KVS/NVS PGT Computer Science SOLVED PAPER & PRACTICE BOOK

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CONTENT

PRACTICE BOOK

Syllabus PGT Computer Science

Subject specific syllabus includes the concepts of NCERT/CBSE syllabus and Text Books (Classes XI & XII), however, the questions will be testing the depth of understanding and application of these concepts at the level of Graduation.

Computer Systems and Organisation

- Basic Computer Organisation : Introduction to computer system, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (Bit, Byte, KB, MB, GB, TB, PB)
- Types of software: system software (operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler & interpreter), application software
- Operating system (OS): functions of operating system, OS user interface
- Boolean logic: NOT, AND, OR, NAND, NOR, XOR, truth table, De Morgan's laws and logic circuits
- Number system: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems.
- Encoding schemes: ASCII, ISCII and UNICODE (UTF8, UTF 32)

Computational Thinking and Programming

- Introduction to problem solving: Steps for problem solving (analysing the problem, developing an algorithm, coding, testing and debugging) representation of algorithms using flow chart and pesudo code, decompostion
- Familiarization with the basics of Python programming: Introduction to Python, features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode, Python character set, Python tokens (keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments
- Knowledge of data types: number (integer, floating point, complex), boolean, sequence (string, list, tuple), none, mapping (dictionary), mutable and immutable data types
- Operators: arithmetic operators, relational operators, logical operators, assignment operators, augmented assignment operators, identity operators (is, is not), membership operators (in, not in)
- Expressions, statement, type conversion & input/output: precedence of operators, expression, evaluation of expression, python statement, type conversion (explicit & implicit conversion), accepting data as input from the console and displaying output
- Errors: syntax errors, logical errors, runtime errors
- Flow of control: introduction, use of indentation, sequential flow, conditional and iterative flow control
- Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number
- Iterative statements: for loop, range function, while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number etc.
- Strings: introduction, indexing, string operations (concatenation, repetition, membership & slicing), traversing a string using loops, built-in functions: len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()
- Lists: introduction, indexing, list operations (concatenation, repetition, membership & slicing), traversing a list using loops, built-in functions: len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list
- Tuples: introduction, indexing, tuple operations (concatenation, repetition, membership & slicing), built-in functions, len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple, suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear search on a tuple of numbers, counting the frequency of elements in a tuple
- Dictionary: introduction, accessing items in a dictionary using keys, mutability of dictionary (adding a new item, modifying an existing item), traversing a dictionary, built-in functions: len, dict(), keys(), values(), items(), get(), update(), del(), clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), count(), sorted(), copy(); suggested programs : count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them
- Introduction of Python modules: Importing module using 'import' and using from statement, Importing math module (pi, e, sqrt, ceil, floor, pow, fabs, sin, cos, tan); random module (random, randint, randrange), statistics module (mean, median, mode)

Society, Law and Ethics

- Digital Footprints
- Digital society and Netizen: net etiquettes, communication etiquettes, social media etiquettes
- Data protection: Intellectual Property Right (copyright, patent, trademark), violation of IPR (plagiarism, copyright infringement, trademark infringement), open source softwares and licensing (Creative Commons, GPL and Apache)
- Cyber-crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, preventing cyber crime
- Cyber safety: safely browsing the web, identity protection, confidentially, cyber trolls and bullying.
- Safely accessing web sites: malware, viruses, trojans, adware
- E-waste management: proper disposal of used electronic gadgets
- Indian Information Technology Act (IT Act)
- Technology & Society: Gender and disability issues while teaching and using computers

Computational Thinking and Programming - 2

- Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, function returning value(s), flow of execution, scope of a variable (global scope, local scope)
- Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths
- Text file: opening a text file, text file open modes (r, r^+, w, w^+, a, a^+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file
- Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() an load() method, read, write/create, search, append and update operations in binary file
- CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader()

Computer Networks

- Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET)

- Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth), data transfer rate), IP address, switching techniques (Circuit switching, Packet switching)
- Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves)
- Network devices (Modem, Ethernet car, RJ45, Repeater, Hub, Switch, Router, Gateway WIFI card)
- Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree)
- Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL
- Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting

Database Management

- Database concepts: introduction to database concepts and its need
- Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key)
- Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and natural join
- Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), rowcount, creating database connectivity applications

Introduction to Computer System

- Introduction to computers and computing: evolution of computing devices, components of a computer system and their interconnections, Input/Output devices.
- Computer Memory: Units of memory, types of memory - primary and secondary, data deletion, its recovery and related security concerns. Software: purpose and types - system and application software, generic and specific purpose software.

Introduction to Python

- Basics of Python programming, Python interpreter - interactive and script mode, the structure of a program, indentation, identifiers, keywords, constants, variables, types of operators, precedence of operators, data types, mutable and immutable data types, statements, expressions, evaluation of expressions, comments, input and output statements, data type conversion, debugging, control statements: if-else, for loop Lists: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions: len(), list(), append(), extend(), insert(), count(), find(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum()
- Dictionary: concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions: len(), dict(), keys(), values(), items(), get(), update(), clear(), del()

Database concepts and the Structured Query Language

- Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data model: concept of attribute, domain, tuple, relation, candidate key, primary key, alternate key, foreign key.
- Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL, Data Types
- Definition Commands: CREATE TABLE
- Data Query Commands: SELECT-FROM-WHERE
- Data Manipulation Commands: INSERT

Emerging Trends

Artificial Intelligence, Machine Learning, natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors, Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology.

Data Handling using Pandas

- Introduction to Python libraries - Pandas, Matplotlib.
- Data structures in Pandas - Series and Data Frames.
- Series: Creation of Series from - ndarray, dictionary, scalar value; mathematical operations; Head and Tail functions; Selection, Indexing and Slicing.
- Data Frames: creation - from dictionary of Series, list of dictionaries, Text/CSV files; display; iteration; Operations on rows and columns: add, select, delete, rename; Head and Tail functions; Indexing using Labels, Boolean Indexing;
- Importing/Exporting Data between CSV files and Data Frames.
- Data Visualization Purpose of plotting; drawing and saving following types of plots using Matplotlib - line plot, bar graph, histogram Customizing plots: adding label, title, and legend in plots

Database Query using SQL

- Math functions: POWER (), ROUND (), MOD().
- Text functions: UCASE ()/UPPER (), LCASE ()/LOWER (), MID ()/SUBSTRING ()/SUBSTR (), LENGTH (), LEFT (), RIGHT (), INSTR (), LTRIM (), RTRIM (), TRIM ().
- Date Functions: NOW (), DATE(), MONTH (), MONTHNAME (), YEAR (), DAY (), DAYNAME ().
- Aggregate Functions: MAX (), MIN (), AVG (), SUM (), COUNT (); using COUNT (*).
- Querying and manipulating data using Group by, Having, Order by.

Introduction to Computer Networks

- Introduction to networks, Types of network: LAN, MAN, WAN.
- Network Devices: modem, hub, switch, repeater, router, gateway
- Network Topologies: Star, Bus, Tree, Mesh.
- Introduction to Internet, URL, WWW, and its applications- Web, email, Chat, VoIP.
- Website: Introduction, difference between a website and webpage, static vs dynamic web page, web server and hosting of a website.
- Web Browsers: Introduction, commonly used browsers, browser settings, add-ons and plug-ins, cookies.

Societal Impacts

- Digital footprint, net and communication etiquettes, data protection, intellectual property rights (IPR), plagiarism, licensing and copyright, free and open source software (FOSS), cybercrime and cyber laws, hacking, phishing, cyber bullying, overview of Indian IT Act.
- E-waste: hazards and management.
- Awareness about health concerns related to the usage of technology.

KENDRIYA VIDHYALAYA SANGATHAN PGT, 2018
Computer Science
Solved Paper with Explanation

71. Which of the following is correct?
निम्नलिखित में से कौन-सा कथन सत्य है?

(a) In asymmetric multiprocessing, the processors are peers./असिमिट्रिक मल्टी-प्रोसेसिंग में प्रोसेसर पीयर्स हैं।

(b) In symmetric multiprocessing, the processors are placed symmetrically on the mother board./सिमिट्रिक मल्टी-प्रोससिंग में, प्रोसेसर मदरबोर्ड पर सिमिट्रिकली रखे जाते हैं।

(c) Clustered systems are used for high performance computing./उच्च निष्पादन कम्प्यूटिंग के लिए क्लस्टर्ड सिस्टम का उपयोग किया जाता है।

(d) All multiprocessor systems are multicore systems./सभी मल्टी-प्रोसेसर सिस्टम मल्टी-कोर सिस्टम होते हैं।

Ans. (c) : The clustered systems are a combination of hardware clusters and software clusters. The hardware clusters help in sharing of high performance disks between the systems. The software clusters makes all the systems work together. So, clustered systems are used for high performance computing.

72. How many characters per second (7 bits + 1 parity) can be transmitted over a 2400 bps line if the transfer is asynchronous (1 start and 1 stop bit)?
(7 बीट्स + 1 पेरिटि) 2400 बी.पी.एस. लाइन पर सेकंड कितने कैरेक्टर्स संचारित किए जा सकते हैं अंतरण अतुल्यकाली (एसिंक्रोनस) हो (1 प्रारंभ और 1 समाप्त बिट)?

(a) 240 (b) 250
(c) 275 (d) 300

Ans. (a) : For the asynchronous, bits are included (start and stop bits) to the total number of bits in each character.
Total number of characters per second = 7 + 1 + 1 +1
= 10 bits
Band width = 2400 bits per second
Number of characters to be transmitted = $\frac{2400}{10}$
= 240 character per second

73. Which of the following are language processors?
निम्नलिखित में से कौन-से लैंग्वेज प्रोसेसर है?

(a) Assembler and Editor/असेम्बलर तथा एडिटर

(b) Compiler and Word Processor/कम्पाइलर तथा वर्ड प्रोसेसर

(c) Only Assembler and Compiler/केवल असेम्बलर तथा कम्पाइलर

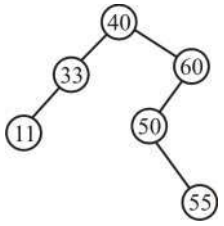
(d) Assembler, Compiler and Interpreter/असेम्बलर, कम्पाइलर तथा इंटरप्रेटर

Ans. (d) : A language processor is a special type of software program that has the potential to translate the program codes into machine codes, there are 3 types of language processors
1. Assembler
2. Compiler
3. Interpreter

74. Following numbers (items) are inserted in order into binary search tree.
40, 60, 50, 33, 55, 11
Then the number of items in left and right sub trees of the root are _____.
निम्नलिखित संख्याएँ (मदें) बाइनरी सर्च ट्री में इस क्रम से डाली गई हैं।
40, 60, 50, 33, 55, 11
तो रूट के बाएँ तथा दाएँ सब-ट्री में मदों की संख्या _____ होगी।

(a) (3, 3) (b) (2, 3)
(c) (3, 2) (d) (2, 4)

Ans. (b) : Binary search Tree (BST) is a rooted binary tree data structure with the key of each internal node being greater than all the keys in the respective node's left subtree and less than the ones in its right subtree
Given items:- 40, 60, 50, 33, 55, 11
So, In order binary search tree-



So, 40 is the root of this binary search tree the number of items in left subtree is 2 (11, 33) and number of items in Right subtree is 3 (60, 50, 55)

75. MPEG involves both spatial compression and temporal compression. The spatial compression is similar to JPEG and temporal compression removes _____ frames.

MPEG में स्पेशल कम्प्रैशन तथा टेम्पोरल कम्प्रैशन दोनों शामिल होते हैं। स्पेशल कम्प्रैशन JPEG के समान होता है तथा टैम्पोरल कम्प्रैशन _____ फ्रेम को हटाता है।

(a) Voice/वॉयस (b) Spatial/स्पेशल

(c) Temporal/टेम्पोरल (d) Redundant/रिडन्डैन्ट

Ans. (d) : MPEG involves both spatial compression and temporal compression. The spatial compression is similar to JPEG and temporal compression removes Redundant frames. A redundant frame is also called an imperfect frame.

76. _____ variables are not reinitialized each times Visual Basic invokes a procedure and thus retains or preserves value even when a procedure ends.

प्रत्येक बार जब भी विजुअल बेसिक किसी प्रक्रिया को सक्रिय करता है, _____ चर पुनर्प्रवर्तित नहीं होते और इस प्रकार प्रक्रिया के समाप्त होने पर भी मान को सुरक्षित रखते हैं।

(a) Static/स्टैटिक (b) Dynamic/डायनैमिक

(c) Virtual/वर्चुअल (d) Private/प्राइवेट

Ans. (a) : Static variables are not reinitialized each time visual Basic invokes a procedure and thus retains or preserves value even when a procedure ends. A static variables continues to exist and retains its most recent value.

77. When a circular queue is implemented in an array, then which of the following condition holds when there is only one element in the queue?

यदि किसी ऐरे में सर्कुलर क्यू क्रियान्वित की जाती है, तो क्यू में केवल अवयव के होने की स्थिति में निम्नलिखित में कौन सी शर्त बनी रहेगी?

(a) Front = Rear = null

(b) Front = Rear ≠ null

(c) Front = Rear + 1

(d) Front = Rear – 1

Ans. (b) : A circular queue is similar to a linear queue as it is also based on the FIFO (first in first out) principle except that the last position is connected to the first position in a circular queue that forms a circle.

