PROVISIONAL ANSWER KEY

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Question1:-From the given Karnaugh map, which one of the following represents the boolean expression in product-of-sums form ?

A:- $(D + \bar{A} + B)(\bar{D} + A + \bar{B})$

B:- $D\bar{B} + \bar{D}B$

C:- $(D + \bar{B})(\bar{D} + B)$

D:- $A\bar{B} + C\bar{D}$

Correct Answer:- Option-C

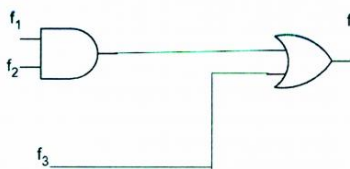Question2:-What is the value of base r if $(121)_r = 144_8$?

A:-7

B:-9

C:-4

D:-3

Correct Answer:- Option-B

Question3:-Given f_1, f_2 and f in canonical sum of products form (decimal notation) for the logic circuit

$f_1 = \Sigma m(8, 9, 10)$
$f_2 = \Sigma m(7, 8, 11, 14, 15)$
$f = \Sigma m(8, 9)$
then, function f_3 is

A:- $\Sigma m(8, 9)$

B:- $\Sigma m(7, 10, 14)$

C:- $\Sigma m(9)$

D:- $\Sigma m(9, 15)$

Correct Answer:- Option-C

Question4:-The dual of the Boolean theorem P.(Q+R)=P.Q+P.R is

A:-P+(Q+R)=P.Q+P.R

B:-P+Q.R = (P+Q)(P+R)

C:-P.(Q+R)=(P+Q)(P+R)

D:-P.R+Q = P+Q

Correct Answer:- Option-B

Question5:-The excess-3 code representation of decimal number 15.46 is

A:-0100 1000 . 0111 1001

B:-1000 0001 . 0101 1100

C:-0010 1010 . 1000 0101

D:-1000 1010 . 0001 0011

Correct Answer:- Option-A

Question6:-Assume that for a certain processor, a read request takes 50 ns on a cache miss and 5 ns on a cache hit. While running a program, it was observed that 80% of the processor's read requests result in a cache hit. The average read access time in nanoseconds is

A:-12

B:-13

C:-14

D:-10

Correct Answer:- Option-C

Question7:-A computer system has a main memory consisting of 1M 16-bit words and a 4K-word cache organized in the block set-associative manner with 4 blocks per set and 64 words per block. The number of bits in each of the Tag, Set and Word fields of main memory address format are

A:-10, 4, 7

B:-11, 4, 7

C:-11, 4, 6

D:-10, 4, 6

Correct Answer:- Option-A

Question8:-A 100KB memory is managed using variable partitions but no compaction. It currently has two partitions of sizes 200 KB and 26 KB respectively. The smallest allocation request in KB that could be denied is for

A:-541

B:-231

C:-151

D:-181

Correct Answer:- Option-B

Question9:-Assume that the time required for the five functional units, which operate in each of the cycles are 10ns, 8ns, 9ns, 10 ns and 7 ns. Find the speed up versus the single cycle data path if the pipelining adds 1ns of overhead.

    A:-4.4

    B:-4.0

    C:-4.1

    D:-6.2

    Correct Answer:- Option-B

Question10:-The stage delays in a 4-stage pipeline are 800, 500, 400 and 300 picoseconds. The first stage with a delay of 800 ps is replaced with a functionality equivalent design involving two stages with respective delays 600 ps and 350 ps. The throughput increase of the pipeline in percent is

    A:-32.35

    B:-30.20

    C:-33.33

    D:-31.25

    Correct Answer:- Option-C

Question11:-The interrupt vector location from which RST 7.5 interrupt in 8085 executes the interrupt service routing.

    A:-0000H

    B:-0075H

    C:-003CH

    D:-0034H

    Correct Answer:- Option-C

Question12:-A small microprocessor's micro instructions has 6 control fields, each one triggering the following number of control lines
Control field   : 1   2   3   4   5   6
Number of Control Lines : 7   4   5   2   1   3
What is the fewest number of control bits required to describe all the control fields ?

