript is more fun than Java!";
 	
var result;
 	
while ((result = pattern.exec(text)) != null)
{
alert("Matched '" + result[0] + "'" +" at position " + result.index +"; next search begins at " + pattern.lastIndex);
}
	Returns the same kind of array whether or not the regular expression has the global g flag.
	
	2
	
	Returns different arrays in the different turns of iterations
	
	3
	
	Both a and b
	
	4
	
	None of the mentioned

Which function among the following lets to register a function to be invoked once?	1 setTimeout() 2 setTotaltime() 3 setInterval() 4 None of the mentioned
Which method receives the return value of **setInterval()** to cancel future	1 clearInvocation() 2 cancelInvocation()

invocations?	3 clearInterval() 4 None of the mentioned
The **setTimeout()** belongs to which object?	1 Element 2 Window 3 Location 4 None of the mentioned
Which method receives the return value of **setTimeout()** to cancel future invocations?	1 clearTimeout() 2 clearInterval() 3 clearSchedule() 4 None of the mentioned
What will happen if we call **setTimeout()** with a time of 0 ms?	1 Placed in stack 2 Placed in queue 3 Will run continuously 4 None of the mentioned
To which object does the **location** property belong?	1 Window 2 Position 3

	Element Location 4
Linked lists are best suited	1. for relatively permanent collections of data 2. for the size of the structure and the data in the structure are constantly changing 3. for both of above situation 4. for none of above situation
The query to print alternate records (i.e even numbered) from a table is	1. SELECT * FROM EMP WHERE ROWNUM=ODD 2. SELECT * FROM EMP WHERE ROWID IN (SELECT DECODE (MOD (ROWNUM,2),0,ROWID,NULL) FROM EMP 3. SELECT * FROM EMP WHERE ROWID IN (SELECT DECODE (MOD (ROWNUM,2),0,NULL,ROWID) FROM EMP 4. SELECT * FROM EMP WHERE ROWNUM=EVEN
Assume relations R and S with the schemas R (A, B, C) and S (B, D)	1. sr.B = s.B (r ¿ s) 2. Y and Z are the candidate keys of R

Assume relations R and S with the schemas R (A, B, C) and S (B, D). Which of the following is equivalent to r ¿ s?	3. Z is the only candidate key of R 4. X is the only candidate key of R
Consider a join (relation algebra) between relations r(R)and s(S) using the nested loop method. There are 3 buffers each of size equal to disk block size, out of which one buffer is reserved for intermediate results. Assuming size(r(R))	1. Relation s(S) is in the outer loop. 2. Join selection factor between r(R) and s(S) is more than 0.5. 3. Relation r(R) is in the outer loop. 4. Join selection factor between r(R) and s(S) is less than 0.5.
R has n tuples and S has m tuples, then the Cartesian product of R and S will produce _____ tuples.	1. n-m 2. n / m 3. n*m 4. n+m
Minimal super key of a relation is called _____.	1. Primary Key 2. Super Key 3. Foreign Key 4. Alternate key
Linked list are not suitable data structure of which one of the following problems ?	1. Insertion sort 2. Binary search 3. Radix sort 4. Polynomial manipulation
Consider a relation R (A, B, C, D, E) with set of functional dependencies F = {A¿BC, CD¿E, B¿D, E¿A}. Which of the following is one of the candidate keys of R?	1. ABC 2. B 3. ED

	4. E
If an AJAX request made using jQuery fails,	1 the browser will automatically report the problem with an alert message. 2 an error message will be displayed in the browser window content area. 3 the programmer should arrange for it to be reported using the jQuery .fail() method. 4 there is no way to notify the user.
Consider a relational table with the schema R (A, B, C). Assume that the cardinality of attribute A is 10, B is 20, and C is 5. What is the maximum number of records R can have without duplicate?	1. 1000 2. 100 3. 200 4. 35
A new web browser window can be opened using which method of the Window object ?	1 createtab() 2 Window.open() 3 open() 4 All of the mentioned
	1 Current DOM object

What does the location property represent?	2 Current URL 3 Both a and b 4 None of the mentioned
Which among the following is not a property of the Location object?	1 protocol 2 host 3 hostee 4 hostname
When does the top value of stack changes?	1 Before Deletion 2 While checking underflow 3 At the time of deletion 4 After Deletion
What is the return type of the hash property?	1 Query string 2 Packets 3 String 4 Fragment identifier
	1 modify() 2

Which is the method that removes the current document from the browsing history before loading the new document?	assign() 3 replace() 4 remove()
Why is the replace() method better than the assign() method?	1 Reliable 2 Highly manageable 3 More efficient 4 Handles unconditional loading
What is the purpose of the assign() method?	1 Only loading 2 Loading of window and display 3 Displays already present window 4 Unloading of window
The history property belongs to which object?	1 Element 2 Window 3 History 4 Location
int unknown(int n) {	1

`int i, j, k = 0;`
`for (i = n/2; i <= n; i++)`
`for (j = 2; j <= n; j = j * 2)`
`k = k + n/2;`
`return k;`
`}`
	O(n^2)
	2
	O(n^2logn)
	3
	O(n^3)
	4
	O(nlogn)

Which of the following is one of the fundamental features of JavaScript?	1 Single-threaded 2 Multi-threaded 3 Both a and b 4 None of the mentioned
The maximum number of binary trees that can be formed with three unlabeled nodes is:	1 1 2 5 3 4 4 3

Trace the output of the following code?
 	
#include
using namespace std;
int main()
{
int x=15,y=27;
x = y++ + x++;
y = ++y + ++x;
	1.118118 **2.118117** 3.117116 4.119119

```
cout<<x+y++<<++x+y;
  return 0;
}</x+y++<<++x+y;
```

Determine the output of the following code?

```
#include
using namespace std;
class one
{
int a;
static int b;
public:
void initialize();
void print();
static void print_S();
};
int one::b = 0;

void one::initialize()
{
a = 10;
b ++;

}
void one::print()
{
cout<<a;
  cout<<b;
  }
void one::print_S()
{
```

1.1110 2.1111 **3.1011** 4.1010

cout<<b;
}
 	
int main()
{
one o;
o.initialize();
o.print();
o.print_S();
return 0;
}
</b;
</b;
</a;	

Consider the following pseudo code fragment: printf (“Hello”); if(!fork( )) printf(“World”); Which of the following is the output of the code fragment?	1.Hello Hello World World **2.Hello World World** 3.Hello World Hello World 4.Hello World
What does JSP stand for?	1 Java Server Pages 2 Java Scripting Pages 3 Java Service Pages 4 Java Script Program
Given the code String s1 = ? VIT? ; String s2 = ? VIT ? ;	1. s3 == s1 2. s1 == s2 3. s3=s1

String s3 = new String (s1); Which of the following would equate to true?	4. s1 = s2
What is the correct HTML for making a hyperlink?	1. url=”http://mcqsets.com”>ICT Trends Quiz 2. mcqsets.com”>ICT Trends Quiz 3. . http://mcqsets.com”>ICT Trends Quiz 4. <http://mcqsets.com
Which of the following input controls that cannot be placed using	1. Submit 2. Password 3. Text 4. Textarea
In HTTP, which method gets the resource as specified in the URI	1 POST 2 PUT 3 TRACE 4 GET
_____ is used to define a special CSS style for a group of HTML elements	1. class attribute 2 name attribute 3 group attribute 4 id attribute

Which of these is Server side technology?	1. CGI 2. CSS 3. HTML 4. Javascript
Which of these interface abstractes the output of messages from httpd?	1. Httpdserver 2. httpdResponse 3. LogResponse 4. LogMessage
If you don’ t want the frame windows to be resizeable, simply add what to the lines ?	1. dontresize 2. Delete 3. noresize 4. save
What sever support AJAX ?	1.SMTP 2.WWW **3.HTTP** 4.BEEP
Where in an HTML document is the correct place to refer to an external style sheet?	1. At the top of the document 2. At the end of the document 3. In the section 4. In the section
Which method is used to remove the first element of an Array object?	1. shift() 2. pop() 3. unshift() 4. push()
---------- is used to define internal schema	1 storage definition language 2 View definition language 3 Data Definition language 4 Data Manipulation Language

What does the following bit of JavaScript print out?
var a = [1,,3,4,5];
console.log([a[4], a[1], a[5]]);
	1. 5, undefined,undefined
	2. 5,3,undefined
	3. 5,0,undefined
	4. 5,null,undefined

Which one of the following statements is NOT correct about HTTP cookies?	1. A cookie is a piece of code that has the potential to compromise the security of an internet user 2. A cookie has an expiry date and time 3. A cookie gains entry to the user¿s work area through an HTTP header 4. Cookies can be used to track the browsing pattern of a user at a particular site
Output------?	1. Error output 2. 4 3. 8 4. 44
If the directive session.cookie_lifetime is set to 3600, the cookie will live until..	1. the browser is restarted 2. 3600 min 3. 3600 hrs 4. 3600 sec