Circular queue is implemented in an array a circular queue will be full when front = – 1 and Rear = max – 1,and when there is only one element in the queue then the condition is front = Rear ≠ Null.

78. How many gate(s) would be required to implement the following Boolean expression after simplification?

सरलीकरण के पश्चात् निम्नलिखित बूलीय व्यंजक को क्रियान्वित करने के लिए कितने गेट की आवश्यकता होगी?

Expression:

$$\overline{A}\left(\overline{C}\overline{D}+\overline{C}D\right)+AB\left(\overline{C}\overline{D}+\overline{C}D\right)+A\overline{B}\overline{C}$$

(a) 1 (b) 2

(c) 3 (d) 4

Ans. (a) : Given Boolean expression-

$$= \overline{A}(\overline{C}\,\overline{D}+\overline{C}D)+AB(\overline{C}\,\overline{D}+\overline{C}D)+A\overline{B}\overline{C}$$

$$= \overline{A}\overline{C}(\overline{D}+D)+AB\overline{C}(\overline{D}+D)+A\overline{B}\overline{C}$$

$$\left(\because\ \overline{D}+D=1\right)$$

$$= \overline{A}\overline{C}+AB\overline{C}+A\overline{B}\overline{C}$$

$$= \overline{A}\overline{C}+A\overline{C}\left(B+\overline{B}\right)$$

$$= \overline{C}\left(A+\overline{A}\right)$$

$$= \overline{C}$$

Therefore, only one NOT gate is enough to represent the given Boolean expression.

79. Given below are several usages of the anchor tag in HTML.

नीचे HTML में anchor टैग के अनेक उपयोग हैं:

(A) <A href = "http://w3c.org/test/html">Test </A>

(B) <A href = "/HTML/test.html">Test</A>

(C) <A href = "test.html">Test</A>

(D) <A href = "test.html#top">Test</A>

Which of the above are valid?

उपरोक्त में से कौन-सा वैध है?

(a) (A) and (B) only/केवल (A) तथा (B)

(b) (A), (B) and (C) only/केवल (A), (B) तथा (C)

(c) (B), (C) and (D) only/केवल (B), (C) तथा (D)

(d) (A), (B), (C) and (D)/(A), (B), (C) तथा (D)

Ans. (d) : The < a > tag (anchor tag) in HTML is used to create a hyperlink on the webpage. This hyperlink is used to link the webpage to other webpage or some

section of the same webpage. It is either used to provide an absolute reference or a relative reference as its "href" value.

Syntax:

< a href = "link" > Link Name < /a >

So, the given, all anchor tag usages in HTML are valid.

80. Parent class of all Java classes is _____.
सभी जावा क्लासों की पैरेंट क्लास क्या है?

(a) Java.lang.system
(b) Java.lang.object
(c) Java.lang.class
(d) Java.lang.reflect.object

Ans. (b) : The object class (Java.lang.object) is the parent class of all the classes in Java by default. In other words, it is the topmost class of Java. The java.lang.object class is the root of the class hierarchy. All objects, including arrays, implement the methods of this class.

81. Von Neumann computer architecture is ____.
वॉन न्यूमैन कम्प्यूटर आर्किटेक्चर किस प्रकार का है।

(a) SISD (b) SIMD
(c) MIMD (d) MISD

Ans. (a) : Von-Neumann proposed his computer architecture design in 1945 which was later known as Von-Neumann Architecture. It consisted of a Control Unit, Arithmetic, and Logical Memory Unit (ALU), Registers and Inputs/Outputs, Von-Neumann architecture is based on the stored program computer concept, where instruction data and program data are stored in the same memory. Von-Neumann computer architecture is SISD. SISD stands for Single Instruction, Signal Data.

82. Which of the following is/are wrong?
निम्नलिखित में से कौन-सा/कौन-से कथन गलत है।

(A) RAM and ROM are volatile memories,
RAM तथा ROM वोलेटाइल मेमोरी हैं।

(B) ROMs, PROMs and EPROMs are non-volatile memories.
ROMs, PROMs तथा EPROMs नॉन-वोलेटाइल मेमोरी हैं।

(C) RAM and Dynamic RAM are same.
RAM तथा डायनैमिक RAM समान हैं।

(D) A Random Access Memory (RAM) is a read write memory.
रैंडम एक्सेस मेमोरी (RAM) रीड राइट मेमोरी

(a) (A) and (B)/(A) तथा (B)
(b) (A) and (C)/(A) तथा (C)
(c) (A) and (D)/(A) तथा (D)
(d) (C) and (D)/(C) तथा (D)

Ans. (b) : RAM: RAM is also called read write memory or the primary memory. It is a volatile memory as the data is lost when the power is turned off. RAM is further classified into two types, static RAM and Dynamic RAM.

ROM: ROM is non-volatile memories ROM is further classified into four types- M ROM, PROM EPROM and EEPROM, which are also non-volatile memories.

83. The elements of the triangular array are stored as a vector in the order A[1, 1], A[2, 1], A[2, 2], A[3, 1], A[3, 2], A[3, 3] ..... A[n, n].
Assuming that A[1, 1] is stored at location 1, addressing function for A[i, j] is given by:
त्रिभुजीय ऐरे को अवयव निम्नलिखित क्रम में वेक्टर के तौर पर स्टोर किए गए है।
A[1, 1], A[2, 1], A[2, 2], A[3, 1], A[3, 2], A[3, 3] ..... A[n, n].
मान लीजिए की A[1, 1] लोकेशन 1 पर स्टोर किया गया है, तो A[i, j] के लिए एड्रेसिंग फंक्शन किससे प्राप्त होगा?

(a) $\frac{(i-1)}{2}+j$ (b) $\frac{(i-1)*i}{2}+j$

(c) $\frac{i\times i}{2}+j$ (d) $\frac{(i*j-1)}{2}$

Ans. (b) : Matrix is shown as:

A_{11}	A_{12}	A_{13}	A_{14}
A_{21}	A_{22}	A_{23}	A_{24}
A_{31}	A_{32}	A_{33}	A_{34}
A_{41}	A_{42}	A_{43}	A_{44}

Let us consider only the lower triangular matrix value from the above matrix.

A [1, 1]

A [2, 1], A[2, 2]

A [3, 1], A[3, 2], A[3, 3]

…….....A [n, n]

Assuming that A[1,1] is stored at location 1, addressing function for A [i, j]–

Using the formual–

$$= \frac{(i-1)*i}{2} + j$$

$$= \frac{(1-1)*i}{2} + 1 \qquad (\because i = 1, j = 1)$$

$$= 1$$

Hence, the memory location of A [1,1] = 1

84. Consider the code segment written below in C++ :

C++ में नीचे लिखे गए कोड खंड पर विचार कीजिए:

```
if (count < 10)//if#1
  if ((count%4) ==2)//if#2
        cout<<" condition;white/n";
  else//(Indentation is wrong)
  cout<<" condition is:tan/n";
```

There are 2 if statements and one else.

To which if, the else statement belong?

दो if स्टेटमेंट हैं तथा एक else स्टेटमेंट है। कौन से if से else स्टेटमेंट संबंधित है?

(a) It belongs to if # 1/यह if # 1 से संबंधित है।

(b) It belongs to if # 2/यह if # 2 से संबंधित है।

(c) It belongs to both the if statements./यह दोनों if स्टेटमेंट से संबंधित है।

(d) It is independent./यह स्वतंत्र है।

Ans. (b) : There are two if statements (if # 1, if # 2) and one else, then else belongs to if # 2 because-

suppose, count = 8

then if # 1

if (8 < 10) is true

if # 2

if (8 % 4 = = 2) is false then it will related with the else statements.

85. Run-time polymorphism is achieved by _____.

रन-टाइम पॉलीमॉर्फ़िज़्म किससे प्राप्त किया जाता है?

(a) friend function/फ्रैंड फंक्शन

(b) virtual function/वर्चुअल फंक्शन

(c) operator overloading/ऑपरेटर ओवरलोडिंग

(d) function overloading/फंक्शन ओवरलोडिंग

Ans. (b) : A virtual function is a member function which is declared within a base class and is re-defined by a derived class. Virtual functions are maily used to achieve Run-time polymorphism.

86. Hardware mechanism that enables a device to notify the CPU is called:

वह हार्डवेयर मैकेनिज्म, जो कि किसी यंत्र को CPU को सूचित करने में सक्षम बनाती है, _____ है।

(a) busy-waiting (b) interrupt

(c) polling (d) DMA

Ans. (b) : Hardware mechanism that enables a device to notify the CPU is called interrupt The CPU hardware has a wire called the interrupt request line that the CPU senses after executing every instruction.

87. Usually pure virtual function _____.

आमतौर पर प्योर वर्चुअल फंक्शन _____

(a) has complete function body/संपूर्ण फंक्शन निकाय होता है

(b) will never be called/को कभी कॉल नहीं किया जाएगा

(c) will be called only to delete an object/केवल किसी ऑब्जेक्ट को डिलीट करने के लिए कॉल किया जाएगा।

(d) is defined only in derived class/केवल डेराइव्ड क्लास में परिभाषित किया जाता है।

Ans. (d) : Usually pure virtual function is defined only in derived class. Virtual functions ensure that the correct function is called for an object, regardless of the type of reference used for function call.

88. For which of the following tasks, stack is not a suitable data structure?

निम्नलिखित में से कौन से कार्यों के लिए स्टैक डाटा संरचना नहीं है?

(A) Binary search in an array/किसी ऐरे में बाइनरी सर्च

(B) Breadth first search/ब्रेड्थ फर्स्ट सर्च

(C) Implementing function calls/इम्प्लीमेंटिंग फंक्शन कॉल्स

(D) Process scheduling/प्रोसेस शेड्यूलिंग

(a) (B) and (D)/(B) तथा (D)

(b) (B) and (C)/(B) तथा (C)

(c) (A) and (C)/(A) तथा (C)

(d) (C) and (D)/(C) तथा (D)

Ans. (a) : Breadth first search (BFS) is an algorithm for searching a tree data structure for a node that satisfies a given property. It starts at the tree root and explores all nodes at the present depth prior to moving on to the

nodes at the next depth level. Extra memory, usually a queue, is needed to keep track of the child nodes that were encountered but not yet explored.

Process scheduling is implemented using the queue data structure. Ready queue is maintained for the processes which are ready for the execution.

89. Action implementing instruction's meaning are actually carried out by _____.
एक्शन इम्प्लीमेंटिंग इंस्ट्रक्शंस का अर्थ वास्तव में किसके द्वारा वहन किया जाता है?

(a) Instruction fetch
इंस्ट्रक्शन फैच

(b) Instruction decode
इंस्ट्रक्शन डीकोड

(c) Instruction execution
इंस्ट्रक्शन एक्जीक्यूशन

(d) Instruction program
इंस्ट्रक्शन प्रोग्राम

Ans. (c) : Action implementing instructions meaning are actually carried out by Instruction execution As instruction are a part of program which are stored inside the memory, so every time the processor requires to execute an instruction, for that the processor first fetches the instruction from the memory, then decodes the instruction and then executes the instruction.

90. The operation executed on data stored in registers is called _____.
रजिस्टरों में स्टोर किए गए डाटा पर ऑपरेशन निष्पादित करना क्या कहलाता है?

(a) Macro-operation/मेक्रो ऑपरेशन

(b) Micro operation/माइक्रो ऑपरेशन

(c) Bit-operation/बिट ऑपरेशन

(d) Byte operation/बाइट ऑपरेशन

Ans. (b): The operation executed on data stored in registers in called Micro operation. Micro operations are the functional or atomic, operations of a processor, These are low level instructions used in some designs to implement complex machine instructions.

91. In VB, to change the size of a dynamic array, _____ is used at the point in the code where you want it to change.
VB में किसी डायनैमिक एरे के आकार को बढ़ाने के लिए कोड के उस पॉइंट पर _____ का उपयोग किया जाता है जहाँ आप इसे बदलना चाहते हैं।

(a) Dim (b) Redim
(c) Chdim (d) Bydim

Ans. (b): The 'ReDim' statement is used to size or resize a dynamic array that has already been formally declared by using a private, Public or Dim statement with empty parentheses, 'redim' is used at the point in the code where you want it to change.

92. The producer and Consumer processes share the following Variables:
प्रोड्यूसर तथा कंज्यूमर प्रोसेस निम्नलिखित चरों को साझा करते हैं:

int n,
Semaphore M = 1
Semaphore E = n
Semaphore F = 0

The consumer process must execute _____ and _____ before removing an item from buffer.
कंज्यूमर प्रोसेस को किसी मद को बफर से हटाने से पहले _____ तथा _____ को निष्पादित करना होगा।

(a) signal (M), signal (F)
(b) signal (M), wait (F)
(c) signal (F), wait (M)
(d) wait (F), wait (M)

Ans. (d) : We assume that the pool consists of n buffers, each capable of holding one item, The mutex (M) semaphore provides mutual exclusion for accesses the buffer pool and a initialized to the value 1. The empty (E) and full (F) semaphores count the number of empty and full buffers. The semaphore empty is initialized to the value n, the semaphore full is initialized to the value 0.

The code for the consumer process is

```
do {
        wait (full);
        wait (mutex);
        /*remove an item from buffer to next-consumed*/
        signal (mutex);
        Signal (empty);
/* consume the item in next-consumed */
        } while (true);
```

So, the consumer process must execute wait (F) and wait (M) before removing an item from buffer.