    A:-12

    B:-6

    C:-14

    D:-7

    Correct Answer:- Option-C

Question13:-A microprogram control unit is required to generate a total of 25 control signals. Assume that during any microinstruction at most two control signals are active. The minimum number of bits required in the control word to generate the required control signals will be

    A:-12

B:-25

C:-2

D:-10

Correct Answer:- Option-D

Question14:-The interface chip used for data transmission between 8086 and a 16-bit ADC is

A:-8251

B:-8253

C:-8255

D:-8259

Correct Answer:- Option-C

Question15:-The execution time for the instruction, "STA addr" of an 8085 microprocessor with a clock frequency of 3MHz in nano seconds is

A:-3115

B:-4333

C:-3960

D:-3975

Correct Answer:- Option-B

Question16:-Out of the following terms, which is related to polymorphism in Object oriented concepts ?

A:-Dynamic allocation

B:-Static allocation

C:-Dynamic binding

D:-Static typing

Correct Answer:- Option-C

Question17:-The operating system maintains the addresses of each variable as it allocates _____ for them during _____

A:-run time, memory

B:-compile time, space

C:-memory, compile time

D:-memory, run time

Correct Answer:- Option-D

Question18:-What will happen if a List is created as shown below in JAVA :
List 1=new LinkedList ()

A:-compiles and executes

B:-compile time error

C:-run time error

D:-raise an exception

Correct Answer:- Option-B

Question19:-What is the priority assigned to all Java threads by default ?

A:-1

B:-5

C:-10

D:-2

Correct Answer:- Option-B

Question20:-What was the name of the team that developed Java ?

A:-Green Team

B:-Star Seven

C:-Sun Microsystems Team

D:-Java Team

Correct Answer:- Option-A

Question21:-In pass by value, values of actual parameters are copied to the variables in the parameter list of the called function. So

A:-original data in the calling function cannot be changed accidently

B:-original data in the calling function can be changed accidently

C:-original data in the calling function may be changed suddenly

D:-original data in the calling function shall be changed certainly

Correct Answer:- Option-A

Question22:-Which of the following is not the category of the functions in C ?

A:-Functions with no arguments and no return values

B:-Functions with one argument and one return value

C:-Functions with arguments and no return values

D:-Functions with return multiple values

Correct Answer:- Option-B

Question23:-Identify error in the following C program :
#include<stdio.h>
void main(){
  char ch;
  void ASCII(char);
  printf("Enter any character:\n");
  scanf("%c",&ch);
  ASCII(ch);

}
void ASCII(int c){

  printf("The ASCII value of %c is %d",c,c);

}

A:-conflicting types for ASCII function

B:-function name is different than called function

C:-conflict in method names

D:-none of the above

Correct Answer:- Option-A

Question24:-The scope of an automatic variables is within _____ in a C Program.

A:-all the functions

B:-the function where it has been declared

C:-whole program

D:-main function only

Correct Answer:- Option-B

Question25:-A function that calls itself is called

A:-reusable

B:-recallable

C:-recursive

D:-iterative

Correct Answer:- Option-C

Question26:-What is the output of the following python program ?
x='Kerala'
for i in range(len(x)):
   x[i].upper()
print(x)

A:-KERALA

B:-Kerala

C:-KERAL

D:-Type Error

Correct Answer:- Option-B

Question27:-What is the output of the following python program ?
my_tuple=(1,2,3,4)
my_tuple.append((5,6,7))
print(my_tuple)

A:-Name Error

B:-Syntax Error

C:-Attribute Error

D:-1,2,3,4,5,6,7

Correct Answer:- Option-C

Question28:-In python programming, suppose list1 is [1,2,3], what is list1*2 ?

A:-[2,4,6]

B:-[1,2,3,1,3]

C:-[1,2,3,3,2,1]

D:-[1,2,3,1,2,3]

Correct Answer:- Option-D

Question29:-What is the output of the following python program ?
b="Hello World"
print(b[::-1])

A:-Hello World

B:-dlroW olleH

C:-Hello

D:-Synatx Error

Correct Answer:- Option-B

Question30:-What will be the output after executing following python code ?
list1=[1,2,3,'X','Y']
list2=list1+list1
print (list2)

A:-[1,2,3,4]

B:-[1,2,3,'X','Y',1,2,3,'X','Y']

C:-[2,4,6,'2X','2Y']

D:-Error

Correct Answer:- Option-B

Question31:-How many stacks are required to implement a queue ?

A:-1

B:-2

C:-3

D:-cannot implement

Correct Answer:- Option-B

Question32:-Which of the following is/are valid balance factor in AVL tree ?