What does the XMLHttpRequest object accomplish in Ajax?	1. It's the programming language used to develop Ajax applications. 2. It provides a means of exchanging structured data between the Web server and client. **3.It provides the ability to asynchronously exchange data between Web browsers and a Web server.** 4. It provides the ability to mark up and style the display of Web-page text.
The following HTML attribute is used to specify the URL of the html document to be opened when a hyperlink is clicked.	1. PATH 2. HREF 3. LINK 4. SRC
A graphical HTML browser resident at a network client machine Q accesses a static HTML webpage from a HTTP server S. The static HTML page has exactly one static embedded image which is also at S. Assuming no caching, which one of the following is correct about the HTML	1. A single HTTP request from Q to S is sufficient, and a single TCP connection between Q and S is necessary for this 2. Q needs to send at least 2 HTTP requests to S, but a single TCP connection to server S is sufficient

no caching, which one of the following is correct about the HTML webpage loading (including the embedded image)?	3. Q needs to send at least 2 HTTP requests to S, each necessarily in a separate TCP connection to server S 4. A single HTTP request from Q to S is sufficient, and this is possible without any TCP connection between Q and S
How does servlet differ from CGI?	1. Easy to remember 2. Simple 3. Open source 4. Light weight Process
HTTP is implemented over	1. TCP 2. SMTP 3. POP 4. UDP
AJAX made popular by	1. Microsoft 2. IBM 3. Sun Micro system 4. Google
How to create a Date object in JavaScript?	1. dateObjectName := new Date([parameters]) 2. dateObjectName Date([parameters]) 3. dateObjectName.new Date([parameters]) 4. dateObjectName = new Date([parameters])
Choose the correct HTML tag to make a text italic	1. . 2. . 3.

	4
table {color: blue;} **With the above code snippet in use, what happens to a table?**	1. The text inside the table would be colored blue. 2. The header row of the table would be colored blue. 3. The table background would be colored blue. 4. The table border would be colored blue.
Which Web browser is the least optimized for Microsoft's version of AJAX?	1.Firefox 2. Opera **3.Safari** 4.Internet Explorer
Which one of these technologies is NOT used in AJAX?	1.CSS 2.DOM 3.DHTML **4.FLASH**

What is the return value of f(p,p) if the value of p is initialized to 5 before the call? Note
 	
that the first parameter is passed by reference, whereas the second parameter is passed by value.
int f (int &x, int c) {
c=c-1;
if (c-0) return 1;
x=x+1;
return f (x,c)*x;}
	1. 161051
	2. 6561
	3. 55440
	4. 3024

What does JSP stand for?	1 Java Server Pages 2 Java Scripting Pages 3 Java Service Pages 4 Java Script Program

Which of these is a stand alone tag?	1. frame 2. anchor 3. table 4. form

What will be the values of x, m and n after the execution of the following statements?
int x, m, n;
m = 10;
n = 15;
x = ++m + n++;
	1. x=27, m=11, n=16 **2. x=26, m=11, n=16**
	3. x=27, m=10, n=15 4. x=25, m=10, n=15

Which of the following type casts will convert an Integer variable named amount to a Double type?	1. int to double(amount) 2. int (amount) to double 3. (int to double) amount **4. (double) amount**
What should be used to point to a static class member?	**1. Normal pointer** 2. Smart pointer 3. None of the mentioned 4. Dynamic pointer
Which cause a compiler error?	1. int[ ] scores = {3, 5, 7}; **2. int [ ][ ] scores = {2,7,6}, {9,3,45};** 3. boolean results[ ] = new boolean [] {true, false, true}; 4. Integer results[ ] = {new Integer(3), new Integer(5), new Integer(8)};
Foreign key is a subset of primary key is stated in _____ constraint	1. Foreign Key Constraint 2. Referential Integrity Constraint 3. Domain Constraint 4. Semantic Constraint

Which of the following scan() statements is true?	1.scanf(%d,&int-var-name); 2.scanf(%d &sum); 3.scanf(%f,float-var-name);**4.scanf(%d,&number);**
Which component of a database is used for sorting?	1. field 2. record 3. table 4. form
A variable P is called pointer if	**1.P contains the address of an element in data** 2.P can store only memory addresses 3.P points the address of first element in data 4.P contain the data and the addresses of data
Consider the following relation Cinema (theater, address, capacity) Which of the following options will be needed at the end of the SQL query SELECT P1. address FROM Cinema P1	1. WHERE P1. Capacity> = Any (select P2. Capacity from Cinema P2) 2. WHERE P1. Capacity> = All (select P2. Capacity from Cinema P2) 3. WHERE P1. Capacity> = All (select max(P2. Capacity) from Cinema P2) 4. WHERE P1. Capacity> = Any (select max (P2. Capacity) from Cinema P2)

Such that it always finds the addresses of theaters with maximum capacity?	
Which of the following relational algebra operations do not require the participating tables to be union-compatible?	1.Union 2.Intersection 3.Difference **4.Join**
The function scanf() reads **(Any Variable Type (option 3))** ---------- ---------- ---------- **SHOULD BE WIDTH IN PRINTF()**	1.specifies the maximum value of a number 2.controls the size of type used to print numbers3.controls the margins of the program listing **4.specifies how many character positions will be used for a number**
main() is an example of	1.statement 2.header 3.library function **4.user-defined function**
An identifier in C	1.can contain both upper case and lower case 2.is made up of letters, numerals and the underscore3.is a name of a thing such as variable and function **4.all of these**
A union that has no constructor can be initialized with another union of _____ type	**1.same** 2.different 3.virtual 4.class

Structured programming involves	1.localization of errors 2.decentralization of program activity **3.functional modularization** 4.centralized processing
By default, any real number in C is treated as	1.a float **2.a double** 3.depends upon memory model that is used 4.a long double

Consider the C function given below.
 	
int f(int j)
 	
{
 	
static int i = 50;
int k;
if (i == j)
{
printf(?something?);
k = f(i);
return 0;
}
else return 0;
}
Which one of the following is TRUE?
	1. The function prints the string something for all values of j.
	
	2. The function returns 0 for all values of j.
	
	3. The function will exhaust the runtime stack or run into an infinite loop when j = 50.
	
	4. The function returns 0 when j = 50.

	1

A subset of a network that includes all the routers but contains no loops is called:	spanning tree 2 Graph 3 Subnet 4 None of the Above
If link transmits 4000 frames per second, and each slot has 8 bits,the transmission rate of circuit this TDM is	1 32kbps 2 500kbps 3 1000kbps 4 32Mbps

6. Consider the below code fragment:
if(fork k( ) = = 0)
{
a= a+5; printf(?%d, %d \n?, a, &a);
}
else
{
a= a ? 5;
printf(?%d %d \n?, 0, &a);
}
 	
Let u, v be the values printed by parent process and x, y be the values printed by child process. Which one of the following is true?
	1. u + 10= x and v ¿ y
	2. u + 10= x and v = y
	3. u= x + 10 and v = y
	4. u= x + 10 and v¿ y

Which one of the following allows a user at one site to establish a connection to another site and	1 HTTP 2 FTP

then pass keystrokes from local host to remote host?	3 TELNET 4 None of the Above
Find the output of the following program? #include using namespace std; typedef int * IntPtr; int main() { IntPtr A, B, C; int D,E; A = new int(3); B = new int(6); C = new int(9); D = 10; E = 20; *A = *B; B = &E; D = (*B)++; *C= (*A)++ * (*B)--; E= *C++ - *B--; cout<<*A<<*B<<*C<<d<<e; return 0; }</d<<e;	1. 71020106 2. 10720107 3. 72010107 4. 62010206
The library function exit() causes an exit from ---- **PROGRAM IN WHICH IT OCCURS**	1.the function in which it occurs 2.the block in which it occurs 3.the loop in which it occurs **4.None of these**

Which of the following statement is correct about destructors?	1.A destructor has void return type. 2.A destructor has integer return type. 3.A destructors return type is always same as that of main() **4.A destructor has no return type.**
Relations produced from an E-R model will always be	1.First normal form. 2.Second normal form. **3.Third normal form.** 4.Fourth normal form.
Which two files are used during operation of the DBMS?	1.Query languages and utilities 2.Data dictionary and query language 3.DML and query language **4.Data dictionary and transaction log**
Which two RAID types use parity for data protection?	1.RAID 1 **2.RAID 4** 3.RAID 1+0 **4.RAID 5**
Which normal form is considered adequate for relational database design?	1.BCNF 2.4 NF **3.3 NF** 4.2 NF
-------involves finding the best line to fit two attributes so that one attribute is used to predict another attribute.	1.Outlier 2.Cluster **3.Regression** 4.Classifier
Changing the conceptual schema without having to change physical schema is	**1.logical data independence** 2.conceptual data independence 3.physical data independence 4.None of these
In a E-R diagram, ellipses represent a	**1.attributes** 2.relationship among entity sets 3.entity sets 4.link between attributes and entity sets