93. The function setcookie ( ) is used to _____.
setcookie ( ) फंक्शन का उपयोग किसके लिए है?

(a) Enable or disable cookie support/cookie सपोर्ट को सक्रिय या निष्क्रिय के लिए

(b) Declare cookie variables/cookie चरों की घोषणा के लिए

(c) Store data in cookie variable/cookie चरों में डाटा स्टोर करने के लिए

(d) Clear data from cookie variables/cookie चरों से डाटा हटाने के लिए

Ans. (c) : The function setcookie ( ) is used to store data in cooke variables. The setcookie ( ) function defines a cookie to be sent along with the rest of the HTTP headers. A cookie is often used to identify a user. A cookie is a small file that the server embeds on the user's computer, Each time the same, computer requests a page with a browser, it will sent the cookie too.

94. Which of the following flipflops does not have a problem of race condition?
निम्नलिखित में से कौन से फ्लिपफ्लॉप में रेस कंडीशन समस्या नहीं है?

(a) T flipflop/T फ्लिपफ्लॉप

(b) JK flipflop/JK फ्लिपफ्लॉप

(c) Clocked RS flipflop/क्लॉक्ड- RS फ्लिपफ्लॉप

(d) Clocked D flipflop/क्लॉक्ड- D फ्लिपफ्लॉप

Ans. (a) : The T flip -flop is also called toggle flip-flop T flip flop is similar to JK flip flop with condition J = K = 1, but in T flip flop we use triggering pulse (either positive or negative) that is very small in duration So, with these triggering pulses, T flip flop doesn't get enough time to race around by the feedbacks of the output. It changes the output only once in clock pulse time period. Hence the T flip flop does not have a problem of race condition.

95. Which of the following applications may use a stack?
निम्नलिखित में से कौन-सी एप्लीकेशन में स्टैक का प्रयोग किया जा सकता है?

(A) parenthesis balancing program/पैरेंथेसिस बैलेंसिंग प्रोग्राम

(B) process scheduling in operating system/ऑपरेटिंग सिस्टम में प्रोसेस शेड्यूलिंग

(C) conversion of infix arithmetic expression to postfix form/इनफिक्स अंकगणितीय व्यंजक को पोस्ट फिक्स में परिवर्तित करना

(a) (A) and (B)/(A) तथा (B)

(b) (B) and (C)/(B) तथा (C)

(c) (A) and (C)/(A) तथा (C)

(d) (A), (B) and (C)/(A), (B) तथा (C)

Ans. (c): Stack is a linear data structure that holds a linear, ordered sequence of elements A stack works on the LIFO process. Some applications of stack are given below–

- A stack can be used for evaluating expression consisting of operands and operators.
- Stacks can be used for Backtracking i.e. to check parenthesis matching in an expression
- It can also be used to convert one form of expression to another form.

96. In which of the following, the density of the core remains constant from the center to the edges?
निम्नलिखित में से किस में कोर की सघनता केन्द्र..... किनारों तक एकसमान रहती है?

(a) Single mode fiber/एकल-मोड फाइबर

(b) Multimode step-index fiber/बहुमोड स्टेप-इन्डैक्स फाइबर

(c) Multimode graded-index fiber/बहुमोड ग्रेडेड-इन्डैक्स फाइबर

(d) Single mode step-index fiber/एकल-मोड स्टेप-इन्डैक्स फाइबर

Ans. (b) : Multimode step-index fiber is the most widely used in optical fiber communication. In this mode, the light ray is propagated using the principle of total internal reflection. Since the core index of refraction is to much higher than the cladding index of refraction, so the light enters at less than the critical angle is guided along the fiber. The density of the core remains constant from the center to the edges.

97. The communication between the components in a microcomputer takes place via the address and _____./किसी माइक्रोकम्प्यूटर में घटकों के मध्य कम्यूनिकेशन एड्रेस तथा _____ के माध्यम से होता है।

(a) I/O bus/I/O बस

(b) Data bus/डाटा बस

(c) Address bus/एड्रेस बस

(d) Control lines/कन्ट्रोल लाइनें

Ans. (b) : The communication between the components in a microcomputer takes place via the address and Data bus. A data bus is a system within a computer or device, consisting of a connector or set of wires, that provides transpiration for data.

98. A device which converts BCD to seven segment is called _____. /वह यंत्र जो BCD को सात खंडों में परिवर्तित करता है, क्या कहलाता है?

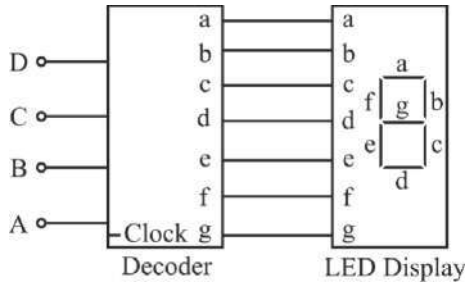
(a) Encoder/एनकोडर

(b) Decoder/डीकोडर

(c) Multiplexer/मल्टीप्लेक्सर

(d) Demultiplexer/डीमल्टीप्लेक्सर

Ans. (b) : A decoder is a combinational circuit that converts binary information from n input lines to a maximum of 2^n unique output lines. The BCD to seven segment decoder has four input lines, (A, B, C and D), and 7 output lines (a, b, c, d, e, f and g), this output is given to seven segment LED display which displays the decimal number depending upon inputs.



99. The _____ property is used to return or sets a value that determines whether the control can respond to user-generated events.

_____ प्रोपर्टी का उपयोग ऐसे मान का प्रदर्शन या निर्धारण करने के लिए किया जाता है जो कि यह निर्धारण करता है कि क्या कन्ट्रोल प्रयोक्ता जनित घटना के लिए प्रतिक्रिया कर सकता है।

(a) Auto (b) Enable

(c) Value (d) Visible

Ans. (b) : The Enable property is used to return or sets a value that determines whether the control can respond to user generated events.

100. Resolution of externally defined symbols is performed by _____.

एक्सटर्नली डिफाइन्ड सिम्बल्स का रिजोल्यूशन किसके द्वारा निष्पादित किया जाता है?

(a) Linker/लिंकर (b) Loader/लोडर

(c) Complier/कम्पाइलर (d) Editor/एडिटर

Ans. (a) : Resolution of externally defined symbols is performed by Linker. Linker is a program in a system which helps to link object modules of a program into a single object file. It associates each symbol reference with exactly one symbol definition Every symbol has a predefined task.

101. Machine that places the request to access the data, is generally called as _____.

वह मशीन जो कि डाटा तक पहुँच पाने का अनुरोध करती है, आमतौर पर _____ कहलाती है।

(a) Server machine/सर्वर मशीन

(b) Client machine/क्लाइंट मशीन

(c) Request machine/रिक्वेस्ट मशीन

(d) Intelligent machine/इंटेलीजेंट मशीन

Ans. (b): Machine that places the request to access the data, is generally called as client machine. A client is a computer or a program that, as part of its operation, relies on sending a request to another program or a computer hardware or software that accesses a service made available by a server.

102. In which case it is mandatory to provide a destructor in a class?

किस मामले में किसी क्लास में डिस्ट्रक्टर का प्रयोग अनिवार्य होता है?

(a) Almost in every class/लगभग सभी क्लास में

(b) Class for which two or more than two objects will be created./क्लास, जिसके लिए दो या दो से अधिक सृजित किए जाएंगे।

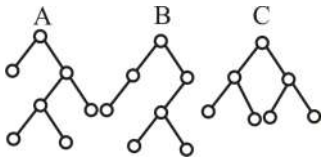
(c) Class for which copy constructor is defined./क्लास, जिसके लिए कॉपी कन्स्ट्रक्टर है।

(d) Class whose objects will be created dynamically./क्लास, जिसके ऑब्जेक्ट डायनैमिकली क्रिएट किए जाएंगे।

Ans. (d) : A destructor is a member function that is invoked automatically when the object goes out of scope or is explicitly destroyed by a call to delete. A destructor has the same name as the class, preceded by a titled (~). When a class contains dynamic object then it is mandatory to write a destructor function to release memory before the class instance is destroyed this must be done to avoid memory leak.

103. Consider the following three binary trees, each with 7 nodes.

निम्नलिखित तीन बाइनरी ट्री पर विचार कीजिए, प्रत्येक में 7 नोड है।



Then A is _____ binary tree, B is _____ binary tree and C is _____ binary tree.

तो A _____ बाइनरी ट्री है, B _____ बाइनरी ट्री है तथा C _____ बाइनरी ट्री है।

(a) strictly, strictly, complete

(b) complete, not strictly, strictly

(c) strictly, not strictly, strictly

(d) strictly, not strictly, complete

Ans. (d) : A Binary tree is identified as a strictly Binary Tree if each parent node contains either no or two children. All nodes contain in a strictly Binary Tree except the leaf nodes which have a children.

A complete binary tree is a special type of binary tree where all the levels of the tree are filled completely except the lowest level nodes which are filled from as left as possible.

Hence, the given A is strictly binary tree, B is not strictly binary tree and C is complete binary tree.

104. An interface that provides I/O transfer of data directly to and from the memory unit and the peripheral, is termed as _____.

वह इंटरफेस, जो कि मेमोरी यूनिट तथा पेरिफेरल को सीधे तौर पर डाटा का इनपुट/आउटपुट ट्रांसफर करने की सुविधा प्रदान करता है, क्या कहलाता है?

(a) DDA/डी.डी.ए.

(b) Serial Interface/सीरियल इंटरफेस

(c) BR/बी.आर.

(d) DMA/डी.एम.ए.

Ans. (d) : DMA (Direct Memory Access) controller is a hardware device that allows I/O devices to directly access memory with less participation of the processor. DMA controller needs the same old circuits of an interface to communicate with the CPU and Input/output devices.

105. In the context of while loop and do-while loop in C++, which of the following is not true?

C++ में while लूप तथा do-while लूप के परिप्रेक्ष्य में, निम्नलिखित में से कौन-सा कथन सही नहीं हैं?

(a) Both the loops are repetitive in nature/दोनों लूप आवृत्तिमूलक प्रकृति के है।

(b) Both are conditional loops/दोनों सशर्त (कंडीशनल) लूप है।

(c) Both will be executed at least once/दोनों को कम-से-कम एक बार निष्पादित किया जाएगा।

(d) Both are terminated when the condition becomes false./शर्त के असत्य होने पर दोनों समाप्त हो जाते हैं।

Ans. (c): While loop and do-while loop, Both are conditional loops and repetitive in nature and both are terminated when the condition becomes false, whereas, while loop condition is checked first then statement is executed and in do-while loop statement is executed atleast once, thereafter condition is checked.

106. Which of the following is not correct in C++?

C++ में निम्नलिखित में से कौन सा कथन सही नहीं है?

(a) x– =2; is the same as x = x–2;/x– =2; समान है x = x–2; के।

(b) x* = 2; is the same as x = x*2;/x* = 2; समान है x = x*2; के।

(c) x% = 2; is the same as x = x/2;/x% = 2; समान है x = x/2; के।

(d) x/=2; is the same as x = x/2;/x/=2; समान है x = x/2; के।

Ans. (c): The % (Modulus) operator given the remainder of an integer after division. In Assignment operator, % = (Modulus then assign) takes modulus using the values of the two operands and assigns the result to the left operand. So, x% = 2; is the same as x = x% 2.

107. Given a relational schema R(ABCDEFGH) in first normal form. For the set of dependencies F = {A→B, A→C, CG→H, B→H, G→F}, which dependency is logically implied?

फर्स्ट नॉर्मल फार्म में एक रिलेशन स्कीमा R(ABCDEFGH) दिया गया है। डिपेन्डेन्सी F = {A→B, A→C, CG→H, B→H, G→F}, के समुच्चय के लिए कौन-सी डिपेन्डेन्सी तर्कसंगत रूप से अन्तर्निहित है?

(a) AC→H (b) C→H

(c) G→H (d) A→H

Ans. (d) : Given, Relational schema R(ABC DEFGH) in first Normal form (1NF).

Given set of dependencies-

F = {A →B, A→C, CG→H, B→H, G →F},

if A → B

B → H

Then we can say that A → H which is logically implied.

So option (d) is the correct answer.

108. The period of a signal is 100ms. What is its frequency in kilohertz?
किसी सिग्नल का आवर्तकाल 100 ms है। इसकी किलोहर्ट्ज में आवृत्ति क्या होगी?

(a) 10^{-1} kHz/10^{-1} किलोहर्ट्ज

(b) 10^{-2} kHz/10^{-2} किलोहर्ट्ज

(c) 10^{-3} kHz /10^{-3} किलोहर्ट्ज

(d) 10^{-4} kHz /10^{-4} किलोहर्ट्ज

Ans. (b) : Given Period (T) = 100 ms

$$= \frac{100}{1000} = 0.1\text{sec}$$

Frequency $(f) = \frac{1}{T}$

$$= \frac{1}{0.1} = 10\text{Hzo}$$

Frequency in kilohertz = 10^{-2} KHz

($\because$ 1Hz = 10^{-3} KHz)

109. Which of the following method is used to refresh the webpage in Java Script?
जावा-स्क्रिप्ट में वेबपेज को रीफ्रेश करने के लिए निम्न में से किस पद्धति का उपयोग किया जाता है?

(a) window.reload( )

(b) location.reload( )

(c) window.refresh( )

(d) page.refresh( )

Ans. (b) : The location.reload( ) method reloads the current URL, like the Refresh button in Java seript.