A:-1

B:-0

C:-−1

D:-All of the above

Correct Answer:- Option-D

Question33:-Which sorting algorithm is best when list is already sorted ?

A:-Insertion Sort

B:-Selection Sort

C:-Merge Sort

D:-Quick Sort

Correct Answer:- Option-A

Question34:-How many stacks are required for evaluation of prefix expression ?

A:-1

B:-2

C:-3

D:-Stack cannot be used to evaluate prefix expression

Correct Answer:- Option-B

Question35:-Which of the following data structure is most appropriate for implementing simple chaining ?

A:-Singly Linked List

B:-Doubly Linked List

C:-Circular Linked List

D:-Binary Tree

Correct Answer:- Option-B

Question36:-Consider following code segment. The time complexity for following code segment will be :
Algorithm Sample :
    Begin
    for i = 1 to n
            for j = i to n
                    A[i][j]=0;
            end for
            End

A:-O(n)

B:-O(n^2)

C:-O(n^3)

D:-O(1)

Correct Answer:- Option-B

Question37:-The minimum number of operations required for the following matrix chain multiplication using dynamic programming:
A(5×10) * B(10×3) * C(3×12) * D(12×5) * E(5×50) * F(50×6)

A:-12010

B:-1950

C:-2010

D:-5000

Correct Answer:- Option-C

Question38:-We have given two sequences X[m] and Y[n] of lengths m and n, respectively with indexes of X and Y starting from 0.

We wish to find the length of the longest common sub-sequence (LCS) of X[m] and Y[n] as c(m,n), where an incomplete recursive definition for the function c(i,j) to compute the length of the LCS of X[m] and Y[n] is given below :
c[i,j]=0, if either i=0 or j=0
    =expr1, if i,j > 0 and X[i−1]=Y[j−1]
    =expr2, if i,j > 0 and X[i−1]≠Y[j−1]
Which one of the following options is correct ?

A:-expr1=0

B:-expr1=1+c[i−1,j]

C:-expr2=max{c[i−1, j−1],c[i+1,j]}

D:-expr2=max{c[i−1, j],c[i,j−1]}

Correct Answer:- Option-D

Question39:-What is true about Greedy Algorithms ?
1. It makes a locally optimal choice in the hope that this choice will lead to a globally optimal solution.
2. Always yield optimal solutions.
3. Generally faster than dynamic programming.

A:-1 only

B:-1 and 2 only

C:-1 and 3 only

D:-All 1, 2 and 3

Correct Answer:- Option-C

Question40:-Which of the following is not example of NP Complete problem ?

A:-Travelling salesperson problem

B:-Halting problem

C:-Subset sum problem

D:-Vertex cover problem

Correct Answer:- Option-B

Question41:-How many tokens are there in the following C programming language statement ?
printf("%d+%d=%d",a,b,c);

A:-18

B:-15

C:-11

D:-20

Correct Answer:- Option-C

Question42:-Which of the following class of automata is used for parsing in a compiler ?

A:-Finite State Automata

B:-Push Down Automata

C:-Linear Bounded Automata

D:-Turing Machines

Correct Answer:- Option-B

Question43:-Which of the following in not used in any compiler optimisation process ?

A:-Dead code elimination

B:-Frequency reduction

C:-Constant Folding

D:-Symbolic execution

Correct Answer:- Option-D

Question44:-Which of the following is not a necessary part of any compiler ?

A:-Abstract Interpretation

B:-Lexical Analysis

C:-Dataflow Analysis

D:-Code generation

Correct Answer:- Option-A

Question45:-Which of the following is not a Regular language ?

A:-$\{x \in \{0, 1\}^*|$ number of 1s in x is even$\}$

B:-$\{x \in \{0, 1\}^*|$ x is the binary representation of a number which is a multiple 3$\}$

C:-$\{x \in \{0, 1\}^*|$ x does not contain consecutive zeros$\}$

D:-None of these

Correct Answer:- Option-D

Question46:-Which of the following language is not closed under complementation ?

A:-Regular

B:-Recursively Enumerable

C:-Recursive

D:-Context Sensitive

Correct Answer:- Option-B

Question47:-Which of the following problem is not decidable ?

A:-Checking whether a Regular language is empty

B:-Checking whether a Context Free language is empty

C:-Checking whether a Context Free language is FULL

D:-Checking whether a given string is a member of a Recursive language

Correct Answer:- Option-C

Question48:-Which of the following is not a deterministic Context Free Language ?