The language used in application programs to request data from the DBMS is referred to as the	**1. query language** 2. DDL 3. DML 4. all of these
Which of the following desired features are beyond the capability of relational algebra?	1. finding transitive closure **2. multiplication 3. aggregate computation** 4. None of these
What are the potential problems when a DBMS executes multiple transaction concurrently - **ALL CORRECT (D)**	1. the phantom problem 2. the unrepeatable problem 3. the dirty read problem 4. the lost update problem
Let R be a relation. Which of the following comments about the relation R are correct?	1. If R is in 3 NF and if its every key is simple then R is in 5 NF 2. If R is in BCNF and if R has at least one simple sky, then R is in 4 NF. **3. If R is in 3 NF, and every key of R is simple, then R is in BCNF** 4. R will necessarily have a composite key if R is in BCNF but not in 4 NF
Which of the following is not a stored procedure?	1. procedure 2. Date 3. function 4. trigger
Which one of these is characteristic of RAID 5?	1. All parity in a single disk 2. No Parity 3. Double Parity 4. Distributed parity
Which of the following is not a function of a DBA?	1. Table creation 2. Index creation

Which of the following is not a function of a DBA?	3. User creation 4. Application creation
A transaction is permanently saved in the hard disk only after giving	1.Savepoint followed by Commit 2.Rollback followed by Commit 3.Update followed by Commit**4.Commit**
The data manipulation language (DML)	1.Refers to data using physical addresses 2.Cannot interfere with high-level programming language**3.None of these** 4.Is used to define the physical characteristics of each record
An advantage of the database approach is	1.Ability to associate related data 2.Increase security 3. Elimination of the data redundancy 4.All of these
Which of the following is not characteristics of a relational database model	1.Tables **2.Treelike structure** 3.Complex logical relationships 4.Records
Microsoft SQL Server is an example for which OLAP Server?	1. Hybrid OLAP 2. Relational OLAP 3. Two-dimensional OLAP 4. Multi-dimensional OLAP
Truncate is _____ command	**1.DDL** 2.DML 3.DDL and DML 4.TCL
	1. Two independent distributed parity

What is the unique characteristic of RAID 6 (Choose one)?	2. Striping 3. Distributed Parity 4. Mirroring
RAID is a way to:	1. Increase hard drive reliability and performance 2. Increase hard drive latency and performance 3. Increase hard drive performance and decrease cost 4. Increase hard drive reliability and decrease cost
Consider a relation R (A, B). If A ¿ B is a trivial functional dependency and A is the super key for R, then what is the maximum normal form R can be in?	1. 3NF 2. 2NF 3. BCNF 4. 1NF
Which of the following is not a characteristic of a relational database model?	1.Table 2.Records 3.Complex logical relationship **4.Tree like structure**
Foreign key is a subset of primary key is stated in _____ constraint	1. Foreign Key Constraint 2. Referential Integrity Constraint 3. Domain Constraint 4. Semantic Constraint
Which of the following relational algebra operations do not require the participating tables to be union-compatible?	1.Union 2.Intersection 3.Difference **4.Join**

Which of the following statement on the view concept in SQL is invalid?	1.All views are not updateable 2.The views may be referenced in an SQL statement whenever tables are referenced. 3.The views are instantiated at the time they are referenced and not when they are defined. **4.The definition of a view should not have GROUP BY clause in it.**
In SQL, testing whether a subquery is empty is done using	1.DISTINCT 2.NULL **3.EXISTS** 4.UNIQUE
Which of the following is/are not a DDL statements?	1 Create 2 Drop 3 Alter 4 delete
	1

Given the basic ER and relational models, which of the following is INCORRECT?	An attributes of an entity can have more that one value 2 An attribute of an entity can be composite 3 In a row of a relational table, an attribute can have more than one value 4 In a row of a relational table, an attribute can have exactly one value or a NULL value
Which of the following is TRUE?	1 Every relation in 2NF is also in BCNF 2 A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R 3 Every relation in BCNF is also in 3NF 4

	No relation can be in both BCNF and 3NF
Which one of the following statements if FALSE?	1 Any relation with two attributes is in BCNF 2 A relation in which every key has only one attribute is in 2NF 3 A prime attribute can be transitively dependent on a key in a 3NF relation 4 A prime attribute can be transitively dependent on a key in a BCNF relation
Let E1 and E2 be two entities in an E/R diagram with simple single-valued attributes. R1 and R2 are two relationships between E1 and E2, where R1 is one-to-many and R2 is many-to-many. R1 and R2 do not have any attributes of their own. What is the minimum number of tables required to represent this situation in the relational model?	1 2 2 3 3 4 4 5
	1

Select operation in SQL is equivalent to	the selection operation in relational algebra 2 the selection operation in relational algebra, except that select in SQL retains duplicates 3 the projection operation in relational algebra 4 the projection operation in relational algebra, except that select in SQL retains duplicates
Grant and revoke are ……. statements	1 DDL 2 TCL 3 DCL 4 DML
……. command can be used to modify a column in a table	1 alter 2 update 3

	set 4 create
Data independence means	1 data is defined separately and not included in programs. 2 programs are not dependent on the physical attributes of data 3 programs are not dependent on the logical attributes of data 4 programs are not dependent on both physical and logical attributes of data
DCL stands for	1 Data Control Language 2 Data Console Language 3

	Data Console Level 4 Data Control Level
..... data type can store unstructured data	1 RAW 2 CHAR 3 NUMERIC 4 VARCHAR
A table can have only one	1 Secondary key 2 Alternate key 3 Unique key 4

	Primary key
----------contains information such as the structure of each file, the type and storage format of each data item, and various constraints on the data	1 Database Schema 2 Database Catalog 3 Data dictionary 4 Lock table
Data Model that provides ad-hoc queries is ----------	1 Network 2 Hierarchical 3 Relational 4 Object Oriented
To prevent any method from overriding, the method has to declared as,	1 static 2 const 3 final 4 extends
---------- is used to describe the structure and constraints for the whole database for a community of users hides the details of physical storage structures in three -schema architecture	1 system catalog 2 Internal Schema 3 External Schema 4 Conceptual schema

1. Java package is a grouping mechanism with the purpose of	1. Providing the library for the Java program 2. Controlling the visibility of the classes, interfaces and methods 3. Replacing header file used in C/C++ 4. An application framework

What is the output of the following program:
public class testmeth
{
static int i = 1;
public static void main(String args[])
{
System.out.println(i+" , ");
m(i);
System.out.println(i);
}
public void m(int i)
{
i += 2;
}
}
	1
	1 , 3
	2
	3 , 1
	3
	1 , 1
	4
	Compile time error

Centralized DBMS has----------	1 DBMS software, Application programs and user interface processing software. 2

	DBMS server 3 UI processing software 4 Webserver
What is the sequence of major events in the life of an applet?	1 init, start, stop, destroy 2 start, init , stop , destroy 3 init, start , destroy, stop 4 init, start, destroy
Given the code String s1 = “ VIT” ; String s2 = “ VIT “ ; String s3 = new String (s1); Which of the following would equate to **true**?	1 s1 == s2 2 s1 = s2 3 s3 == s1 4 s3=s1
Which of the following events will cause a thread to die?	1 The method sleep( ) is called 2 The method wait( ) is called 3 Execution of the start( ) method ends 4 Execution of the run( ) method ends
	1

A method within a class is only accessible by classes that are defined within the same package as the class of the method. Which one of the following is used to enforce such restriction?	Declare the method with the keyword public 2 Declare the method with the keyword private 3 Declare the method with the keyword protected 4 Do not declare the method with any accessibility modifiers

Consider the following code.
static void nPrint(String message, int n) {
while (n > 0) {
System.out.print(message);
n--;
}
}
What is the printout of the call nPrint('a', 4)?
	1
	aaaaa
	2
	aaaa
	3
	aaa
	4
	aa
	INVALID CALL

Which method must be defined by a class implementing the *java.lang.Runnable* interface?	1 void run() 2 public void run() 3 public void start() 4 void run(int priority)
13. Which of the following line of code is suitable to start a thread ?	1 Thread t = new Thread(X);

	2 Thread t = new Thread(this); t.start(); 3 X run = new X(); Thread t = new Thread(run); t.start(); 4 Thread t = new Thread(); x.run();
Which method is used to call the base class methods from the subclass?	1 extends 2 private 3 final 4 super
Answer the following question based on the given table. <table><tr><td>Package Name</td><td>Class Name</td></tr><tr><td>Lab.project.util</td><td>Date, Time</td></tr><tr><td>Lab.project.game</td><td>Car, Puzzle</td></tr></table> What will be the access modifier if a method in Date class is inherited in the Puzzle class?	1 final 2 protected 3 private 4 default
What will be the value of c at the end of execution? public static void main(String args[])	1 10