110. _____ key must satisfy referential integrity in a relation, white _____ key must satisfy entity integrity.
_____ 'की' को किसी रिलेशन में रेफरेन्सियल इंटीग्रिटी को संतुष्ट करना चाहिए जबकि _____ 'की' को एन्टिटी इंटीग्रिटी को संतुष्ट करना चाहिए।

(a) Candidate, primary/कैंडिडेट, प्राइमरी

(b) Foreign, primary/फॉरेन, प्राइमरी

(c) Primary, foreign/प्राइमरी, फॉरेन

(d) Foreign super key/फॉरेन,सुपर- 'की'

Ans. (b) : Foreign key must satisfy referential integrity in a relation, while primary key must satisfy entity integrity. A primary key is a column or a set of columns in a table whose values uniquely identify a row in the table. A foreign key is a column or set of columns in a table whose value correspond to the value of the primary key in another table.

111. Which of the following expression results in zero?/निम्नलिखित में से कौन से व्यंजक का उत्तर शून्य होगा।

(a) (0+0+1)(0+0+1)

(b) (0+0+0)(0+1+1)

(c) (1+0+0)(1+1+1)

(d) (0+1+0)(1+0+1)

Ans. (b) : Given expression

(a) (0 + 0 + 1) (0 + 0 + 1) = 1.1 = 1

(b) (0 + 0 + 0) (0 + 1 + 1) = 0.1 = 0

(c) (1+ 0 + 0) (1 + 1 + 1) = 1.1 = 1

(d) (0 + 1 + 0) (1 + 0 + 1) = 1.1= 1

Hence option (b) expression (0 + 0 + 0) (0 + 1 + 1) results is zero.

112. How many page faults occur in LRU page replacement algorithm for the given reference string, with four page frames.
दी गई रेफरेन्स स्ट्रिंग के लिए LRU पेज रिप्लेसमेंट अल्गोरिथ्म में, चार पेज फ्रेम्स के साथ कितने पेज फॉल्ट होंगे?

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1

(a) 6 (b) 8

(c) 7 (d) 9

Ans. (c) : In least Recently used (LRU) algorithm is a Greedy algorithm where the page to be replaced in least recently used. Given reference string.

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1

with four page frames,

Initially all slots are empty, so when 7, 0, 1, 2 are allocated to the empty slots → 4 page faults

0 is already their so → 0 page fault.

when 3 came it will take the place of 7 because it is least recently used → 1 page fault

0 is already in memory so → 0 page fault

4 will takes place of 1 → 1 page fault.

Now, 2, 3, 0, 2, are already in memory

So → 0 page fault.

1 will takes place → 1 page fault

Now for the further page reference string → 0 page fault because they are already available in the memory.

So, total 7 page faults occurred.

113. Given an instance of the relation R(ABCD).
नीचे रिलेशन R(ABCD) दिया गया है।

A	B	C	D
a_1	b_1	c_1	d_1
a_1	b_2	c_2	d_2
a_2	b_2	c_2	d_3
a_3	b_3	c_4	d_3

Which of the following functional dependencies hold?/निम्नलिखित में से कौन-सी फंक्शनल डिपेन्डेन्सी बनी रहेंगी?

(a) $\{A\ B\} \rightarrow D$ and $D \rightarrow A$
$\{A\ B\} \rightarrow D$ तथा $D \rightarrow A$

(b) $\{A\ B \rightarrow C\}$ and $B \rightarrow D$
$\{A\ B \rightarrow C\}$ तथा $B \rightarrow D$

(c) $\{A\ B\} \rightarrow C$ and $B \rightarrow C$
$\{A\ B\} \rightarrow C$ तथा $B \rightarrow C$

(d) $\{A\ B\} \rightarrow D$ and $A \rightarrow D$
$\{A\ B\} \rightarrow D$ तथा $A \rightarrow D$

Ans. (c) : A functional dependency (FD) is a relationship between two attributes, typically between the primary key and non-key attributes within a table. Rules of defining functional dependencies (FD), If LHS of FD are all different, then we can directly say that FD holds true, If LHS of FD are same, then check the corresponding value of RHS, that should be same for all the matching value of LHS, otherwise FD will not hold true.

In option (c) $\{A\ B\} \rightarrow C$ and $B \rightarrow C$

$AB \rightarrow C$ hold true. (As all the value of AB are different)

and $B \rightarrow C$, in B all the values are not same.

So, we have to check value of C corresponds to b_2. Both the values in C are same for b_2.

Hence, $B \rightarrow C$ holds true.

114. The electromagnetic waves ranging in frequencies between 1 GHz and 300 GHz are called _____.

1 गीगाहर्ट्ज तथा 300 गीगाहर्ट्ज के मध्य की आवृत्ति परास वाली विद्युत-चुम्बकीय तरंगें क्या कहलाती हैं?

(a) Radio waves/रेडियों तरंगें

(b) Micro waves/सूक्ष्म तरंगें

(c) Infrared waves/इन्फ्रारेड तरंगें

(d) Light waves/प्रकाश तरंगें

Ans. (b): The electromagnetic waves ranging in frequencies between 1 GHz and 300 GHz are called microwaves.

115. Given the list of tasks in Col-A and list of data structure in Col-B. Identify the best match.
कॉलम-A में कार्यों की सूची दी गई है तथा कॉलम-B में डाटा स्ट्रक्चर की सूचना दी गई है। सही मिलान कीजिए:

A		B	
A.	**Recursion रिकर्शन**	**(i)**	**Binary tree बाइनरी ट्री**
B.	**Scheduling शेड्यूलिंग**	**(ii)**	**Stack/स्टैक**
C.	**Sorting/सॉर्टिंग**	**(iii)**	**Queue /क्यू**

A B C

(a) (i) (iii) (ii)

(b) (ii) (i) (iii)

(c) (iii) (ii) (i)

(d) (ii) (iii) (i)

Ans. (d) : Best match of Col-A and Col-B

Recursion	–	Stack
Scheduling	–	Queue
Sorting	–	Binary tree.

116. _____ operation preserves those tuples that would be lost in _____.

_____ ऑपरेशन उन टपल्स को संरक्षित करते है जो कि _____ में गुम जो जाती।

(a) natural join, outer join/नैचुरल जॉइन, आउटर जॉइन

(b) outer join, natural join/आउटर जॉइन, नैचुरल जॉइन

(c) left outer join, right outer join/लैफ्ट आउटर जॉइन, राइट आउटर जॉइन

(d) left outer join, natural join /लैफ्ट आउटर जॉइन, नैचुरल जॉइन

Ans. (b) : A outer join operation preserves those tuples that would be lost in natural Join. That is, a full outer join returns all matching and non-matching rows from the left and right table.

117. The device bridge is used at _____ layer of OSI reference model./डिवाइस ब्रिज का उपयोग OSI रेफरेंस मॉडल की लेयर पर किया जाता है?

(a) Data link/डाटा लिंक

(b) Network/नेटवर्क

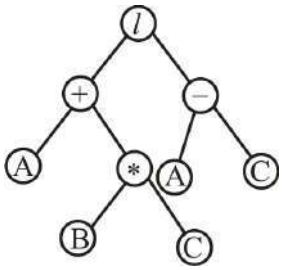
(c) Transport/ट्रांसपोर्ट

(d) Application/एप्लीकेशन

Ans. (a) : A bridge in a computer network is a device used to connect multiple LAN, together with a larger Local Area Network (LAN). The bridge is a physical or hardware device but operates at the OST model's data link layer and is also known as a layer of two switches.

118. Given the following expression tree, identify the correct arithmetic expression:

नीचे एक एक्सप्रेशन ट्री दिया गया है। सही अंकगणितीय व्यंजक की पहचान कीजिए:



(a) (A+B)*/A–C

(b) A+(B*C)/(A–C)

(c) A+B*C/A–C

(d) (A+B*C)/(A–C)

Ans. (b) : The expression tree is a binary tree in which each external or leaf node corresponds to the operand and each internal or parent node corresponds to the operators so, the used infix expression evaluation, Hence the correct arithmetic

expression is A + (B * C)/ (A – C).

119. Social network analysts use _____ to access Facebook data.

सोशल नेटवर्क विश्लेषण फेसबुक डाटा प्राप्त करने के लिए _____ का उपयोग करते है।

(a) Facebook System Calls/फेसबुक सिस्टम कॉल्स

(b) Facebook APIs/फेसबुक ए पी आई

(c) Facebook Scripts/फेसबुक स्क्रिप्ट्स

(d) Facebook System Libraries/फेसबुक सिस्टम लाइब्रेरीज

Ans. (b) : Social network analysis use facebook APIs to access facebook data. Facebook APIs are the primary way to connect with the massive Facebook platform programmatically. Third-party developers create cool facebook apps, games, steam live programmatically, run automated marketing compaigns, manage their business pages all with the help of the facebook APIs.

120. Which of the following is not true in case of public Inheritance in C++ ?

C++ में पब्लिक इन्हेरिटेंस के मामले में निम्नलिखित में से कौन सा कथन सत्य नहीं है?

(a) Each public member in the base class is public in the derived class./बेस क्लास में प्रत्येक पब्लिक मेंबर डेराइव्ड क्लास में पब्लिक होता है।

(b) Each protected member in the base class is protected in the derived class./बेस क्लास में प्रत्येक प्रोटेक्टेड मेंबर डेराइव्ड क्लास में प्रोटेक्टेड होता है।

(c) Each private member in the base class remains private in the base class./बेस क्लास में प्रत्येक प्राइवेट मेंबर बेस क्लास में प्राइवेट रहता है।

(d) Each private member in the base class remains private in the derived class./बेस क्लास में प्रत्येक प्राइवेट मेंबर डेराइव्ड क्लास में प्राइवेट रहता है।

Ans. (d) : In public inheritance, when deriving a class from a public base class, public members of the base class become public members of the derived class and protected members of the base class become protected members of the derived class. A base class's private members are never accessible directly from a derived class, but can be accessed thorough calls to the public and protected members of the base class.

121. Consider the following code segment in C++. How many times the for loop will be repeated?

C++ में निम्नलिखित कोड खंड पर विचार करें। for लूप की कितनी बार आवृत्ति होती?

```
int main ( )
{
  int f = 1;
  for (; f ;)
  cout <<"f = " <<f++<<"\n";
  return 0;
}
```

(a) 10 times/10 बार

(b) Not even once/एक बार भी नहीं

(c) Repeated forever/अनंत काल के लिए आवृत्ति

(d) Only once/केवल एक बार

Ans. (c): In given code segment there is no test condition in the for loop due to which loop will get executed infinite number.

So, the for loop will be repeated forever.

122. While making bulleted lists, which of the following options are available?

बुलेटिड लिस्ट बनाने के लिए निम्नलिखित में से विकल्प उपलब्ध है?

(a) square, disc, triangle/स्क्वायर, डिस्क, ट्राएंगल

(b) triangle, disc, circle/ट्राएंगल, डिस्क, सर्कल

(c) triangle, square, circle/ट्राएंगल, स्क्वायर, सर्कल

(d) disc, square, circle/डिस्क, स्क्वायर, सर्कल

Ans. (d) : HTML Unordered list or Bulleted list displays elements in bulleted format. We can use unordered list where we do not need to display items in any particular order. The HTML ul tag is used for the unordered list. There can be 4 types of bulleted list:

1. disc
2. circle
3. Square
4. None

123. In single-precision, double precision and extended-precision representation of floating point numbers, as defined by ANSI/IEEE standard 754-1985, the no. of bits used are _____ respectively.

फ्लोटिंग पॉइंट नंबरों के सिंगल-प्रिसीजन, डबल प्रिसीजन तथा एक्स्टेंडेड-प्रिसीजन निरूपण में जैसे कि ANSI/IEEE मानक 754-1985, द्वारा परिभाषित है। प्रयुक्त बिटों की संख्या क्रमशः _____ है।

(a) 32, 64 and 80/32, 64 तथा 80

(b) 32, 64 and 128/32, 64 तथा 128

(c) 16, 32 and 64/16, 32 तथा 64

(d) 16, 32 and 80/16, 32 तथा 80

Ans. (a) : In single - precision, double-precision and extended-precision representation of floating point numbers, as defined buy ANST/IEEE standard 754-1985, the number of bits used are 32, 64 and 80 respectively.

124. Additional information sent when an exception is thrown may be placed in _____.

किसी अपवाद के डाले जाने पर भेजी गई अतिरिक्त सूचना कहाँ रखी जाती है?

(a) the throw keyword/थ्री कीवर्ड में

(b) the function that caused the error/चूक करने वाले फंक्शन में

(c) the catch block/कैच ब्लॉक में

(d) an object of the exception class/एक्सेप्शन क्लास के ओब्जेक्ट में

Ans. (c) : Additional information sent when an exception is thrown may be placed in the catch block. The catch block contains code that is executed if and when the exception handler is invoked. The runtime system invokes the exception handler when the handler is the first one in the call stack whose

Exception Type matches the type of the exception thrown.

125. Which of the following is a special effect in motion pictures and animations that changes one image/picture into another through a seamless transition?

मोशन पिक्चर्स तथा एनीमेशन का ऐसा कौन-सा स्पेशल इफैक्ट है जो कि एक चित्र को दूसरे में एक बेजोड़ संक्रमण के माध्यम से परिवर्तित करता है?

(a) Modeling/मॉडलिंग

(b) Morphing/मॉर्फिंग

(c) Animating/एनीमेटिंग

(d) Wrapping/रैपिंग

Ans. (b) : Morphing is an effect which sees one shape or object transform into another in a seamless transition. There are different approaches, but the fundamental meaning of morphing remains the same.