A:-{x ∈ {a,b}*|x is an even length palindrome

B:-{x ∈ {a,b}*| x starts with a and ends with b}

C:-{$a^n b^n$ |n ≥ 0}

D:-{x ∈ {a,b}*| number of a's x=number of b's}

Correct Answer:- Option-A

Question49:-Which of the following is not an application of Myhill Nerode Theorem ?

A:-Checking whether a language is Regular

B:-Checking whether a language is non-Regular

C:-Proving that there exists a deterministic automaton for any language over an alphabet set

D:-None of these

Correct Answer:- Option-D

Question50:-Which of the following is not equivalent in power with a standard (single tape, deterministic) Turing Machine ?

A:-Two-tape Turing Machine

B:-Push Down Automata with an additional stack

C:-Linear Bounded Automata

D:-Nondeterministic Turing Machine

Correct Answer:- Option-C

Question51:-Which of the following is a non-preemptive scheduling algorithm ?

A:-Shortest job first

B:-Round robin

C:-Priority

D:-None of these

Correct Answer:- Option-A

Question52:-When a page fault occurs ?

A:-Page to be accessed is available in the primary storage

B:-Page to be accessed is used in the previous page reference

C:-Page to be accessed is containing an error

D:-None of these

Correct Answer:- Option-D

Question53:-Which one of the following is a command in Unix to find the number of characters in a text file ?

A:-nc

B:-wc

C:-chc

D:-length

Correct Answer:- Option-B

Question54:-Let s be a semaphore to allow only one process to enter a critical section. Then, which of the following is the initial value required for s ?

A:-−1

B:-0

C:-1

D:-True

Correct Answer:- Option-C

Question55:-Which of the following is most desirable in an OS which allows to execute a program whose size is greater than the size of the main memory ?

A:-Virtual memory

B:-Multitasking

C:-Pre-emptive scheduling

D:-None of these

Correct Answer:- Option-A

Question56:-Which of the following can represent the term *attribute* in a relational database ?

A:-Tuple

B:-Row

C:-Column

D:-None of these

Correct Answer:- Option-C

Question57:-Which of the following is a correct about a relational database system ?

A:-BCNF is stronger than 3NF

B:-3NF is stronger than BCNF

C:-BCNF and 3NF are equivalent

D:-None of these

Correct Answer:- Option-A

Question58:-Which one of the following is the most typical database normal form used in practise ?

A:-2NF

B:-3NF

C:-4NF

D:-5NF

Correct Answer:- Option-B

Question59:-Which of the following is most correct about *views* in database ?

A:-Useful to reduce redundancy

B:-Used to maintain consistency

C:-Used to minimise memory requirement

D:-Used to hide unnecessary attributes

Correct Answer:- Option-D

Question60:-Which of the following is not correct about a partial order relation ?

A:-Reflexive

B:-Symmetric

C:-Transitive

D:-Antisymmetric

Correct Answer:- Option-B

Question61:-Let a and b are two Natural numbers such that : $a <= 100$, $b <= 100$ and $a > b$. Consider an equivalence relation which relates a and b when $a - b$ is divisible by 13. Then, how many equivalence classes are induced by this relation ?

A:-10000

B:-10201

C:-2

D:-None of these

Correct Answer:- Option-D

Question62:-Let A and B be two sets with cardinalities m and n respectively. Then, how many functions are possible from A to B ?

A:-n^m

B:-m^n

C:-n·m

D:-None of these

Correct Answer:- Option-A

Question63:-Which of the following is not correct about software testing ?

A:-It is a technique for proving the presence of bugs in a software

B:-It is a technique for proving the absence of bugs in a software

C:-It can be performed without running the executable version of the software

D:-None of these

Correct Answer:- Option-B

Question64:-Which of the following is a functional requirement of a software ?

A:-Efficiency

B:-Availability

C:-Correctness

D:-Both A and B

Correct Answer:- Option-C

Question65:-Which of the following situation demands prototyping model of software development ?