{ int a = 10, b = 2,c=0,d=0; int[] A = {1,2,3}; try { c=a/b; try { d = a/(a-a); d= A[1]+1; } catch(ArrayIndexOutOfBoundsException e) { System.out.println("Array - unreachable element "+e); } Finally { System.out.println("Finally block inside "); } } catch(Exception e) { System.out.println("Some Problem:"+e); b = 1; c = a/b; } finally { System.out.println("Finally block outside“) } System.out.println("after try/catch blocks"); System.out.println("Ans = " +c); }	2 5 3 0 4 1
What statement is used to execute stored procedure in Java JDBC A.	1. Call method execute() on a CallableStatement object 2. Call method executeProcedure() on a Statement object 3. Call method execute() on a StoredProcedure object 4. Call method run() on a ProcedureCommand object
Consider following code.	1

public class Test {
public static void main(String[] args) {
System.out.println(m(2));
}
public static int m(int num) {
return num;
}
public static void m(int num) {
System.out.println(num);
}
}
	The program has a syntax error because the two methods m have the same signature
	2
	The program has a syntax error because the second m method is defined, but not invoked in the main method
	3
	The program runs and prints 2 once
	4
	The program runs and prints 2 twice

public class MyRunnable implements Runnable
{
public void run()
{
// some code here
}
}
 	
which of these will create and start this thread?
	1.new Thread(MyRunnable).run(); **2.new Thread(new MyRunnable()).start();** 3.new Runnable(MyRunnable).start(); 4.new MyRunnable().start();

Which method is used for loading the driver in Java JDBC.	1.getDriver() method **2.class.forName()**

A.	3.createStatement() 4.getConnection()
When a class extends the Thread class ,it should override ..... method of Thread class to start that thread.	1.init() **2.run()** 3.start() 4.go()
Which one is the first high level programming language	1.C 2.COBOL **3.FORTRAN** 4.C++

OOPs
 	
Find the output of the following program?
 	
#include
#define pow(x) (x)*(x)*(x)
using namespace std;
 	
int main()
{
int a=3,b=3;
a=pow(b++)/b++;
cout<<a<<b;
return 0;
}</a<<b;
	1.98 2.99 3.97 **4.96**

What is the output of the following program?
 	
#include
using namespace std;
int main()
{
int x=20;
if(!(!x)&&x)
	1.20 2.10 3.1 4.0

cout<<x;
  else
{
x=10;
cout<<x;
  return 0;
}}</x;
</x;	

Determine the output of the following code?
 	
#include
using namespace std;
 	
void func_a(int *k)
{
*k += 20;
}
 	
void func_b(int *x)
{
int m=*x,*n = &m;
*n+=10;
}
 	
int main()
{
int var = 25,*varp=&var;
func_a(varp);
*varp += 10;
func_b(varp);
cout<<var<<*varp;
  return 0;
	1.5555 2.5545 3.6565 4.4555

}</var<<*varp;	

What will be the output of the following program?
 	
#include
using namespace std;
 	
class x {
public:
int a;
x();
};
x::x() { a=10; cout<
 	
class b:public x {
public:
b();
};
b::b() { a=20; cout<
 	
int main ()
{
b temp;
return 0;
}
	1.1010 2.2020 3.2010 4.1020

_____ users work on canned transactions	1 Sophisticated 2 Naive 3 DBA 4 Casual

An Employee entity of a company database can be a SECRETARY, TECHNICIAN or MANAGER. What kind of participation constraint can be used for Employee and its job types?	1 Disjoint and partial 2 Disjoint and total 3 overlapping and partial 4 overlapping and total

Find the output of the following program?
 	
#include
using namespace std;
 	
void myFunction(int& x, int* y, int* z) {
static int temp=1;
temp += (temp + temp) - 1;
x += *(y++ + *z)+ temp - ++temp;
*y=x;
x=temp;
*z= x;
cout<<x<<*y<<*z<<temp;
 	
}
 	
int main() {
int i = 0;
int j[] = {0, 1, 2, 3, 4, 5, 6, 7, 8, 9};
i=i++ - ++i;
	1. 3233
	2. 3133
	3. 3332
	4. 3232

myFunction(i, j, &i); return 0; }</x<<*y<<*z<<temp;	
The expected size of the join result divided by the maximum size is called _____.	1 Join cardinality 2 join selectivity 3 join count 4 number of rows
Which one of these lists contains only Java programming language keywords?	1.class, if, void, long, Int, continue **2.goto, instanceof, native, finally, default, throws** 3.try, virtual, throw, final, volatile, transient 4.strictfp, constant, super, implements, do
. The attributes in foreign key and primary key have the same _____.	1 Number of tuples 2 Number of attributes 3 Domain 4 Symbol
If a hospital has to store the description of each visit of a patient according to date what attribute you will use in the patient entity	1 composite 2 comples

according to date what attribute you will use in the patient entity type?	3 multivalued 4 weak entity
The SQL statement SELECT SUBSTR('123456789', INSTR('abcabcabc','b'), 4) FROM EMP; prints	1 6789 2 2345 3 1234 4 456789
In SQL, which command is used to issue multiple CREATE TABLE, CREATE VIEW and GRANT statements in a single transaction?	1 CREATE PACKAGE 2 CREATE SCHEMA 3 CREATE CLUSTER 4 all the above
The C++ language is	1.A context free language **2.A context sensitive language** 3.A regular language 4.Parsable fully only by a Turing machine
Changing the conceptual schema without having to change the external schema is called as _____	1 physical data independence 2 logical data independence 3 Data Model 4 Relational model

Which of the following is the right syntax for assertion?	1 Create assertion 'assertion-name' check 'predicate'; 2. Create assertion check 'predicate' 'assertion-name'; 3. Create assertions 'predicates'; 4. All of the mentioned
The following query is called as ? select * from emp where ssn in (select dssn from dependent order by age desc) ?;	1. Nested Query 2. Ordered query 3. Top N Query 4. Pseudo column query
. _____ is increasingly being used in server systems to improve performance by caching frequently used data, since it provides faster access than disk, with larger storage capacity than main memory.	1 Flash Memory 2 Disk 3 Main Memory 4 Secondary Memory
How to find the index of a particular string?	1 position() 2 index() 3 indexOf() 4 None of the mentioned

#include
int main ()
{
static int a[]={10, 20, 30 40, 50};
static int *p[]= {a, a+3, a+4, a+1, a+2};
int **ptr=p;
	1.43 **2.140** 3.89 4.78

ptr++;
printf ("%d%d", ptr p, **ptr);
}
The output of the program is _____.	

Which of the following is the child object of the JavaScript navigator?	1 Navicat 2 Plugins 3 NetRight 4 None of the mentioned
The probability that a single bit will be in error on a typical public telephone line using 4800 bps modem is 10 to the power -3. If no error detection mechanism is used, the residual error rate for a communication line using 9-bit frames is approximately equal to	1 0.003 2 0.009 3 0.999 4 0.991
Frames from one LAN can be transmitted to another LAN via the device	1 Router 2 Repeater 3 Modem 4 Bridge
You are working with a network that is 172.16.0.0 and would like to	1 255.255.192.0 2 255.255.224.0

support 600 hosts per subnet. What subnet mask should you use?	3 255.255.252.0 4 255.255.248.0
A modulator converts a _____ signal to a(n) _____ signal.	1 FSK; PSK 2 PSK; FSK 3 analog; digital 4 digital:analog
Which of the following digits are known as the sub-address digits (for use by the user) of the Network User Address (NUA)?	1 5 7 2 1 4 3 8 12 4 13 14
What is the loopback address?	1 127.0.0.1 2 255.0.0.0 3 255.255.0.0 4 255.255.255.255.
A 4 KHz noise less channel with one sample every 125 per sec is used to	1 32 Kbps 2

A 4 KHz noise less channel with one sample ever 125 per sec is used to transmit digital signals. Differential PCM with 4 bit relative signal value is used. Then how many bits per second are actually sent?	64 Kbps 3 8 Kbps 4 128 Kbps
What is the minimum number of wires required for sending data over a serial communications links?	1 2 2 1 3 4 4 3
In cyclic redundancy checking, the divisor is _____ the CRC.	1 the same size as 2 one bit less than 3 one bit more than 4 two bits more
An error-detecting code inserted as a field in a block of data to be transmitted is known as	1 Error detecting code 2 Frame check sequence 3 Checksum 4 flow control
Working of the WAN generally involves	1 telephone lines 2 microwaves

working of the WAN generally involves	3 satellites 4 All of the above
If you configure the TCP/IP address and other TCP/IP parameters manually, you can always verify the configuration through which of the following? Select the best answer.	1 Network Properties dialog box 2 Server Services dialog box 3 DHCPINFO command-line utility 4 Advanced Properties tab of TCP/ IP Info.
Four bits are used for packet sequence numbering in a sliding window protocol used in a computer network. What is the maximum window size?	1 4 2 8 3 15 4 16
Error control is needed at the transport layer because of potential errors occurring _____.	1 from transmission line noise 2 in routers 3 from out-of-sequence delivery 4 from packet losses.
	1

Data link layer retransmits the damaged frames in most networks. If the probability of a frame's being damaged is p, what is the mean number of transmissions required to send a frame if acknowledgements are never lost.	P I (K + 1) 2 KIK (1 + F) 3 1/ (1 - F) 4 K I (K - P)
The method that performs the search-and-replace operation to strings for pattern matching is	1 searchandreplace() 2 add() 3 edit() 4 replace()
and are the tags used for ?	1. Audio-voiced text 2. Adding links to your page 3. Adding header to your page 4. Aligning text

Consider the following program in C language:
 	
#include
 	
main()
 	
{
int i;
int *pi = &i;
scanf(?%d?,pi);
printf(?%d\n?, i+5);
	1. On execution, the value printed is 5 more than the integer value entered
	
	2. Execution results in a run-time error.
	
	3. On execution, the value printed is 5 more than the address of variable i
	
	4. Compilation fails.

} Which one of the following statements is TRUE?	