126. Consider the following Java code segment:

निम्नलिखित जावा कोड खंड पर विचार कीजिए:

```
public class while /* line 1*/
{
  public void loop ( )
  {
  int x = 0;
   While (1)/* line-6*/
    {
system. out. println("x plus one is" + (x+1)):
            }
       }
  }
```

Which of the following is true ?

निम्नलिखित में से कौन-सा कथन सत्य है?

(a) There is a syntax error in line-1/लाइन-1 में सिन्टैक्स एरर है।

(b) There are syntax errors in line- 1 and line-6/लाइन-1 व लाइन - 6 में सिन्टैक्स एरर हैं।

(c) There is a syntax error in line- 6/लाइन-6 में सिन्टैक्स एरर है।

(d) No syntax error/कोई सिन्टैक्स एरर नहीं है।

Ans. (a) : In given Java code segment line 1, a keyword is used as class name i.e. while which is error. So, there is a syntax error in line-1.

127. Shifting a register content to left by one bit is equivalent to _____.
रजिस्टर कन्टैन्ट को एक बिट बाएँ खिसकाने का अर्थ है:

(a) Davison by 2 /2 से भाग करना

(b) Addition by 2/2 जोड़ना

(c) Multiplication by 2/2 से गुणा करना

(d) Subtraction by 2/2 घटाना

Ans. (c): Shifting a register content to left by one bit is equivalent to multiplication by 2. An shifting register content to right by one bit is equivalent to division by 2.

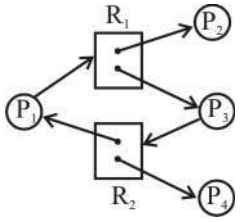
128. Which of the following protocol is used for transferring electronic mail messages from one machine to another?
एक मशीन से दूसरी मशीन तक इलेक्ट्रॉनिक मेल संदेश भेजने के लिए निम्नलिखित में से किस प्रोटोकॉल का उपयोग किया जाता है?

(a) FTP (b) SMTP

(c) SNMP (d) STTP

Ans. (b) : The simple Mail Transfer Protocol (SMTP) is an Internet standard communication protocol for electronic mail transmission. Mail severs and other message transfer agents use SMTP to send and relieve mail messages.

129. Given a set of four processes, two resources with two units, each. the following resource allocation graph exists at point in time:
चार प्रोसेस का एक समुच्चय दिया गया है। प्रत्येक में दो रिसोर्स जिनके पास दो यूनिट्स हैं। एक समय पर निम्न रिसोर्स आवंटन ग्राफ हैं:



The graph indicates:
यह ग्राफ संकेतिक करता है:

(a) cycle and deadlock
साइकिल तथा डेडलॉक

(b) no cycle but deadlock
कोई साइकिल नहीं किन्तु डेडलॉक

(c) neither cycle nor deadlock
न साइकिल न डेडलॉक

(d) cycle but no deadlock
साइकिल किन्तु कोई डेडलॉक नहीं

Ans. (d) : Deadlocks can be described more precisely in terms of a directed graph called a system resource allocation graph. This graph consists of a set of vertices V and a set of edges E. The set of vertices V is partitioned into two different types of nodes:

$P = \{P_1, P_2, -----P_n\}$ the set consisting of all the active processes in the system and

$R = \{R_1, R_2----R_m\}$ the set consisting of all resource types in the system.

In given resource-allocation graph we have

a cycle $P_1 \rightarrow R_1 \rightarrow P_3 \rightarrow R_2 \rightarrow P_1$

Hence the given graph indicates cycle but no deadlock.

130. Time taken to switch between user and Kernel modes is _____ the time taken to switch between two processes.
यूजर तथा करनेल मोड के बीच अंतरित होने में लगने वाला समय दो प्रोसेसरों के मध्य अंतरित होने में लगने वाले समय से _____ है।

(a) more than/अधिक

(b) independent of/स्वतंत्र

(c) less than/कम

(d) equal to/समान

Ans. (c) : Time taken to switch between user and kernel modes is less than the time taken to switch between two processes,

131. What shall be the 2's complement representation of 24 in a 16 bit computer?
किसी 16 बिट कम्प्यूटर में 24 का 2's पूरक निरूपण होगा?

(a) 1111 1111 1110 1011

(b) 1111 1111 1110 1001

(c) 1111 1111 1110 0111

(d) 1111 1111 1110 1000

Ans. (d) : Convert decimal number 24 into binary number in 16 bit computer.

$(24)_{10} = (0000000000011000)_2$

1's complement of 24 is-

= 1111111111100111

2's complement of 24 is

= 111111111100111

+ 1

1111111111101000

So, the 2's complement representation of 24 in 16 bit is 1111111111101000.

132. The worst case complexity for searching an element in binary search tree is:
किसी बाइनरी सर्च ट्री में कोई एलीमेंट खोजने के लिए वर्स्ट केस कॉम्प्लेक्सिटी क्या है?

(a) O(lgn) (b) O(nlgn)

(c) $O(n^2)$ (d) O(n)

Ans. (d) : Binary search Tree (BST) is a special type of binary tree in which left child of a node has value less than the parent and right child has value greater than parent. for searching element, we have to traverse all elements. Therefore, searching in binary search tree has worst case complexity of O (n).

133. Given the following two statements about SQL.
नीचे SQL के बारे में दो कथन दिए गए हैं:

(A) An SQL query can contain HAVING clause only if it has GROUP BY clause./किसी SQL क्वेरी में HAVING क्लॉज तभी हो सकता है यदि इसमें GROUP BY क्लॉज हो।

(B) In an SQL query "SELECT_FROM_ WHERE_GROUP BY_HAVING". HAVING is executed before WHERE. / किसी SQL क्वेरी "SELECT_FROM_ WHERE_GROUP BY_HAVING" में WHERE से पहले HAVING निष्पादित किया जाता है।

Which of the following is correct?
निम्नलिखित में से कौन-सा सत्य है?

(a) (A) and (B) both are true/(A) तथा (B) दोनों सत्य है?

(b) (A) is true, (B) is false/(A) सत्य है, (B) असत्य है।

(c) (A) is false, (B) is true/(A) असत्य है, (B) सत्य है।

(d) (A) and (B) both are false/(A) तथा (B) दोनों असत्य हैं।

Ans. (b) : Statement (A) 'An SQL query can contain HAVING clause only if it has GROUP By clause', is correct because Having clause is applied after the aggregation phase and must be used if you want to filter aggregate results.

Statement (B) is saying that HAVING is executed before WHERE but according to order of execution of clauses, HAVING is executed after WHERE.

So, statement (B) is incorrect.

134. To load a byte of data parallelly into a shift register with a synchronous load, there must be _____.
सिंक्रोनस लोड के साथ शिफ्ट रजिस्टर में समानांतर रूप से डाटा की एक बाइट लोड करने के लिए निम्नलिखित में से किसकी आवश्यकता होगी?

(a) one clock pulse/एक क्लॉक पल्स

(b) one clock pulse for each 1 in the data/डाटा में प्रत्येक 1 के लिए एक क्लॉक पल्स

(c) eight clock pulses/आठ क्लॉक पल्स

(d) one clock pulse for each 0 in the data/डाटा में प्रत्येक 0 के लिए एक क्लॉक पल्स

Ans. (a) : To load a byte of data parallel into a shift register with synchronous load, there must be one clock pulse. A signal used to synchronize the operations of electronic system. clock pulses are continuous, precisely spaced changes in voltage.

135. The _____ attribute of <TABLE> tag is used to control the distance between the data in a cell and the boundaries of the cell.
<TABLE> टैग के _____ एट्रीब्यूटर का उपयोग सैल में डाटा तथा सैल की परिसीमाओं के मध्य दूरी को नियंत्रित किया जाता है।

(a) colspan (b) rowspan

(c) cellpadding (d) cellspacing

Ans. (c) : The cellpadding attribute of <TABLE> tag is used to control the distance between the data in a cell and the boundaries of the cell. By default the padding is set to 0. The cellpadding attribute is set in terms of pixels.

Syntax–

<table cellpadding = "pixels">

136. File operations that manipulate the 'open-count' maintained for each entry in open-file table include:/फाइल ऑपरेशंस, जो कि ओपन-फाइल टेबल में प्रत्येक प्रविष्टि के लिए रखे गए ओपन-काउंट को मैनिपुलेट करते हैं, उनमें शामिल है:

(a) open, write/ओपन, राइट

(b) read, write/रीड, राइट

(c) write, close/राइट, क्लोज

(d) open, close/ओपन, क्लोज

Ans. (d) : File operation that manipulate the 'open-count' maintained for each entry in open-file table include open and close. Open file table stores the information about all the files that are open while the OS is running.

137. The process of removing deficiencies and loop holes in the data is called as _____.

डाटा में खामियों तथा लूप होल्स को हटाने की प्रक्रिया _____ कहलाती है।

(a) Data aggregation
डाटा एग्रीगेशन

(b) Extraction of data
एक्स्ट्रेक्शन ऑफ डाटा

(c) Compression of data
कम्प्रेशन ऑफ डाटा

(d) Cleaning of data
क्लीनिंग ऑफ डाटा

Ans. (d) : The process of removing deficiencies and loop holes in the data is called as cleaning of data. Data cleaning is the process that removes data that does not belong in your dateset.

138. Which of the following is true about time value assignment in VB Script?

वीबी स्क्रीप्ट में समय मान प्रदान करने के बारे में निम्नलिखित में से कौन सा कथन सत्य है?

(a) The time value should be assigned without double quotes (").
समय मान दोहरे उध्दहरण चिन्ह (") के बिना प्रयोग किया जाना चाहिए।

(b) The time value should be enclosed within double quotes (").
समय मान दोहरे उध्दरण चिन्ह (") के अंदर प्रयोग किया जाना चाहिए।

(c) The time value should be enclosed within single quotes (').
समय मान एकल उध्दरण चिन्ह (') के भीतर होना चाहिए।

(d) The time value should be enclosed within hash symbols (#)./समय मान हैश संकेतों (#) के भीतर होना चाहिए।

Ans. (d): In VB script, values are assigned similar to an algebraic expression. The variable name on the left hand side followed by an equal to (=) symbol and then its value on the right hand side. There are some rules-

- Data and Time variables should be enclosed within hash symbol (#)
- The string values should be enclosed within double quotes (")
- The numeric values should be declared without double quotes.

139. Exclusive OR (XOR) is a special gate whose output is 1 only if:

एक्सक्लूसिव ऑर (XOR) एक विशेष गेट है जिसका आउटपुट 1 तभी होगा यदि:

(a) all inputs are 9/सभी इनपुट 0 हों।

(b) all inputs are 1/सभी इनपुट 1 हों।

(c) odd number of inputs are 1/विषम संख्यक इनपुट 1 हों।

(d) even number of inputs are 1/सम संख्यक इनपुट 1 हों।

Ans. (c) : The exclusive OR (XOR) gate is a digital logic gate with two or more inputs and one output that performs exclusive disjunction. If an XOR gate has more than two inputs, then its behavior depends on its implementation. An XOR gate will output 1 if an odd number of its inputs is 1. The following truth table for an XOR gate with two inputs.

Input A	Input B	Output Y
0	0	0
0	1	1
1	0	1
1	1	0

140. The simplified form of the Boolean expression;

$\left(A\bar{B}\left(C+BD\right)+\bar{A}\bar{B}\right)C$ **is**

दिए गए बूलीय व्यंजक का सरल रूप क्या होगा?

$\left(A\bar{B}\left(C+BD\right)+\bar{A}\bar{B}\right)C$

(a) $\bar{B}C$ (b) $\bar{A}\bar{B}C$

(c) $A\bar{B}C$ (d) $\bar{A}BC$

Ans. (a) : Given Boolean expression

$$=\left(A\bar{B}\left(C+BD\right)+\bar{A}\bar{B}\right)C$$

$$=\left(A\bar{B}C+A\bar{B}BD+\bar{A}\bar{B}\right)C$$

$= (A\overline{B}C + \overline{A}\overline{B})C \quad \because \overline{B}B = 0$

$= \overline{B}C(AC + \overline{A}) \quad \because \overline{A} + AC = \overline{A} + C$

$= \overline{B}C(\overline{A} + C)$

$= \overline{B}C\overline{A} + \overline{B}C.C$

$= \overline{B}C(\overline{A} + 1)$

$= \overline{B}C$

141. In a computer system, memory mapped access takes 100 nanoseconds when a page is found in TLB. In case the page is not TLB, it takes 400 nanoseconds to access. Assuming a hit ratio of 80%, the effective access time is:

किसी कम्प्यूटर सिस्टम में, यदि 'TLB' में कोई पेज मिलता है तो मेमोरी मैप्ड एक्सेस 100 नैनोंसेकेंड लगाता है। यदि पेज TLB में नहीं है तो यह एक्सेस में 400 नैनोसेकेंड लगाता है। मान लीजिए हिट अनुपात 80% है तो प्रभावी एक्सेस टाइम होगा:

(a) 120 nanoseconds/120 नैनोसेकेंड

(b) 160 nanoseconds/160 नैनोसेकेंड

(c) 200 nanoseconds/200 नैनोसेकेंड

(d) 500 nanoseconds/500 नैनोसेकेंड

Ans. (b) : Given data

Hit Ratio (H) = 80% = 0.8

Miss Ratio (1 – H) = 20% = 0.2

TLB access time = T

Main memory access time = M

Page is found (T + M) = 100 ns

Page is not found (T + 2×M) = 400 ns

So, effective memory access time

= H×(T + M) + (1 – H) (T + 2×M)

= 0.80×100+0.20×400

= 80 + 80

=160 ns

142. Consider the following code segment:

निम्नलिखित कोड खंड पर विचार कीजिए:

```
int x = 22, y = 15;
x = (x>y) ? (x+y) : (x–y);
```

What will be the value of x after the code is executed?