A:-Requirements are well defined

B:-Requirements are not clearly defined

C:-Requirements are formally stated

D:-None of these

Correct Answer:- Option-B

Question66:-A packet arrrives with destination address 135.46.52.2. The router has the following (CIDR) entries in its rounting table :

Address/mark	Next hop
135.46.56.0/22	Interface 0
135.46.60.0/22	Interface 1
192.53.40.0/23	Router 1
default	Router 2

The packet will be routed to :

A:-Interface 0

B:-Interface 1

C:-Router 1

D:-Router 2

Correct Answer:- Option-D

Question67:-A channel has a bit rate of 4 kbps and a propagation delay of 20 msec. The minimum frame size to achieve at least 50% efficiency in stop-and-wait protocol

A:-80 bits

B:-120 bits

C:-160 bits

D:-240 bits

Correct Answer:- Option-C

Question68:-Following figure shows the process of TCP connection establishment in simultaneous connection establishment on both sides.
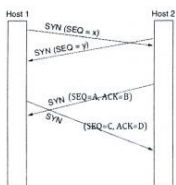
Which of the following is true ?

A:-A=B=x and C=D=x+1

B:-A=y, B=x and C=x, D=y

C:-A=y, B=x+1 and C=x, D=y+1

D:-A=y+1, B=x and C=x+1, D=y

Correct Answer:- Option-C

Question69:-The purpose of ARP is to resolve :

A:-IP Address to hostname

B:-IP Address to MAC Address

C:-Host name to IP Address

D:-MAC Address to IP Address

Correct Answer:- Option-B

Question70:-Which of the following is true about dynamic IP address assignment by DHCP to a host ?

A:-Addresses are allocated after a negotiation between the server and the host to determine the length of the agreement.

B:-Addresses are leased to the host. A host will usually keep the same address by periodically contacting the DHCP server to renew the lease.

C:-Addresses are assigned for a fixed period. At the end of the period, a new quest for an address must be made and another address is then assigned.

D:-Addresses are permanently assigned so that the host uses the same address at all times.

Correct Answer:- Option-B

Question71:-Which statement(s) about IPv4 and IPv6 addresses are true ?
1. An IPv6 address is 32 bits long, represented in decimal.
2. An IPv6 address is 128 bits long, represented in hexadecimal.
3. An IPv6 does not support stateless address auto configuration.
4. IPv6 doesn't allow routers to fragment packets.

A:-1 and 2 only

B:-1, 2 and 3 only

C:-1, 2 and 4 only

D:-All of the above

Correct Answer:- Option-D

Question72:-Which of the following is not an advantages of link state routing over distance vector routing ?

A:-easy to configure

B:-faster convergence

C:-designed to operate for enterprise network

D:-event driven updates

Correct Answer:- Option-A

Question73:-The principal of Non-repudiation ensures

A:-Confidentiality of message

B:-Message is not altered while in transit between communicating partners

C:-Proves that nobody but on only sender could have sent a particular

message

D:-All of above

Correct Answer:- Option-C

Question74:-AES uses a _____ bit block size and a key size of _____ bits.

A:-128; 128 or 256

B:-64; 128 or 192

C:-256; 128, 192 or 256

D:-128; 128, 192 or 256

Correct Answer:- Option-D

Question75:-Which of the following is not true about Digital Signature Algorithm (DSA) ?

A:-It is based on the difficulty of computing discrete logarithms.

B:-It is used for encryption and key exchange.

C:-It makes use of the Secure Hash Algorithm (SHA).

D:-It was published by National Institute of Standards and Technology (NIST).

Correct Answer:- Option-B

Question76:-Using the RSA with p=3, q=1 and e=7. Encrypt message=2 to find ciphertext. Ciphertext will be :

A:-29

B:-33

C:-39

D:-23

Correct Answer:- Option-A

Question77:-Which of the following is not included in IP security ?

A:-Authentication Header

B:-Encapsulating Security Payload

C:-Multi-Protocol Support

D:-Internet key Exchange

Correct Answer:- Option-C

Question78:-A proxy firewall filters at

A:-Network Layer

B:-Data Link Layer

C:-Transport Layer

D:-Application Layer

Correct Answer:- Option-D

Question79:-Which of the following is not an example of cyber-attack ?

A:-SQL Injection

B:-Phishing

C:-Hashing

D:-Denial of Service

Correct Answer:- Option-C

Question80:-Which of the following defines how a web server communicates with external applications ?

A:-HTTP

B:-CGI

C:-SMTP

D:-TCP/IP

Correct Answer:- Option-B

Question81:-Which tag allows you to add a row in the tables ?