Consider the following C program.
#include
int f1 (void) ;
int f 2 void ;
int x 10;
int main ()
{
int x=1;
x+=f1()+ f2()+f3()+f2() ;
printf("%d", x);
return 0;
}
int f1(){int x=25; x++; return x;}
int f2(){static int x =50; x++;return x;}
int f3(){x*=10; return x};
The output of the program is_____.
	1. 434
	2. 432
	3. 43
	4. 230

temp=root->left;
while(temp->right!=NULL)
temp=temp->right;
return temp;
The above code snippet for a BST with the address of the root node in pointer ‘root’
returns
	1
	Inorder successor of the root
	2. Inorder predecessor of the root
	3
	Maximum element in the right subtree of root
	4
	Minimum element in the right subtree of root

	1

The ‘$’ present in the RegExp object is called a	character 2 matcher 3 metacharacter 4 metadata
Identify the sorting technique that supports divide and conquer strategy and has (n2) complexity in worst case	1. Merge 2. Insertion 3. Shell 4. Quick
The regular expression to match any one character, not between the brackets is	1 [...] 2 [^] 3 [^...] 4 [\D]
_____is the first schema to be designed when you are developing a DBMS	1 conceptual 2. hierarchical 3. physical 4. relational
The _____ is generally used to group hosts based on the physical network topology.	1. Subnet ID 2. NET ID 3. Host ID 4. Netmask
Which of the following is shared between all of the threads in a process? Assume a kernel level thread implementation.	1. File descriptors 2. Scheduler priority 3. Local variables 4. Register values
	1. 64 Byte

1024 bit is equal to how many byte	2. 32 Byte 3. 1 Byte 4. 128 Byte
On simple paging system with 224 bytes of physical memory, 256 pages of logical address space, and a page size 210 bytes, how many bytes are in a page frame?	1. 224 bytes 2. 210 Bytes 3. 256 Bytes 4. 210 bytes
For the IEEE 802.11 MAC protocol for wireless communication, which of the following statements is/are TRUE ? I. At least three non-overlapping channels are available for transmissions. II. The RTS-CTS mechanism is used for collision detection. III.Unicast frames are ACKed.	1. All I, II, and III 2. I and III only 3. II and III only 4. II only
X.25 Networks are _____ networks	1. Circuit switched 2. UDP 3. Packet switched 4. Connection less service
KDD (Knowledge Discovery in Databases) is referred to,	1. collection of interesting and useful patterns in a database 2. data fusion 3. Non-trivial extraction of previously unknown useful information from data 4. data extraction
Integer division in a C program results in	1.truncation 2.overflow 3.none of these 4.rounding
	1 A process was pre-empted by another process

In the process state transition diagram, the transition from the READY state to the RUNNING state indicates that:	2 A process has blocked for a semaphore or other operation 3 A process is done waiting for an I/O operation 4 A process was just created
Which of these would not be a good way for the OS to improve battery lifetime in a laptop?	1 Shut down the hard drive until it's needed 2 Reduce the processor speed while it's idle 3 Turn off power to the memory 4 Shut down the modem when it's not connected

Consider the following C program segment.
#include
intmain()
{char sl [7]="1234",*p;
p=sl+2;
*p='0';
	1. 1034
	2. 23324
	3. 1204
	4. 12

printf ("%s",s1) { What will be printed by the program?	
In Javascript, which of the following method is used to find out the character at a position in a string?	1 charPosition() 2 charAt() 3 CharacterAt() 4 CharAt()
What is the output of following JavaScript code?	1 Error 2 1 3 2 4 3
Which one of the following statements is false?	1 In JavaScript, identifier names are case sensitive 2 JavaScript code can appear in both and sections 3 External JavaScript file can be linked using the link element 4 JavaScript can be turned off by the users concerning of security

Uniform Resource Locator (URL), is a standard for specifying any kind of information on the	1 Server 2 IP 3 Internet 4 Web Page
This Key Uniquely Identifies Each Record	1. Primary Key 2. Key Record 3. Field Name 4. Unique Key
What are the three phases in virtual circuit switching?	1 Setup, data transfer, teardown 2 request-connect, data sending-acknowledgment, request-disconnect 3 send-connect, data transfer, request-disconnect 4 none of above
Which of the following is a bit rate of an 8-PSK signal having 2500 Hz bandwidth ?	1 2500 bps 2 5000 bps 3 7500 bps 4 20000 BPS

If the page size is 1024 bytes, what is the page number in decimal of the following virtual address 1110 1010010101	1 2 2 10 3 14 4 5
In communication satellite, multiple repeaters are known as?	1 Detectors 2 Modulators 3 Stations 4 Transponders
The Internet Control Message Protocol (ICMP)	1 allows gateways to send error a control messages to other gateways or hosts 2 provides communication between the Internet Protocol Software on one machine and the Internet Protocol Software on another 3

	reports error conditions to the original source, the source must relate errors to individual application programs and take action to correct the problem 4 All of the above
An IP router with a Maximum Transmission Unit (MTU) of 1500 bytes has received an IPpacket of size 4404 bytes with an IP header of length 20 bytes. The values of the relevant fields in the header of the third IP fragment generated by the router for this packet are	1 MF bit: 0, Datagram Length: 1444; Offset: 370 2 MF bit: 1, Datagram Length: 1424; Offset: 185 3 MF bit: 1, Datagram Length: 1500; Offset: 370 4 MF bit: 0, Datagram Length: 1424; Offset: 2960
Graph traversal is different from a tree traversal, because	1. trees are not connected. 2. **graphs may have loop** 3. trees have root 4. None is true as tree is a subset of graph.
For the array (77 ,62,114,80,9,30,99), write the order of the elements after two passes using the Radix sort	1. 114 30 62 77 9 99 2. 9 30 62 77 80 99 114 3. 9 114 30 62 77 80 99

	4. 80 30 62 114 77 9 99
For non-negative functions, f(n) and g(n), f(n) is theta of g(n) if and only if	1. f(n) = omega(g(n)) and f(n) = O(g(n)) 2. f(n) = O(g(n)) and f(n) = o((g(n)) 3. f(n) = o(g(n)) and f(n) = omega(g(n)) 4. f(n) = O(g(n)) and f(n) = little_omega(g(n))
If the opearand of stack operation is register, the stack contents in 8085 store which of the following?	1 content of register pair 2 content of one Register only 3 content of memory location 4 only stack contents
What technique is often used to prove the correctness of a recursive function?	1. Diagonalization 2. Mathematical induction 3. Matrix Multiplication 4. Commutativity
How many bits are present in registers A, B, C together in 8085?	1 6 2 16 3 24 4 32
	1 Increment register H by one 2

What does the instruction INX H perform in 8085 microprocessor?	Increment register pair HL by one storing the result in same place 3 Increment register AH by one 4 Increment all registers by one
How many modes are present in 8255 and what are they? (	1 5, A to E 2 6, 0 to 5 3 4, 2 to 5 4 one , one
Which of the following is DMA controller?	1 8085 2 8255 3 8257 4 8088
How many gate delays are present in efficient implementation of XOR gate ?	1 three 2 twp 3 one 4 five

1. Among the following sorting techniques ,which has its time complexity as O(n) in the best-case?	1 Quick sort 2 Insertion sort 3 Both 4 None
The best index for range query is	1.Bucket Hash 2.Quad tree **3.B Tree** 4.Binary Tree
Commit, Savepoint, Rollback are _____	1. DDL 2. DCL 3. DML 4. TCL
R right outer join S on a=b gives	1. Rows from R and S where a=b 2. All rows from S and joined rows from R 3. All rows from R and joined rows from S 4. All rows from R and S
Rotation method of hashing is usually combined with other hashing techniques except	1 Modulo-division 2 Fold boundary 3 Fold shift 4 Mid-square hashing
The command which undo the transaction is	**1.Rollback** 2.Savepoint 3.Commit 4.Savepoint p