कोड के निष्पादित होने के बाद x का मान क्या होगा?

(a) 22

(b) 37

(c) 7

(d) 37 and 7/37 तथा 7

Ans. (b) : The conditional operator is kind of similar to the if-else statement as it does follow the same algorithm as of if-else statement but the conditional operator takes less space and helps to write the if-else statements in the shortest way possible.

Given code segment:

int x = 22, y = 15;

x = (x > y) ? (x + y): (x – y);

// 22 > 15 (condition is true), so output will be 22 + 15

So, output will be x = 37.

143. Which of the following algorithms use recursion for sorting an array of integers?

निम्नलिखित में से कौन सा एल्गोरिदम पूर्णांकों की एक सरणी को छाँटने के लिए पुनरावर्तन का उपयोग करता है?

(a) Bubble sort and Insertion sort

(b) Bubble sort and Quick sort

(c) Bubble sort and merge sort

(d) Quick sort and merge sort

Ans. (d) : Quick sort is a Divide and Conquer algorithm. It picks an element as a pivot and partitions the given array around the picked pivot, The merge sort algorithm is a sorting algorithm that is based on the Divide and Conquer paradigm. In this algorithm, the array is initially divided into two equal halves and then so, quick sort and merge sort algorithms are based on the divide and conquer algorithm which works in the recursive manner.

144. In which of the topology, each device has a dedicated point-to-point link to a central controller?

किस टोपोलॉजी में, प्रत्येक डिवाइस में एक केन्द्रीय नियंत्रक के लिए एक समर्पित पॉइंट-टू-पॉइंट लिंक होता है?

(a) Mesh/मेश (b) Bus/बस

(c) Ring/रिंग (d) Star/स्टार

Ans. (d) : Star topology is a network topology, in which each network component is physically connected to a central node such as a router, hub or switch. Star networks require a point-to-point connection between

the central node and connecting devices. In a star topology, the central hub acts like a server and the connecting nodes act like clients. When the central node receives a packet from a connecting node, it can pass the packed on to other nodes in the network.

145. Which of the following is the correct declaration of linked list?
निम्नलिखित में से कौन सी लिंक्ड लिस्ट की सही घोषणा है?

(a)
```
Struct node*
{
int data;
node * link;
}
```
(b)
```
Struct node
{
int data;
struct node* link;
}
```
(c)
```
Struct node
{
int data;
node link;
}
```
(d)
```
Struct node*
{
int data;
struct node* link;
}
```

Ans. (b) : A linked list is a way to store a collection of element. Like an array these can be character or integers each element in a linked list is stored in the form of a node. A linked list can be implemented using structure and pointers.

```
Struct node
{
    int data;
    struct node* link;
}
```

Each node in the linked list is a struct.

So, the option (b) is correct.

146. Consider the relation Emp-Dept with SSn as key./कुंजी के रूप में SSn के साथ Emp-Dept के संबंध पर विचार करे।

Ename	SSn	EAddr	Dept. No.	Dept. Name	Dept. Manager	SSn

Which of the following is (are) invalid operations (s)?
निम्नलिखित में से कौन सा अवैध संचालन है?

(i) Inserting an employee without name and address./नाम और पते के बिना किसी कर्मचारी को सम्मिलित करना।

(ii) Inserting an employee with only SSn./केवल SSn वाले कर्मचारी को सम्मिलित करना।

(iii) Inserting a department with no employee./बिना कर्मचारी वाले विभाग को सम्मिलित करना।

(iv) Inserting an employee without SSn./SSn के बिना कर्मचारी को सम्मिलित करना।

(a) (i)
(b) (iv)
(c) (iii) and (iv)
(d) (ii) and (iii)

Ans. (b): In given relation employee and department both table are merged into one table so right most SSn id is foreign key and second entry from left side is key of employee table. Hence, Inserting an employee without SSn is invalid operation because SSn employee id cannot be null.

147. Use of virtual function implies _____.
वर्चुअल फंक्शन के उपयोग का अर्थ ..... है?

(a) Overloading
(b) Overriding
(c) Static binding
(d) Dynamic binding

Ans. (d) : Use of virtual function implies Dynamic binding. If a body of the method at runtime is bonded to a method call then it is called dynamic binding. Dynamic binding is also referred to as a run-time polymorphism. overriding a method is a per feet example of dynamic binding in Java.

148. When a mobile telephone physically moves from one cell to anther cell, the base station transfers ownership to the cell, getting strongest signal. This process is known as —— ./जब एक मोबाइल टेलीफोन भौतिक रूप से एक क्षेत्र से दूसरे सेल में जाता है, तो बेस स्टेशन सबसे मजबूत सिग्नल प्राप्त करने वाले सेल को स्वामित्व हस्तांतरित करता है। इस प्रक्रिया को ..... के रूप में जाना जाता है।

(a) Handoff

(b) Mobile routing

(c) Mobile switching

(d) Cell Switching

Ans. (a) : when a mobile telephone physically moves from the one cell to another cell, the base station transfers ownership to the cell getting strongest signal. This process is known as Handoff. A Handoff refers to the process of transferring an active call or data session from one cell in a cellular network to another or from one channel in a cell to another. A Well-implemented Handoff is important for delivering uninterrupted service to a caller or data session user.

149. Which of the following statements is incorrect?

निम्नलिखित में से कौन सा कथन गलत है?

(a) Data definition languages is used by DBA and database designers to define schemas.

स्कीमा को परिभाषित करने के लिए DBA और डेटाबेस डिजाइनरों द्वारा डेटा परिभाषा भाषाओं का उपयोग किया जाता है।

(b) Storage definition language is used to specify the internal schema.

आंतरिक स्कीमा को निर्दिष्ट करने के लिए स्टोरेज परिभाषा का उपयोग किया जाता है।

(c) Storage definition language is used to insert delete and update data

स्टोरेजे डेफिनिशन लैंग्वेज का इस्तेमाल डिलीट और अपडेट डेटा डालने के लिए किया जाता है।

(d) Data definition languages is used to retrieve data from the database.

डेटा डिफिनिशिन लैंग्वेज का उपयोग डेटाबेस से डेटा को पुनः प्राप्त करने के लिए किया जाता है।

Ans. (c) : Data Definition Language (DDL) actually consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to retrieve data from the database.

Storage Definition Language (SDL) is different in every DBMS which specifies anything to do with how or where data in relevant table is stored. It is used to define internal schema. It defines physical structure of database.

So, option (c) is incorrect statement.

150. Consider the following SQL query:

निम्न SQL क्वेरी पर विचार करें:

PROJ (Pnum, Dnum)

DEPT (Dnumber, Mgr_SSn)

EMP (fname, lname, SSn)

Works_ON (Pno, E SSn)

(SELECT DISTINCT Pnum FROM PROJ, DEPT,

EMP WHERE Dnum = Dnumber

AND Mgr_SSn = SSn AND Lname = 'XXXX')

UNION

(SELECT DISTINCT Pnum FROM PROJ, WORKS_ON,

EMP WHERE Pnum = Pno AND ESSn = SSn

AND Lname = 'XXXX')

(a) All project numbers for projects that involve an employee with last name 'XXXX', either as worker or as manager

(b) All project numbers for projects that involve an employee with last name 'XXXX' as manager.

(c) Records of all employees with last name as 'XXXX' working in a project as manager.

(d) All project number for projects in department Dnumber and where 'XXXX' is involved either as worker or as manager.

Ans. (a) : The SQL UNION operator is used to combine the results of two or more SELECT statements without returning any duplicate rows. So, the union of both subquery displayed as a result, 'all project number for projects that involve an employee with last name 'XXXX', either as worker or a manager.'

KENDRIYA VIDHYALAYA SANGATHAN PGT, 2017
Computer Science
Solved Paper with Explanation

101. Anti-aliasing is important to improve the readability of text. It deals with the:
पाठ की पठनीयता में सुधार के लिए एन्टी-एलिआसिंग महत्वपूर्ण है। यह किससे संबंधित है?

(a) elimination of "jaggies"./''जैगीज'' को हटाना।

(b) spacing between two individual characters./दो अलग-अलग वर्णों के बीच स्पेस देना।

(c) Underlining of letters./अक्षरों को अण्डरलाइन करना ।

(d) spacing of a group of characters./वर्णों के एक समूह की स्पेसिंग ।

Ans. (a) : Anti-aliasing is a technique used in computer graphics to remove the aliasing effect. The aliasing effect is the appearance of jagged edges or 'jaggies' in a resterized image. The problem of jagged edges technically occurs due to distortion of the image when scan conversion is done with sampling at a low frequency, which is also known as under sampling. Aliasing occurs when real-world objects which comprise of smooth, continuous curves are rasterized using pixels.

102. Consider a set of n tasks with known runtimes r1, r2 ..... rn, to be run on a uniprocessor machine, Which of the following processor scheduling algorithm will result in the maximum throughput.
'n' कार्यों के एक सेट पर विचार कीजिए जिसका ज्ञात निष्पादन काल (रनटाइम) r1, r2.....rn, है जिसे यूनिप्रोसेसर मशीन पर निष्पादित किया जाना है। निम्नलिखित में से किस प्रोसेसर शिड्डूलिंग अल्गोरिद्म से अधिकतम थ्रोपुट निकलेगा ?

(a) Priority scheduling/प्रायोरिटी शिड्डूयूलिंग

(b) Round-robin/राउण्ड-रॉबिन

(c) FCFS/एफ सी एफ एस

(d) Shortest job first/शार्टेस्ट जॉब फर्स्ट

Ans. (d) : Shortest job first (SJF), also known, as shortest job next (SJN) or shortest process next (SPN), is a scheduling algorithm in which the process with the smallest execution time is selected for execution next shortest job first can be either preemptive or non-preemptive. It results in maximum throughput.

103. Which of the following is the most appropriate format for graphics that are to be embedded within an Internet documents?
निम्न में से किसी इंटरनेट दस्तावेज के भीतर दिए जाने वाले ग्राफिक्स के लिए सबसे अधिक उपयुक्त फार्मेट क्या होगा?

(a) HTML (b) BMP
(c) TIFF (d) GIF

Ans. (d) : The Graphics Interchange format (GIF) is a bitmap image format that was developed by a team at the online services provider CompuServe and released on 15 June 1987. It is in widespread usage on the world wide web due to its wide support and portability between applications and operating systems.

104. Which of the following is true to define a variable for ASP?
ए एस पी के लिए चर को परिभाषित करने के लिए निम्नलिखित में से कौन सा सही है?

(a) Var (b) Dim
(c) $ (d) Set

Ans. (b) : In ASP, declare a variable with the use of the 'Dim' keyword, which is short for Dimension. Dimension in computer terms it refers to space in computer memory. Variables can be declared one at a time or all at once.

105. In the context of Visual Basic, multiple controls of the same type can be grouped into an array, in the same manner as a collection of data items. Such a grouping is known as :
विजुअल बेसिक के संदर्भ में समान प्रकार के बहुत से कंट्रोलों को एक सारणी (अरे) में, उसी तरीके से जिस तरीके में डेटा मद एकत्रित किया गया है, समूहित किया जा सकता है। ऐसे समूह को कहा जाता है :

(a) control array/नियंत्रण (कंट्रोल) सरणी

(b) primary array/प्राथमिक सरणी

(c) secondary array/द्वितीयक सरणी

(d) an integer array/पूर्णांक सरणी

Ans. (a) : A Control array is a group of controls that share the same name type and the same event procedures. A control array can be setup by naming one or more control of same type the same name and set the index property of each control in array to be non-negative value.

106. Consider two database relations R and S having 3 tuples in R and 2 tuples in S. What is the maximum number of tuples that could appear in the natural join of R and S?

दो डेटाबेस संबंध R और S पर विचार कीजिए, R में 3 टपल्स है और S में 2 टपल्स है। R और S के नैसर्गिक जोड (नेचुरल ज्वाइन) में दिखाई दे सकने वाले अधिकतम टपल्स की संख्या क्या होगी?

(a) 6 (b) 2

(c) 3 (d) 5

Ans. (a) : In Natural join, if two tables R and S with m and n number of tuples respectively. Then maximum number of tuples in their natural join will be m×n. Hence , given two relations R and S having tuples 3 and 2 respectively. So, maximum number of tuples in natural join of R and S is 3×2 = 6.

107. Which of the following protocol is used for transferring electronic mail messages from one machine to another?

एक मशीन से दूसरी मशीन में इलेक्ट्रानिक डाक संदेशों को अंतरित के लिए निम्नलिखित में से किस 'प्रोटोकाल' का उपयोग किया जाता है?

(a) HTTP/एच.टी.टी.पी. (HTTP)

(b) FTP/एफ.टी.पी. (FTP)

(c) SMTP/एस.एम.टी.पी. (SMTP)

(d) SNMP/एस.एन.एम.पी. (SNMP)

Ans. (c) : The Simple Mail Transfer Protocol (SMTP) is an Internet standard communication protocol for electronic mail transmission. Mail servers and other message transfer agents use SMTP to send and receive mail messages.

