

CBSE
**15 SAMPLE
QUESTION
PAPERS**
CLASS 12
COMPUTER SCIENCE

Strictly based on the latest CBSE 2021 Exam Sample Paper released
on 9th Oct 2020 (CBSE Cir.No. Acad-77/2020)



Strictly as per the Reduced
CBSE Syllabus released
on 7th July 2020
(CBSE Cir.No.Acad-47/2020)



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**CENTRAL BOARD OF
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DELHI**



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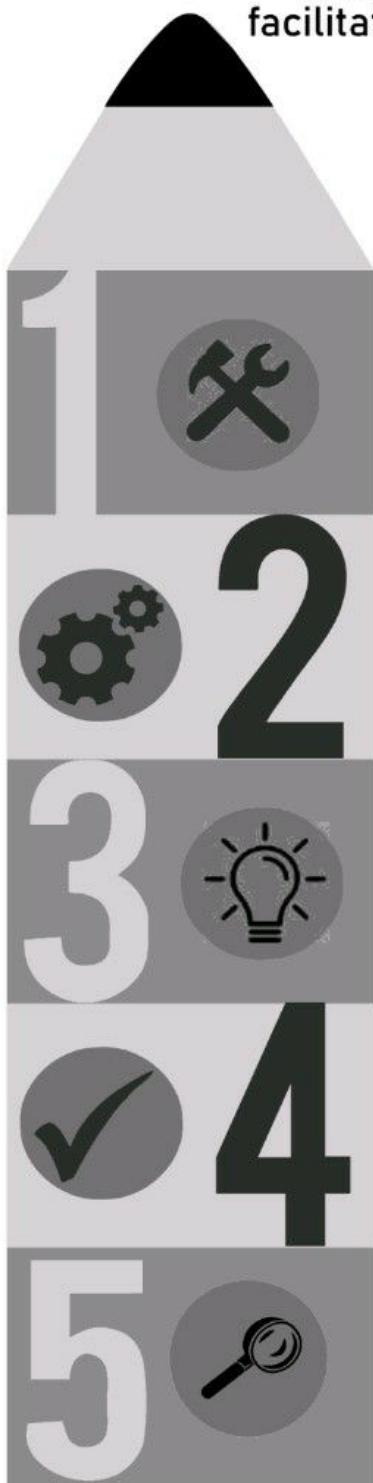
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केन्द्रीय माध्यमिक शिक्षा बोर्ड
CENTRAL BOARD OF SECONDARY EDUCATION



CBSE-Acad/Circular/2020

Date: 07 July, 2020

Circular No: Acad 47/2020

All Heads of Institutions affiliated to CBSE

Subject: Revised Academic Curriculum for the session 2020-21

The prevailing health emergency in the country and at different parts of the world as well as the efforts to contain the spread of Covid-19 pandemic has resulted in loss of class room teaching due to closure of schools. Therefore the Board has decided to revise the syllabi for classes IX-XII for the academic session 2020-21. The changes made in the syllabi have been finalised by the respective Course Committees with the approval of the Curriculum Committee and Governing Body of the Board.

The revision of syllabi is a measure taken due to the extraordinary situation prevailing in the country and at different parts of the world. Considering the importance of achieving the level of learning, the syllabus has been rationalised to the extent possible by retaining the core concepts.

The Heads of Schools and Teachers may ensure that the topics that have been reduced are also explained to the students to the extent required to connect different topics. However the reduced syllabus will not be part of the topics for Internal Assessment and year-end Board Examination. Alternative Academic Calendar and inputs from the NCERT on transacting the curriculum using different strategies may also be part of the teaching pedagogy.

For Elementary Classes (I-VIII) schools may follow the Alternative Academic Calendar and Learning Outcomes specified by NCERT.

The revised syllabi are available at the link: http://cbseacademic.nic.inRevisedcurriculum_2021.html

(Dr. Joseph Emmanuel)
Director (Academics)



केन्द्रीय माध्यमिक शिक्षा बोर्ड CENTRAL BOARD OF SECONDARY EDUCATION



F.No.CBSE/DIR(ACAD.)/2020

March 16th, 2020

Circular No. Acad-18/2020

All Heads CBSE affiliated schools

Subject: Strengthening Assessment and Evaluation Practices of the Board

Competency Based Education (CBE) is an outcome based approach to schooling, where attainment of goals takes priority. Learning Outcomes (LOs) are defined in terms of competencies and capacities, which students acquire and demonstrate at the end of instructional programme. In CBE, explicitly defined learning outcomes guide instruction; instruction is more flexible, learner centric, learner-led and provides multiple opportunities for learning; and assessment is authentic and examines if the students are able to apply required concepts in real life situations.