Which function among the following lets to register a function to be invoked repeatedly after a certain time?	1 setTimeout() 2 setTotaltime() 3 setInterval() 4 None of the mentioned
Which is the handler method used to invoke when uncaught JavaScript exceptions occur?	1 onhalt 2 onerror 3 Both a and b 4 None of the mentioned
Which property is used to obtain browser vendor and version information?	1 modal 2 version 3 browser 4 navigator
What is the result of the following operation Top (Push (S, X))	1 X 2 NULL 3 s 4 0
	1

Which object serves as the global object at the top of the scope chain?	Hash 2 Property 3 Element 4 Window
In a priority queue insertion and deletion takes place at	1 front, rear end 2 only rear end 3 only front end 4 at any position
Which one of the following is NOT a part of the ACID properties of database transactions?	1. Atomicity 2. Deadlock 3. Isolation 4. Consistency
What happens when a pointer is deleted twice?	1.It cause an error 2.It cause a failure 3.It can abort the program **4.It can cause a trap**
A variable whose size is determined at compile time and cannot be changed at run time is	1.not a variable 2.dynamic variable **3.static variable** 4.none of these
	1 Constraints 2

.…… is preferred method for enforcing data integrity	Stored Procedure 3 Triggers 4 Cursors
Which of the following is not a binary operator in relational algebra?	1 Join 2 Semi-Join 3 Assignment 4 Project
Which database level is closest to the users?	1 External 2 Internal 3

	Physical 4 Conceptual
Trigger is a	1.Statement that enables to start any DBMS 2.Condition the system tests for the validity of the database user 3.Statement that is executed by the user when debugging an application program **4.Statement that is executed automatically by the system as a side effect of a modification to the database**
----------module of the DBMS controls access to DBMS information that is stored on disk, whether it is part of the database or the catalog	1 Stored data manager 2 DDL Compiler 3 DDL Catalog 4 DML Compiler
---------- component of DBMS extracts DML commands from an	1.DML Compiler 2.DDL Compiler

application program written in a host programming language	3.Pre Compiler 4.Query Optimizer
The runtime database processor of DBMS executes----------	1 Query statements only 2 The privileged commands,the executable query plans and the canned transactions 3 Privileged commands and Query statements 4 DML commands
More than one transaction can apply this lock on X for reading its value but no write lock can be applied on X by any other transaction. What is that lock?	1 Exclusive 2 shared 3 read lock 4 none
Who is responsible for correlating the different perspectives of distinct users?	1 DBA 2 Database Designers 3.System Analysts 4. Application Programmers

----------describes the the part of the database that a particular user group is interested in and hides the rest.	1. External Schema 2 Internal Schema 3 Conceptual schema 4 System catalog

1. What will be printed as the output of the following program?
public class testincr
{
public static void main(String args[])
{
int i = 0;
i = i++ + i;
System.out.println(" I = " +i);
}
}
	1
	I = 0
	2
	I = 1
	3
	I = 2
	4
	I = 3

Consider the following code:
public class Test {
public static void main(String[] args) {
int[] x = new int[5];
int i;
for (i = 0; i < x.length; i++)
x[i] = i;
	1
	The program displays 0 1 2 3 4
	2
	The program displays 4
	3
	The program has a runtime error because the last statement in the main method causes ArrayIndexOutOfBoundsException
	4.The program displays 1 2 3 4 5.

System.out.println(x[i]); } }	
Which two are valid constructors for Thread? a.) Thread(Runnable r, String name) b.) Thread() c.) Thread(int priority) d.) Thread(Runnable r, ThreadGroup g) e.) Thread(Runnable r, int priority)	**1.a & b** 2.a & c 3.d & e 4.b & c
The data type describing the types of values that can appear in each column is called _____.	1. Domain 2. Attribute 3. Relation 4. Tuple
Which of the following is an electronic transfer system that operates in hourly batches ?	**1.NEFT** 2.RTGS 3.Paytm 4.MICR
Business markets usually include fewer but	**1.large scale production firms** 2.small scale retailers 3.small scale production firms 4.small scale wholesalers
Non banking financial institutions (NBFIs) are registered under	1.RBI Act **2.Companies Act** 3.SEBI Act 4.Banking Regulation Act
	1 var salaries = new Array(1:39438, 2:39839 3:83729) 2

Which of the following is the correct way for writing JavaScript array?	var salaries = new (Array1=39438, Array 2=39839 Array 3=83729) 3.var salaries = new Array(39438, 39839,83729) 4 var salaries = new Array() values = 39438, 39839 83729
What is the correct syntax for referring to an external script called " abc.js"	1.script href=" abc.js" 2.script name=" abc.js" **3.script src=" abc.js"** 4.None of the above
Browsers typically render text wrapped in _____ tags as an indented paragraph.	**1.p** 2.pre 3.blockquote 4.paragraph
AJAX has become very commonly used because	1 it allows pages to be interactive without further communication with the server. 2 XML is a close relative of HTML. 3 it avoids the need for JavaScript. 4

	it allows page content to be updated without requiring a full page reload.
If an AJAX request made using jQuery fails,	1 the browser will automatically report the problem with an alert message. 2 an error message will be displayed in the browser window content area. 3 the programmer should arrange for it to be reported using the jQuery .fail() method. 4 there is no way to notify the user.
Which algorithm chooses the page that has not been used for the longest period of time whenever the page required to be replaced?	1. **least recently used algorithm** 2. **additional reference bit algorithm** 3. **first in first out algorithm**

	4. **counting based page replacement algorithm**
If we can determine exactly those entities that will become members of each subclass by a condition then such subclasses are called----------	1 Predicate defined subclasses 2 Attribute defined subclasses 3 User defined subclasses 4 it is not a subclass type
SQl allows duplicates tuples in relations, and correspondingly defines the multiplicity of tuples in the result of joins. Which one of the following queries always gives the same answer as the nested query shown below: select * from R where a in (select S.a from S)	1. Select R.* from R,(select distinct a from S) as S1 where R.a=S1.a 2. Select distinct R.* from R,S where R.a=S.a 3. Select R.* from R, S where R.a=S.a 4. select R.* from R,S where R.a=S.a and is unique R
Assume a table Employee (Eno, Ename, Dept, Salary, Phone) with 10000 records.	1. Query will use index of Dept

Also assume that Employee has a non-clustering index on Salary, clustering indexes on Dept and Phone. If there is a SQL query "SELECT Eno FROM Employee WHERE Salary/12 = 10000", which of the following will happen during query execution?	2. Query will use index of Phone 3. Query will use index of Salary 4. Query will not use index

Consider the following program:
int f(int *p, int n)
{
if (n <= 1) return 0;
else return max (f (p+1, n-1),p[0]-p[1]);
}
int main()
{
int a[] = {3,5,2,6,4};
printf("%d", f(a,5));
}
The value printed by this program is
	1. 3
	2. 1
	3. 4
	4. 2

What is the JavaScript syntax to insert a comment that has more than one line?	1./* comment */ 2.// comment 3.// comment // 4
Which of the following is shared between all of the threads in a process? Assume a kernel level thread implementation.	1. File descriptors 2. Scheduler priority 3. Local variables 4. Register values
	1 connectionless

Hypertext Transfer Protocol (HTTP) is _____ protocol.	2 connection oriented 3 routing 4 node
_____ is the most popular way of establishing an encrypted HTTP connection	1 www 2 http:// 3 HTTPS 4 HTTs
HTTP code ____ indicates that the required resource could not be found.	1 400 2 401 3 404 4 101
The Hypertext Transfer Protocol (HTTP) is an _____ protocol	1 layer-2 2 layer-3 3 application level 4 physical level
Hypertext Transfer Protocol (HTTP) uses services of TCP on	1.well, known port no. 80 2. well, known port no. 81 3

Hypertext Transfer Protocol (HTTP) uses services of TCP on	well, known port no. 8080 4 well, known port no. 82
HTTP error messages, also called _____ are response codes given by Web-servers and help identify the cause of the problem.	1 HTTP recovery codes 2 HTTP status codes 3 HTTPs 4 HTTP fix
Which statement about the name and id attributes of form fields is *false?*	1 the id attribute is what is sent when the form is submitted. 2 the name attribute can be used to access the field using getElementsByName(). 3 it is customary to give form fields both attributes, with the same value if possible 4 either attribute may be omitted if it is unused.
	1 method