108. OLE, A Microsoft's component document technology, means :

ओ एल ई, माइक्रोसॉफ्ट की कम्पोनेंट डाक्यूमेंट टेक्नोलॉजी, का अभिप्राय है:

(a) Overlay Linking and Exchange/ओवरले लिंकिंग एण्ड एक्सचेंज

(b) Online Linking and Embedding/ऑनलाइन लिंकिंग एण्ड एम्बेडिंग

(c) Open Learning Exchange/ओपन लर्निंग एक्सचेंज

(d) Object Linking and Embedding/ऑब्जेक्ट लिंकिंग एण्ड एम्बेडिंग

Ans. (d) : Object Linking & Embedding (OLE) is a proprietary technology developed by Microsoft that allows embedding and linking to documents and other objects. OLE allows an editing application to export part of a document to another editing application and then import it with additional content.

109. The problem of indefinite blockage of low-priority jobs in general priority scheduling algorithm can be solved using :

'जनरल प्रयोरिटी शिड्यूलिंग अल्गोरिद्म' में ''लो – प्रायोरिटी जॉब'' की अनिश्चित ब्लाकेज की समस्या का समाधान _____की सहायता से किया जा सकता है।

(a) Swapping/स्वेपिंग

(b) dirty bit/डर्टी बिट

(c) aging/एजिंग

(d) compaction/कम्पेक्शन

Ans. (c) : Aging is a scheduling technique used to avoid starvation. Fixed priority scheduling is a scheduling discipline, in which tasks queued for utilizing a system resource are assigned a priority each. A task with a high priority is allowed to access a specific system resource before a task with a lower priority is allowed to do the same. Aging is used to gradually increase the priority of a task, based on its waiting time in the ready queue.

110. What result set is returned from the following SQL query ?

निम्नलिखित एस क्यू एल क्वेरी से क्या परिणाम सेट लौटाया गया है?

Select customer_name, telephone

From customers

Where city in ('Jaipur','Delhi','Agra');

(a) The customer_name of all customers who are not living in Jaipur, Delhi or Agra./सभी उपभोक्ताओं _नाम जो जयपुर, दिल्ली या आगरा में नहीं रहते हैं।

(b) The customer_name and telephone of all customers./उपभोक्ता_नाम और सभी उपभोक्ताओं के टेलीफोन ।

(c) The customer_name and telephone of all customers living in either Jaipur, Delhi or Agra./उपभोक्ता___नाम और जयपुर, दिल्ली में या आगरा में रहने वाले सभी उपभोक्ता के टेलीफोन ।

(d) The customer_name and telephone of all customers living in Jaipur, Delhi and Agra./उपभोक्ता__नाम और जयपुर, दिल्ली और आगरा में रहने वाले सभी उपभोक्ता के टेलीफोन।

Ans. (c) : SQL query –

SELECT customer_name, telephone

FROM customers

WHERE city IN ('Jaipur', 'Delhi', 'Agra');

when we are using keyword IN there must be OR keyword. So, result is –

The customer_name and telephone of all customers living in either Jaipur, delhi or Agra.

111. Which of the following data structures is most suitable for evaluating postfix expressions?
पोस्टफिक्स व्यंजकों के मूल्यांकन के लिए निम्नलिखित में से कौन सी डेटा संरचना सबसे अधिक उपयुक्त है?

(a) Tree/ट्री

(b) Stack/स्टैक

(c) Linked list/लिंक्ड लिस्ट

(d) Queue/क्यू

Ans. (b) : Stack is a linear data structure in which elements are inserted and deleted from one end only (top of the stack). It follows a order to insert the elements into stack which is known as LIFO (Last in First out). stack can be used for evaluating arithmetic expression. So, Stack data structure is most suitable for evaluating postfix expressions.

112. The major goal of object – oriented programming is :
अभिलक्ष्य केन्द्रित प्रोग्रामिंग का प्रमुख उद्देश्य है :

(a) Top-down program development/टॉपडाउन प्रोग्राम विकास

(b) Speed/गति

(c) User – interface/प्रयोक्ता-अन्तरपृष्ठ

(d) Reuse/पुनः उपयोग

Ans. (d) : Languages that support object oriented programming typically use inheritance for code reuse and extensibility in the form of either classes or prototypes. Object oriented programming language is based on classes and objects. It is used to structure a program into a simple, reusable piece of code.

113. Which of the following is the default scripting language in Active Server Pages (ASP)?
एक्टिव सर्वर पृष्ठ (ए एस पी) में निम्नलिखित में से कौन सा ड़िफॉल्ट स्क्रिप्टिंग भाषा है?

(a) JavaScript/जावास्क्रिप्ट

(b) PHP/पी एच पी

(c) HTML/एच टी एम एल

(d) VBScript/वी बी स्क्रिप्ट

Ans. (d) : The default scripting language used for writing Active server Pages (ASP) is VBScript, although you can use other scripting languages like Jscript (Microsoft's version of Java Script) . ASP is the server-side scripting engine developed by Microsoft. It can be used to dynamically generate web pages.

114. What is the bit rate for transmitting uncompressed 800×600 pixel color frame with 8 bits/pixel at 40 frames/second?
8 बिट्स/पिक्सल वाले 800×600 पिक्सल के असंपीडित (अनकम्प्रेस्ड) कलर फ्रेम को 40 फ्रेम/सेकंड पर संचरित करने के लिए बिट दर क्या होगी?

(a) 1536 Mbps (b) 2.4 Mbps

(c) 15.36 Mbps (d) 153.6 Mbps

Ans. (d) : Given –
Uncompressed pixel = 800×600
each of 8 bit = 800×600×8
Total frames = 40
Bit rate for transmitting = 800×600×8×40
= 153600000 bits
Here they are given in Mbps,
153600000 bits = 153.6 Mbps.

115. Assume the C++ definition : class circle : public point
Which of the following is false?
मान लें C++ परिभाषाएं : क्लास सर्कल : पब्लिक प्वाइंट
निम्नलिखित में से कौनसा गलत है?

(a) 'Point' is the base class and 'circle' is the derived class./'प्वाइंट' आधार वर्ग है और 'सर्कल' व्युत्पन्न वर्ग है।

(b) The colon (:) in the header of class definition indicates inheritance./क्लास डेफिनिशन के हेडर में कोलन (:) इनहेरिटेन्स को दर्शाता है।

(c) The keyword 'public' indicates type of inheritance./मुख्य शब्द 'पब्लिक' 'इनहरिटेन्स' के प्रकार को दर्शाता है।

(d) All the public and protected members of class 'circle' are inherited as public and protected members, respectively, into class 'point'./क्लास 'सर्कल' के सभी पब्लिक और प्रोटेक्टेड सदस्यों के क्रमशः पब्लिक एण्ड प्रोटेक्टेड मेम्बर्स के रूप 'प्वाइंट' वर्ग में इनहेरिट किए गए है।

Ans. (d) : In this question option (d) is incorrect, Because according to the given C++ definition, all the public and protected members of class 'point' are inherited as public and protected members, respectively, into class 'circle'. In public inheritance, public members of the base class, become public members of the derived class and protected members of the base class become protected members of the derived class.

116. Which of the following Java statements declare and allocate a 2-dimensional array of integers with four rows and five columns.

निम्नलिखित में से कौन सा जावा कथन चार पंक्तिया और पाँच स्तंभों वाले पूर्णांक के दो विमितीय अरे (array) को डिक्लेयर और एलोकेट करता है?

(a) int array [][] = new int [5][4];

(b) int array [4][5];

(c) int array [5][4];

(d) int array [][] = new int [4][5];

Ans. (d) : Multidimensional array is stored in the form of rows and columns.

Syntax–

int array [][] = new int [row size] [Column Size];

Here, in this question we have allocate 2-d array of integers with 4 rows and 5 columns.

So, int array [][] = new int [4][5];

117. The technology that stores only the essential instructions on a microprocessors chip and thus enhances its speed is referred to as :

वह प्रौद्योगिकी जो माइक्रोप्रोसेसर चिप पर केवल आवश्यक अनुदेशों का भण्डार करता है और इस प्रकार से गति में वृद्धि करता है, को कहा जाता है:

(a) MIMD (b) CISC

(c) RISC (d) SIMD

Ans. (c) : RISC (Reduced Instruction set computer.) is a microprocessor that is designed to perform a smaller number of types of computer instructions so that it can operate at a higher speed (MIPS). Since each instruction type that a computer must perform requires additional transistors and circuitry, a larger list or set of computer instructions tends to make the microprocessor more complicated and slower in operation.

118. Ten signals, each requiring 3000Hz, are multiplexed onto a single channel using FDM. How much minimum bandwidth is required for the multiplexed channel? Assume that the guard bands are 300 Hz wide.

दस सिग्नल जिनमें प्रत्येक की 3000 अपेक्षित है, एफ डी एम का का उपयोग करते हुए एक एकल चैनल पर बहु संकेतिक (मल्टीप्लेक्स) किया गया है। बहु सकेतित चैनल के लिए कम से कम कितने बैण्डविड्थ की आवश्यकता होगी? यह मान ले कि गार्ड बैण्ड 300Hz विस्तीर्य (वाइड) है।

(a) 33,700 (b) 30,000

(c) 32,700 (d) 33,000

Ans. (c): 10 signals with having 3000 Hz frequency.

if there are n signals multiplexed on to a single channel. Then the number of guard bands between each signal required = n–1

Hence, guard bands required = 10–1 = 9

guard bands = 300 Hz wide.

minimum bandwidth required for the multiplexed channel = 3000×10+300×9

= 30000+2700

= 32700Hz

119. Which of the following methods in Java Script will display a window having a dialog box with a specified message, along with an OK and CANCEL button as options?

जावा स्क्रिप्ट में निम्नलिखित में से कौन सी विधि में विकल्प के रूप मे 'ओके' और 'कैन्सल' बटन के साथ, निर्धारित संदेश युक्त डायलॉग बॉक्स वाला विन्डों प्रदर्शित होता है?

(a) prompt () (b) alert ()

(c) confirm () (d) request ()

Ans. (c) : confirm () displays a dialog box with a specified message along with OK and CANCEL button. It returns true if the user presses OK and false otherwise. Alert () displays an alert box with a message and an OK button.

Prompt () shows modal with a text message, an input field for the user, and OK/CANCEL buttons.

120. To declare the version of XML. the correct syntax is :

XML के संस्करण की घोषणा के लिए, सही सिन्टेक्स है?

(a) </xml version = '1.0'/>

(b) <?xml version = "1.0"/>

(c) <*xml version = '1.0'/>

(d) <?xml version = 1.0"/>

Ans. (b) : XML stands for eXtensible Markup Language. It is a markup language much like HTML. It is used to store and organize the data. The first line in the XML declaration, DOCTYPE, version and comments.

Syntax–

for declaring the version of XML is :

<?xml version = " 1.0"/>

121. Which of the following statements best describes the main reasons for normalizing relational database?

निम्नलिखित में से कौन सा कथन प्रासामान्यीकरण डेटाबेस के लिए मुख्य कारणों की व्याख्या करता है?

(I) To Achieve physical data independence. /भौतिक डेटा अनिर्भरता प्राप्त करना ।

(II) To remove data anomalies (insertion. update, deletion, anomalies)./डाटा विसंगतियों को दूर करना (अंतःस्थापन, अद्यतन, विलोपन, विसंगति)।

(III) To save space on disk./डिस्क पर 'स्पेस' बचाना।

(a) (I), (II) and (III)/(I), (II) और (III)

(b) (I) and (II) only/केवल (I) और (II)

(c) (I) and (III) only/केवल (I) और (III)

(d) (II) and (III) only/केवल (II) और (III)

Ans. (d) : Normalization is a technique for organizing data in a database. It is important that a database is normalized to minimize redundancy (duplicate data) and to ensure only related data is stored in each table. It also prevents any issues stemming from database modifications such as Insertions, Deletions, and Updates. The stages of organizations are called normal forms.

122. A thread is also called :
थ्रेड को _____ भी कहा जाता है।

(a) a scheduler/शिड्यूलर

(b) a virtual process/वर्चुअल प्रोसेस

(c) a heavyweight process/हेवीवेट प्रोसेस

(d) a lightweight process/लाइटवेट प्रोसेस

Ans. (d) : A thread is also known as lightweight process. The idea is to achieve parallelism by dividing a process in to multiple threads. A thread is a path of execution within a process. A process can contain multiple threads.

123. Copying a process from memory to disk to allow space for other processes is called _____.
अन्य प्रोसेसों को स्पेस प्रदान करने के लिए किसी प्रोसेस को मेमोरी से डिस्क में कॉपी करने को कहा जाता है_____।

(a) demand paging/डिमांड पेजिंग

(b) deadlock/डेडलॉक

(c) pagefault/पेजफाल्ट

(d) swapping/स्वेपिंग

Ans. (d) : Swapping is mechanism in which a process can be swapped temporarily out of main memory (or move) to secondary storage (disk) and make that memory available to other processes. At some later time, the system swaps back the process from the secondary storage to main memory.

124. When a subroutine is called, the address of the instruction following the CALL instructions stored in/on the _____.
जब ''सबरूटीन'' ''कॉल'' किया जाता है, ''कॉल'' अनुदेशों का पालन करते हुए अनुदेश का पता _____में/पर स्टोर होता है।

(a) program counter/प्रोग्राम काउण्टर

(b) stack/स्टैक

(c) stack pointer/स्टैक प्वाइंटर

(d) accumulator/एकुमुलेटर

Ans. (b) : A set of instructions that are used repeatedly in a program can be referred to as subroutine. Only one copy of this instruction is stored in the stack. when a subroutine is required it can be called many times during the execution of a particular program. when a subroutine is called, the address of the instruction following the CALL instructions stored in the stack.