A:-<td>

B:-<th>

C:-<ch>

D:-<tr>

Correct Answer:- Option-D

Question82:-In CSS, how do you display a border like this ?
top border = 10 pixels, bottom border = 5 pixels, left border = 20 pixels, right border = 1 pixel

A:-border-width:10px 1px 5 px 20px

B:-border-width:10px 5px 20px 1px

C:-border-width:5px 20px 10px 1px

D:-border-width:10px 20px 5px 1px

Correct Answer:- Option-A

Question83:-Which of the following represents a positive look ahead regular expression ?

A:-X(?!Y)

B:-X(?=Y)

C:-X(?|=Y)

D:-X(?==Y)

Correct Answer:- Option-B

Question84:-Which method is used to parse an XML document ?

A:-parse()

B:-doParse()

C:-parseXML()

D:-parseXMLDoc()

Correct Answer:- Option-A

Question85:-What is the use of controller in mvc ?

A:-It is responsible for controlling the flow of application.

B:-It is responsible for controlling the way that a user interacts with an MVC application.

C:-A controller determines what response to send back to a user when a user makes a browser request

D:-All of above

Correct Answer:- Option-D

Question86:-In machine learning, the process of adding labels to the data is referred as

A:-Transfer Learning

B:-Unsupervised Learning

C:-Supervised Learning

D:-Reinforcement Learning

Correct Answer:- Option-B

Question87:-Reinforcement learning system learns through

A:-Trial and Error

B:-Labelled Data

C:-Association Rule Mining

D:-Regression

Correct Answer:- Option-A

Question88:-Following essentials are involved in Principal Components Analysis (PCA)

A:-Covariance matrix

B:-Eigenvectors

C:-Eigenvalues

D:-All of the above

Correct Answer:- Option-D

Question89:-The ratio of correctly predicted labels and the total number of predicted labels is termed as

A:-Accuracy

B:-Precision

C:-F1-Score

D:-Exact match ratio

Correct Answer:- Option-B

Question90:-Principal Components Analysis (PCA) is used for

A:-Dimensionality Reduction

B:-Cross Validation

C:-Loss estimation

D:-Measuring performance of a classifier

Correct Answer:- Option-A

Question91:-Y=Xb + e
This equation represents

A:-Gaussian Mixture Model

B:-Expectation-Maximization

C:-Moments

D:-Linear Model

Correct Answer:- Option-D

Question92:-Following can be the kernel functions for a Support Vector Machine (SVM) classifier

A:-Gaussian

B:-Radial basis function

C:-Linear

D:-All of the above

Correct Answer:- Option-D

Question93:-_____ are used to model situations where all the information of the system necessary to predict the future can be encoded in the current state.

A:-Support vector machine (SVM)

B:-k-mean clusters

C:-Markov chain

D:-None of the above

Correct Answer:- Option-C

Question94:-Average pairwise misranking is plotted in

A:-Recall

B:-Area under the ROC curve

C:-False positive rate

D:-True negative rate

Correct Answer:- Option-B

Question95:-The area under an ROC curve (AUC) is

A:-Equivalent to Wilcoxon-Mann-Whitney statistic

B:-Closely related to the Gini index

C:-Both 1 and 2

D:-None of the above

Correct Answer:- Option-C

Question96:-Support vector machine (SVM) algorithm solves

A:-Convex optimization problem

B:-Local minima

C:-Global minima

D:-Entropy Maximization

Correct Answer:- Option-A

Question97:-Boosting techniques is used to make a weak learning algorithm strong.

A:-True

B:-False

C:-True only for classification algorithms

D:-True only for un-supervised learning algorithms

Correct Answer:- Option-A

Question98:-The idea of trying to use a large unlabeled data set U to augment a given labeled data set L in order to produce more accurate rules than would have been achieved using just L alone is referred as

A:-Forced learning

B:-Regression

C:-Semi-supervised learning

D:-Un-supervised learning

Correct Answer:- Option-C

Question99:-Which of the following is a heuristic for k-means clustering algorithm ?

A:-Ward's algorithm

B:-Lloyd's algorithm

C:-Both 1 and 2

D:-None of the above

Correct Answer:- Option-C

Question100:-The "Q Function" is used in

A:-Supervised learning

B:-Un-supervised learning

C:-Reinforcement learning

D:-All of the above

Correct Answer:- Option-C