The jQuery AJAX methods .get(), .post(), and .ajax() all require which parameter to be supplied?	2 url 3 data 4 headers
Which property is used to check whether AJAX request has been completed.	1 open 2 ready 3 onreadystate 4 readystate
The number of squares in K-map of n-variables is	1 2n 2 2+n 3 2^n 4 2n+n
The stage delays in a 4-stage pipeline are 800, 500, 400 and 300 picoseconds. The first stage (with delay 800 picoseconds) is replaced with a functionally equivalent design involving two stages with respective delays 600 and 350 picoseconds. The throughput increase of the pipeline is percent.	1. 34 2. 32 3. 35 4. 33
If a virtual memory system has 4 pages in real memory and the rest must be	1. 31% 2. 25%

swapped to disk. Which of the following is the hit ratio for the following page address stream. Assume memory starts empty, use the FIFO algorithm	3. 15% 4. 10%
The minimum duration of the active low interrupt pulse for being sensed without being lost must be	1. equal to 2 machine cycles 2. Greater than one machine cycle 3. Greater than 2 machine cycles 4. Equal to one machine cycle
A file system with 300 GByte disk uses a file descriptor with 8 direct block addresses, 1 indirect block address and 1 doubly indirect block address. The size of each disk block is 128 Bytes and the size of each disk block address is 8 Bytes. The maximum possible file size in this file system in KBytes is	1. 35 2. 3 3. 280 4. Dependent on Disk
Consider a disk queue with requests for I/O to blocks on cylinders 47, 38, 121, 191, 87, 11,92, 10. The C-LOOK scheduling algorithm is used. The head is initially at cylinder number 63, moving towards larger cylinder numbers on its servicing pass. The cylinders are numbered from 0 to 199. The total head movement (in number of cylinders) incurred while servicing these requests is	1. 324 2. 4819 3. 165 4. 431
	1 (j mod v) * k to (j mod v) * k + (k-1)

In a k-way set associative cache, the cache is divided into v sets, each of which consists of k lines. The lines of a set are placed in sequence one after another. The lines in set s are sequenced before the lines in set (s+1). The main memory blocks are numbered 0 on wards. The main memory block numbered j must be mapped to any one of the cache lines from	2 (j mod v) to (j mod v) + (k-1) 3 (j mod k) to (j mod k) + (v-1) 4 (j mod k) * v to (j mod k) * v + (v-1)
Port number of DNS is	1 53 2 23 3 25 4 110
Socket address is a combination of _____ and _____ addresses	1 IP and MAC 2 MAC and port 3 IP and port 4 mail and port
IEEE 802.11 is for	1 Ethernet 2 Tokenring 3 Token bus 4

	WLAN
Viruses are a network-issue	1 Performance 2 Reliability 3 Security 4 Management
Which Topology features a point to point line configuration?	1 Mesh 2 Ring 3 Star 4 All three
Television broadcast is an example of - transmission	1 Simplex 2 Half-duplex 3 Full-duplex 4 Automatic
Packet discard policy is implemented in	1 Physical layer 2 Data link layer 3 MAC layer 4.Network layer
	1

While booting the system the IP address is	1 1.1.1.1 2 1.1.0.0 3 0.0.1.1 4 0.0.0.0
In transport layer, End to End delivery is the movement of data from	1 one station to the next station 2 one network to the other network 3 source to destination 4 one router to another router
Which flip flop is suitable to store any number?	1 JK flip flop 2 D flip flop 3 RS flip flop 4 T flip flop
Which circuit is used to perform address mapping in cache memories?	1 decoder 2 multiplexer 3 encoder 4 RAM

A circuit has seven inputs and one outputs based on three signals. Which component is suitable to realize this circuit?	1 demultiplexer 2 decoder 3 multiplexer 4 encoder
What is the machine that uses zero address instructions called?	1 RISC machine 2 CISC machine 3 Vector processor 4 Stack machine
Suggest one alternative to binary multiplication	1 Change the radix 2 Division 3.Trignometric functions 4. Hyperbolic functions
What is the time complexity of inserting a node in a doubly linked list?	1 O(nlogn) 2 O(logn) 3 O(n) 4 O(1)
	1 Huffman codes 2

Which of the following is not an application of priority queue?	Interrupt handling in operating system	3
	Undo operation in text editors	4
	Bayesian spam filter	
A computer has a 256 KByte, 4-way set associative, write back data cache with block size of 32 Bytes. The processor sends 32 bit addresses to the cache controller. Each cache tag directory entry contains, in addition to address tag, 2 valid bits, 1 modified bit and 1 replacement bit. The number of bits in the tag field of an address is	11	1
	14	2
	16	3
	27	4
An 8KB direct-mapped write-back cache is organized as multiple blocks, each of size 32-bytes. The processor generates 32-bit addresses. The cache controller maintains the tag information for each cache block comprising of the following. 1 Valid bit 1 Modified bit As many bits as the minimum needed to identify the memory block mapped in the cache. What is the total size of memory needed at the cache controller to store meta-data (tags) for the cache?	4864 bits	1
	6144 bits	2
		3

	6656 bits 4 5376 bits
In Depth First Search, how many times a node is visited?	1 Once 2 Twice 3 Equivalent to number of outdegree of the node 4 Equivalent to number of indegree of the node
Register renaming is done in pipe lined processors	1 as an alternative to register allocation at compile time 2 for efficient access to function parameters and local variables 3 to handle certain kinds of hazards 4 as part of address translation
	1 to avoid formation of skew trees

Why we need to a binary tree which is height balanced?	2 to save memory 3 to attain faster memory access 4 to simplify storing
Consider a 4-way set associative cache consisting of 128 lines with a line size of 64 words. The CPU generates a 20-bit address of a word in main memory. The number of bits in the TAG, LINE and WORD fields are respectively:	1 9,6,5 2 7,7,6 3 7,5,8 4 9,5,6
You have an array of n elements. Suppose you implement quicksort by always choosing the central element of the array as the pivot. Then the tightest upper bound for the worst case performance is	1 $O(n^2)$ 2 O(nLogn) 3 Θ(nLogn) 4 $O(n^3)$
Consider two cache organizations: The first one is 32 KB 2-way set associative with 32-byte block size. The second one is of the same size but direct mapped. The size of an address is 32 bits in both cases. A 2-to-1 multiplexer has a latency of 0.6 ns while a k bit comparator has a latency of k/10 ns. The hit latency of the set associative organization is h1 while that of the direct mapped one is h2. The value of h2 is:	1 2.4ns 2 2.3 ns

	3 1.8 ns 4 1.7 ns
what is the advantage of selection sort over other sorting techniques?	1 It requires no additional storage space 2 It is scalable 3 It works best for inputs which are already sorted 4 It is faster than any other sorting technique
A process executes the code fork (); fork (); fork (); The total number of child processes created is	1. 4 2. 7 3. 8 4. 3
What is the minimum size of ROM required to store the complete truth table of an 8-bit x 8-bit multiplier?	1 32 K x 16 bits 2 64 K x 16 bits 3 16 K x 32 bits 4 64 K x 32 bits

A processor has 40 distinct instructions and 24 general purpose registers. A 32-bit instruction word has an op code, two register operands and an immediate operand. How many number of bits available for the immediate operand field is	1 16 2 8 3 4 4 32
Having clause in SQL occurs with	1. where 2. group by 3. sort by 4. order by
A schema describes	1.data elements 2.records and files 3.record relationships **4.all of these**
Maximum data rate of a channel for a noiseless 3-kHz binary channel is	1 3000 bps 2 6000 bps 3 4500 bps 4 1500 bps
If data rate of ring is 20 Mbps, signal propagation speed is 200 b/ms, then number of bits that can be placed on the channel of 200 km is	1.20000 bits 2. 1000 bits 3. 10000 bits 4.2000 bits
Maximum data rate of a channel of 3000 Hz bandwidth and SNR of 30 dB is	1 1,000 bps 2 15,000 bps 3

	30,000 bps 4 75,000 bps
Attributes that are divisible are called	1 composite 2 simple 3 atomic 4 single
Data link layer retransmits the damaged frames in most networks. If probability of a frame's being damaged is p, then what is the mean number of transmissions required to send a frame if acknowledgements are never lost ?	1. K / K - P 2. 1 / K - P 3. K / K(1 + p) 4. p / K + 1
A processor that has carry, overflow and sign flag bits as part of its program status word (PSW) performs addition of the following two 2's complement numbers 01001101 and 11101001. After the execution of this addition operation, the status of the carry, overflow and sign flags, respectively will be:	1 1, 1, 0 2 1, 0, 0 3 0, 1, 0 4 1, 0, 1
Consider a processor with 64 registers and an instruction set of size twelve. Each instruction has five distinct fields, namely, opcode, two source register identifiers, one destination register identifier, and a twelve-bit immediate value. Each instruction must be stored in memory in a byte-aligned fashion. If a program has 100 instructions, the amount of memory (in bytes) consumed by the program text is _____	1 100 2 200 3 400

	4 500
The width of the physical address on a machine is 40 bits. The width of the tag field in a 512 KB 8-way set associative cache is _____ bits	1 24 2 20 3 30 4 40
Another name for total participation is	1 partial participation 2 existence dependency 3 functional dependency 4 non dependency
Difficult reconnection and fault isolation are disadvantages of	1.Star Topology 2. Mesh Topology 3 Ring Topology 4 Bus Topology
Elapsed time between an inquiry and a response is called.	1 Transit Time 2 Delay Time 3 Processing Time 4 Response Time
	1