125. Consider the following code segment:
निम्नलिखित कूट खण्ड पर विचार कीजिए-

```
if ( Y<0 )
  {X = –X; Y = – Y;}
Z = 0;
while (Y>0)
        {Z = Z + X; Y = Y –1;}
```

Assume that X, Y and Z are inter variables, and that X and Y have be initialized. Which of the following best describes what this code segment does?
मान लें कि X, Y, और Z पूर्णांक चर है और X और Y आरंभित है। निम्न में से क्या इस कोड खण्ड के कार्य का सर्वोत्तम वर्णन करता है?

(a) Sets Z to be the product X* Y/Z , X* Y का गुणनफल होगा

(b) Sets Z to be the sum X+ Y/Z , X+ Y का योगफल होगा

(c) Sets Z to be the absolute value of X/Z , X का निरपेक्ष मान होगा

(d) Sets Z to be the value of Y/Z,Y का मान होगा

Ans. (a): In this code segment

Consider, X = 4 and Y = 2

CASE 1. if (Y< 0) // 2 < 0 (false)

{ X = –X ; Y = –Y ;}

Z = 0 ;

while (Y > 0) // 2 > 0 (true)

{Z = Z + X ; Y = –1 ;} // Z = 0+4 = 4 ; Y = 2–1=1

CASE 2. (when Z = 4; Y = 1 ; X = 4)

if (Y<0)

{ X = –X ; Y = –Y;}

Z = 0;

while (Y>0) // 1 > 0 (true).

{Z = Z + X; Y = –1;} // Z = 4+4=8, Y = 1–1=0

CASE 3. if (Y<0)

{ X = –X ; Y = –Y ;}

Z =0 ;

while (Y>0) // 0>0 (false)

{Z = Z + X ; Y = –1}

finally , Z becomes 8. which is the product of X and Y (4×2=8)

126. A combinational logic circuit that is used when it is desired to send data from two more source through a single transmission line is known as _____.

किसी सिंगल ट्रांसशिन लाइन के माध्यम से दो या अधिक स्त्रोतों से डेटा भेजा जाना वांछित होने पर उपयोग में लाए जाने वाले संयोजनात्मक तर्क परिपथ को _____कहा जाता है।

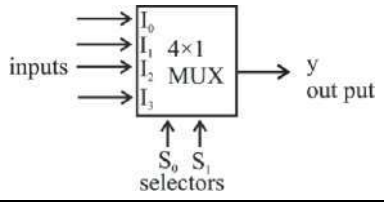
(a) De-multiplexer/डिमल्टीप्लक्सर

(b) Encoder/एनकोडर

(c) Decoder/डिकोडर

(d) Multiplexer/मल्टीप्लेक्स

Ans. (d) : Multiplexer is a combinational circuit which have many data inputs and single output depending on control or select inputs. Multiplexers are also known as 'Data n selector', parallel to serial convertor, many to one circuit , universal logic circuit for 2^n input lines, n selection lines are required.



127. What is garbage collection in the context of Java?

जावा के संदर्भ 'गार्बेज कलेक्शन' क्या होता है?

(a) The Java Virtual Machine (JVM) checks the output of any Java program and deletes anything that does not make sense at all./जावा वर्चुवल मशीन (जे.वी.एम.) किसी जावा प्रोग्राम के आउटपुट की जाँच करता है और उन सभी का विलोपन (डि्लीट) करता है जिसका कोई अर्थ नहीं है।

(b) The Operating System periodically deletes all of the Java files available on the system./ऑपरेटिंग सिस्टम, सिस्टम पर उपलब्ध सभी जावा फाइलों की आवधिक रूप से डिलीट करता है।

(c) Any Java package imported in a program and not being used, is automatically deleted./किसी प्रोग्राम में इस्पोर्ट किए गए कोई जावा पैंकेज जिसका उपयोग नही हो रहा है, स्वतः डि्लीट हो जाते है।

(d) When all references to an object are gone, then the memory used by the object is automatically reclaimed./जब किसी को सभी रैफरैंस चले जाते है तो ऑब्जेक्ट द्वारा प्रयुक्त स्मृति स्वतः वापस मांग ली जाती (रिक्लैम कर ली जाती) हैं।

Ans. (d) : Garbage collection in Java is the process by which Java programs perform automatic memory management. when Java programs run on the JVM, objects are created on the heap, which is a portion of memory dedicated to the program. Eventually, some objects will no longer be needed. The garbage collector finds these unused objects and deletes them to free up memory.

128. What is the full form of DTD that is used to describe content in an XHTML document?

किसी XHTML दस्तावेज की विषयवस्तु का वर्णन करने में प्रयुक्त DTD का पूर्ण रूप क्या है?

(a) Document To Definition

(b) Document Type Definition

(c) Document Towards Definition

(d) Document Text Definition

Ans. (b) : DTD stands for Document Type Definition. A DTD defines the structure and the legal elements and attributes of an XHTML document. The XHTML Standard defines, 3 DTDs.

* Strict
* Transitional
* frameset.

129. A register in the microprocessor that keeps track of the answer or result of any arithmetic or logic operation is the _____.

माइक्रोप्रोसेसर में वह रजिस्टर जो किसी अंकगणितीय या तार्किक प्रचालन के उत्तर या परिणाम के पथ की रखता है उसे _____कहा जाता है।

(a) Accumulator/एक्युमुलेटर

(b) Stack pointer/स्टैक प्वाइंटर

(c) Program counter/प्रोग्राम काउण्टर

(d) Instruction pointer/अनुदेश प्वाइंटर

Ans. (a) : An accumulator is a type of register for short-term intermediate storage of arithmetic and logic data in a computer's central processing unit (CPU). However, the term is rarely used in reference to contemporary CPUs. having been replaced around the turn of the millennium by the term register. It keeps track of result of any arithmetic or logic operation.

130. If the time quantum size is 2 units of an there is only one job of 14 time unit in a ready queue, the round-robin scheduling algorithm will cause_____ context switches.

यदि समय क्वांटम आकार समय की 2 यूनिटें है और किसी रेडी क्यू में 14 समय यूनिटों का केवल एक 'जॉब' है, राउण्ड-रोबिन शिड्यूलिंग अल्गोरिद्म _____ कन्टेस्ट स्विचों को प्रेरित करेगा।

(a) 8 (b) 5

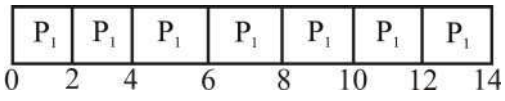
(c) 6 (d) 7

Ans. (c) : Round-Robin is a CPU scheduling algorithm where each process is cyclically assigned a fixed time slot. It is the preemptive version of First come first serve (FCFS) CPU scheduling algorithm. Round-Robin CPU Algorithm generally focuses on Time sharing technique.

Given time quantum = 2 units

There is only one job that requires 14 time units to execute completely.

So, the job queue-



context switches at 2, 4, 6, 8, 10, 12,

In this, there is a total of 6 context switches, as first and last will not be the context switch.

131. The memory which does not loose its content on failure of power supply is known as _____ memory.

वे स्मृतियाँ विद्युत आपूर्ति के बंद हो जाने पर भी अन्तर्निहित विषवस्तु नष्ट नहीं होती है, को _____ स्मृतियाँ कहा जाता है।

(a) Main memory (b) Volatile

(c) Non-volatile (d) RAM

Ans. (c) : Non-volatile memory is a type of computer memory, that can retain stored information even after power is removed. In contrast, volatile memory needs constant power in order to retain data.

132. The easiest method in Flash to draw a heptagon, is to use the _____.

फ्लैश में किसी सप्तभुज को बनाने का सबसे सरल तरीका _____ की सहयता लेना है।

(a) Polystar Tool with the "Polygon" style./'पॉलीगॉन' स्टाइल के साथ पॉलीस्टार टूल।

(b) Polygon Tool./पॉलीगॉन टूल।

(c) Lasso Tool with the "Create star" option./''क्रिएट स्टार'' आप्शन के साथ लेस्सो टूल।

(d) Polystar Tool with the "Star" style./''स्टार'' स्टाइल के साथ पॉलीस्टार टूल।

Ans. (a) : The Polystar tool is used to make a whole variety of different polygons and stars. when the polystar tool is active, an options button appears in the Properties panel that enables to control the type of shape to draw. We can set the number of sides for either shape by entering a value between 3 and 32 in the number of sides field. A standard five-sided star is as easy to create as a triangle i.e., a polygon with three sides. So, draw a heptagon to use the polystar Tool with the Polygon style.

133. If the period of a signal is 1000 ms, then what is its frequency in kilohertz?

यदि किसी 'सिगनल' की अवधि 1000 ms है, तो किलोहर्टज में इसकी आवृति क्या होगी?

(a) 10 kHz (b) 1kHz

(c) 10^{-3}kHz (d) 10^{-2}kHz

Ans. (c) : Given period of a signal = 1000ms

Time period = 1000 ms

$$\text{frequency} = \frac{1}{\text{time period}}$$

$$= \frac{1}{1000\,\text{ms}} = \frac{1}{1000\times10^{-3}\,\text{s}}$$

$$= 10^{-3}\times10^{3}\,\text{S}^{-1}$$

frequency = 10^{-3} kHz (: Hz = S^{-1})

134. Which of the following Visual Basic statements will assign the value "QUICK" from the variable y to the string variable x?

y = "THE QUICK RED FOX JUMPED OVER THE DOG"

निम्नलिखित में से कौन सा विजुअल बेसिक कथन स्ट्रिंग वेरिएबल x को, वेरिएबल y से, क्विक (QUICK) मान प्रदान करता है?

(a) x = Middle (y,5,5)

(b) x = Left (y,5)

(c) x = Mid (y,5,5)

(d) x = Instr (5,y,"QUICK")

Ans. (c) : Visual Basic has a Mid function and a Mid statement. These elements operate on a specified number of characters in a string but the Mid function returns the characters while Mid statement replaces the characters, Here to get the value QUICK from variable Y we have to use the Mid function.

y = " THE QUICK RED FOX JUMPED OVER THE DOG"

x = Mid (y, 5, 5)

it means, it starts from 5th character of the string and prints up to length 5 from that character and finally copies QUICK to variable x.

135. In structured programming, a program is decomposed into modules. Coupling and cohesion describe the characteristics of modules. A good decomposition should attempt to :

संरचित प्रोग्रामिंग में, प्रोग्राम की माड्यूलों में विघटित किया जाता है। 'कपलिंग' और 'कोहेसन' माड्यूल की विशषता का उल्लेख करते है। एक अच्छे विघटन (डिकम्पोजिशन) में किसके लिए प्रयास किया जाना चाहिए?

(a) Minimize coupling and minimize cohesion./न्यूनतम कपलिंग और न्यूनतम कोहेसन।

(b) Maximize coupling and minimize cohesion./अधिकतम कपलिंग और न्यूनतम कोहसन।

(c) Minimize coupling and maximize cohesion./न्यूनतम कपलिंग और अधिकतम कोहसन।

(d) Maximize coupling and maximize/अधिकतम कपलिंग और अधिकतम कोहेसन।

Ans. (c) : In structured programming, a program is decomposed into modules. coupling (degree of independence between modules) and cohesion (how the element inside the module joined functionally together) describe the characteristics of modules. A good decomposition should attempt to minimize coupling and maximize cohesion.

136. Consider the database table "Persons" having persons_ID as the primary key:/डेटाबेस तालिका पर विचार कीजिए व्यक्ति आईडी रखने वाले 'व्यक्ति', 'प्राथमिक कुंजी' (प्राइमरी की) के रूप में है:

person _ ID	Name	Age
1000	Rajan	40
–	Jatin	–45
1001	Rajesh	35

What are the constraints violated by the above table ?/उपर्युक्त तालिका द्वारा उल्लंघन किए जाने वाले प्रतिबंध क्या है?

(a) Relationship integrity/संबंध इंटेग्रिटी

(b) Referential integrity only/केवल रेफरेंशल इंटेग्रिटी

(c) Entity and domain integrities/एन्टिटी और डोमेन इंटेग्रिटी

(d) Referential and domain integrities/रेफरंशल और डोमेन इंटेग्रिटी

Ans. (c) : According to entity integrity rule. The primary key or part of it in any relation can not be NULL. Primary key is Person_Id which does not follow entity integrity rule, as value in the second row of primary key is Null. Domain constraints means all data items in a column must follow within a defined set of valid values. Age has negative value which does not follow Domain integrity rule.

137. On which of the following storage media, storage of information is organized as a single continuous spiral groove ?

निम्नलिखित में से किस भण्डारण माध्यम में, सूचना का भण्डारण एकल सतत घुमावदार खांचे (सिंगल कंटिन्यूअस स्पिरल ग्रुव) के रूप में व्यवस्थित होती है?

(a) CD-ROM/सी डी - रोम

(b) RAM/रैम

(c) Hard disk/हार्ड डिस्क

(d) Floppy disk/फ्लॉपी डिस्क

Ans. (a) : A CD-ROM, (compact disc read-only memory) is a type of read-only memory consisting of a pr-pressed optical compact disc that contains data. In CD-Rom storage of information is organized as a single continuous spiral groove.