What is the typical range of Ephemeral Ports?	1 to 80 2 1 to 1024 3 80 to 8080 4 1024 to 65535
What is the purpose of the PSH flag in the TCP header?	1 Typically used to indicate end of message 2 Typically used to indicate beginning of message 3 Typically used to push the message 4 Typically used to indicate stop of the message
Which of the following is correct in CIDR?	1 Class A includes Class B network 2 There are only two networks 3 There are high and low class networks 4 There is no concept of Class A, B, C networks
One of the DDL command is	1 rename 2 update

One of the DDL command is	3 insert 4 select
The command which is used to change the structure of the table	1 Delete 2 Truncate 3 Alter 4 update
No of entity type participate in recursive relationship are	1 three 2 two 3 one 4 zero
Suppose a disk has 201 cylinders, numbered from 0 to 200. At some time the disk arm is at cylinder 100, and there is a queue of disk access requests for cylinders 30, 85, 90, 100, 105, 110, 135 and 145. If Shortest-Seek Time First (SSTF) is being used for scheduling the disk access, the request for cylinder 90 is serviced after servicing _____ number of requests.	1. 4 2. 3 3. 2 4. 5
	1 Cartesian product

Spurious tuples generation are avoided by	2 join condition 3 projection 4 filtering
The Normal form does not involve any dependencies.	1 1NF 2 2NF 3 3NF 4 4NF
The main property of normalization is	1 joining 2 decomposition 3 adding 4 altering
If a designer wants to design a point-to-point subnetwork with 10 routers of full duplex line, then total number of lines among them would be	1 10 2 20 3 45 4 90
	1 Entity

the collection of all entities of particular entity type in the database at any point in time is	2 Entity Type 3 Entity Set 4 relation
A bridge has access to which address of a station on the same network ?	1 Physical 2 Service access point 3 Network 4 Transport
the degree of a relationship type is	1 no of participating entity types 2 no of attributes 3 no of values in the relationship 4 no of transactions
Entity types that do not have key attributes is	1 strong entity type 2 weak entity type 3 key entity type

	4 negative key attribute
Given memory partitions of 100K, 500K, 200K, 300K, and 600K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212K, 417K, 112K, and 426K (in order)? Which algorithm makes the most efficient use of memory?	1. All the three provides the same efficiency 2. Best - fit 3. Worst - fit 4. First- fit
Port C of 8255 can function independently as	1 input port 2 output port 3 either input or output ports 4 both input and output ports
R left outer join S on a=b gives	1. Rows from R and S where a=b 2. All rows from R and joined rows from S 3. All rows from R and S 4. All rows from S and joined rows from R
In a relational schema, each tuple is divided into fields called	1.Queries **2.Domains** 3.Relations 4.All of these
_____ extracts the DML statements from a host language and passes to DML Compiler	1.Sub Language compiler 2.Host Language compiler **3.Pre compiler** 4.Query Compiler
	1

The subset of super key is a candidate key under what condition ?	No proper subset is a super key 2 Each subset is a super key 3 Subset is a super key 4 All subsets are super keys
Which of the following command remove a relation from an SQL database	1 Delete 2 Drop table 3 Remove 4 Purge
To retain all duplicate records, which of the following keyword is used	1 Union all 2 Union some 3 Intersect all 4 Intersect some
What type of join is needed when you wish to include rows that do not have matching values?	1 Equi-join 2 Natural join 3 Outer join 4 All of the mentioned
	1

Which relationship is used to represent a specialization entity ?	WHOIS 2 AIS 3 ONIS 4 ISA
Insert into instructor values (10211, ’ Smith’ , ’ Biology’ , 66000); What type of statement is this ?	1 Query 2 DML 3 Relational 4 DDL
Which of he following is used to input the entry and give the result in a variable in a procedure ?	1 Put and get 2 Get and put 3 Out and In 4 In and out
Which normal form is considered adequate for normal relational database design?	1 2NF 2 5NF 3 4NF 4 3NF
	1

Which of the following is TRUE?	Every relation in 2NF is also in BCNF 2 A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R 3 Every relation in BCNF is also in 3NF 4 No relation can be in both BCNF and 3NF
In SQL, relations can contain null values, and comparisons with null values are treated as unknown. Suppose all comparisons with a null value are treated as false. Which of the following pairs is not equivalent? ---- **X NOT EQUAL TO 5**	1 x = 5, not (not (x = 5) 2 x = 5, x > 4 and x < 6, where x is an integer 3 not(x = 5) 4 x < 5
	1 Entity-relationship diagram 2

Which of the following gives a logical structure of the database graphically ?	Entity diagram 3 Database diagram 4 Architectural representation
Consider a directed line(->) from the relationship set advisor to both entity sets instructor and student. This indicates _____ cardinality	1 One to many 2 One to one 3 Many to many 4 Many to one
1. Elements 7, 2, 8, 1, 4, 3, 5 are to be inserted in an AVL tree. After insertion and height balancing it, the root node will be	1 2 2 7 3 4 4 none
In a min-heap	1.parent node has a value greater than its left and right child nodes 2. parent node has a value lesser than its left and right child nodes 3

	parent node has a value greater than its left child node and lesser than its right child node 4 none
1. In a **directed graph**, the statement "if(adj[x][y]==1 && visited[y]==0)"	1 Checks if x is reachable from y and y has not yet been visited 2 Checks if y is reachable from x and x has not yet been visited 3 Checks if x is reachable from y and x has not yet been visited 4 Checks if y is reachable from x and y has not yet been visited

The following function computes the maximum value contained in an integer array
 	
p[ ] of size n (n >= 1).
int max(int *p, int n) {
int a=0, b=n-1;
while (_____) {
if (p[a] <= p[b]) { a = a+1; }
else { b = b-1; }
}
return p[a];
}
	1. b != 0
	
	2. b != a
	3. b > (a + 1)
	4. a != n

The missing loop condition is

Consider the following C code segment:

```
int a, b, c = 0;
void prtFun(void);
main( )
{ static int a = 1; /* Line 1 */
prtFun( );
a + = 1;
prtFun( )
printf(?\n %d %d ?, a, b);
}
void prtFun(void)
{ static int a=2; /* Line 2 */
int b=1;
a+=++b;
printf(?\n %d %d ?, a, b);
}
```

What output will be generated by the given code segment?

1. 31
   41
   42
2. 42
   62
   20
3. 31
   52
   52
4. 42
   61
   61

Consider the following C program

```
#inclue
int main()
int i, j, k 0;
j=2*3/4+2.0 / 5+8 / 5;
k-= --j;
for (i=0; i<5; i++)
{
Switch (i + k)
{
case1:
case 2 : printf ("\ n%d", i+k)
case 3 : printf ("\ n%d", i+k);
```

1. 43 2. 9 3. 2 **4. 10**

default : printf ("\n%d",i+k); } } Return 0: } The number of times printf statement is executed is _____.	
Consider the following recursive C function. Void get (int n) {if (n<1) return; get (n-1) get (n-3) ; printf ("%d",n); If get(6) function is being called in main () then how many times will the get() function be invoked before returning to the main ( ) ?	1. 15 2. 25 3. 43 4. 24

What will be the output of the following C program?
 	
void count(int n){
static int d=1;
printf("%d ", n);
printf("%d ", d);
d++;
if(n>1) count(n-1);
printf("%d ", d);
}
void main(){
count(3);
}
	1. 3 1 2 1 1 1 2 2 2
	2. 3 1 2 2 1 3 4
	3. 3 1 2 1 1 1 2
	4. 3 1 2 2 1 3 4 4 4

Consider the following recursive C function. Void get (int n)	1. 15 2. 25

```
{if (n<1) return;
get (n-1)
get (n-3) ;
printf ("%d",n);
```

If get(6) function is being called in main () then how many times will the get() function be invoked before returning to the main ( ) ?

3. 43
4. 24

Given the following structure template, choose the correct syntax for accessing the 5th subject marks of

```
struct stud
{
            int marks[6];
            char sname[20];
            char rno[10];
}s[10];
```

1. stud[4].marks[2]
2. s[4].marks[2]
3. s[2].marks[4]
4. stud[2].marks[4]

Consider the following C code segment:

```
int a, b, c = 0;
void prtFun(void);
main( )
{ static int a = 1; /* Line 1 */
prtFun( );
a + = 1;
prtFun( )
printf(?\n %d %d ?, a, b);
}
void prtFun(void)
{ static int a=2; /* Line 2 */
int b=1;
a+=++b;
printf(?\n %d %d ?, a, b);
}
```

1. 42

   61
   61
2. 31

   41
   42
3. 42

   42
   20
4. 42

   62
   20

What output will be generated by the given code segment if: Line 1 is replaced by auto int a = 1; Line 2 is replaced by register int a = 2;	

Consider the following function written the C programming language.
 	
void foo (char * a) {
if (* a & & * a ! =’ ’){
putchar (*a);
}
}
}
 	
The output of the above function on input ?ABCD EFGH? is
	1. HGFE DCBA
	2. ABCD
	3. DCBA
	4. ABCD EFGH

Which of the following is an advantage of using database systems?	1 Security Enforcement 2 Avoidance of Redundancy 3 Reduced Inconsistency 4 All of these