The Board vide Circular No. Acad-05/2019 dated 18.01.2019 has adopted Learning Outcomes developed by NCERT and the theme of the Capacity Building Programmes for the year 2020 is Competency Based Education. Augmenting the thrust towards CBE, the Board is initiating corresponding changes in the Examination and Assessment practices for the year 2020-21 onwards.

While the overall marks and duration of examination shall remain same, change in the composition of assessment tasks would help us achieve the desired ends.

The changes for classes IX-XII (2020-21) year-end/Board Examination are as under:

Classes XI-XII		
Year-end Examination /Board Examination (Theory)	(2019-20) Existing	(2020-21) Modified
Composition	<ul style="list-style-type: none">Objective type Questions including Multiple Choice QuestionsShort Answer type/Long Answer type Questions	<ul style="list-style-type: none">Objective type including Multiple Choice Questions- 20%Case-based/ Source-based Integrated Questions- 10%Short Answer/Long Answer type questions- Remaining

Curriculum document for the Academic Session 2020-21 to be released in March, 2020 will reflect the respective changes for the individual subjects.

(Dr. Joseph Emmanuel)
Director (Academics)



केन्द्रीय माध्यमिक शिक्षा बोर्ड
CENTRAL BOARD OF SECONDARY EDUCATION



F.1001/CBSE-Acad/Curriculum/2020

March 31, 2020

Cir No Acad-21/2020

All Heads of Institutions affiliated to CBSE

Subject : CBSE - Secondary and Senior School Curriculum 2020-21

1. The curriculum refers to the lessons and academic content to be taught to a learner in the school. It encompasses general objectives of learning, courses of study, subject- wise instructional objectives and content, pedagogical practices and assessment guidelines.
2. The curriculum provided by CBSE seeks to provide opportunities for students to achieve excellence in learning based on the National Curriculum Framework-2005 and are adopted/ adapted from the NCERT Curriculum.
3. It is important that schools ensure curriculum transaction as per directions given in the Curriculum document. The subjects to be taught must be as per syllabi given. Before going through the syllabus, the teachers must be well-versed with the strategies given in the initial pages of the curriculum. Therefore, it is desired that the head of the school may circulate the initial pages of the curriculum and the syllabi to all the teachers and ensure that curriculum is transacted as per the directions given therewith for optimal learning and specifically to avoid difficulties for students at the time of the examinations.
4. It is reiterated that any deviation in transaction of the curriculum may seriously affect assessment of the student's learning level and the preparation for the Board examinations. Please note that the Evaluation will be carried out exactly according to the syllabi given for the current academic year. Sample Question Papers with detailed design of the Question Paper will be made available on CBSE website during the progress of the academic session for reference.
5. Please refer to Circular No.Acad /18 dated March 16, 2020 on strengthening the Assessment and Evaluation Practices of the Board to know about the proposed changes. Hence, all the teachers and students are cognizant of the Curriculum Document (Initial Pages and Syllabus) in totality, which is available on www.cbseacademic.nic.in.
6. The Board will consider possible loss of instructional time in the academic session 2020-21 due to the closure of schools to prevent spread of COVID-19 as per directions from the Central Government and various State/UT Governments. Revision if any required in the syllabi and course and the pattern of Examination of various subjects on account of the above will be chalked out in consultation with the Course Committees of each subject as well as with the Examination Committee of the Board and notified in due course of time.

(Dr. Joseph Emmanuel)
Director (Academics)

OSWAAL BOOKS

LEARNING MADE SIMPLE



Pratyush Goel
Teacher

Oswaal Books has been & continues to be the best!!!!!! The books are well written. It is not like any other sample paper containing just sample papers, it contains more than what anyone can think of !!! Anyone can buy it blindfolded... Very happy to buy it :)



Megha Jain
Teacher

It is very important for students to solve as many papers as possible in the last few months before the board examination and OSWAAL helps them to do that with Sample Question Papers. Must buy for more practice.



Ishita
Student

Extremely useful for Exam Preparations. It contains all relevant topics and questions and has brilliant concept of Mind Maps to revise. Must buy book!!



Ankita
Student



Akriti Rana
Teacher

It is an amazing book with the most helpful content for effective learning of students. It is most suitable from examination point of view with relevant content.



Lalita Verma
Student

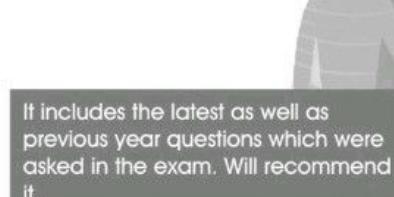
Oswaal SQPs covers all the topics. It is strictly as per the syllabus. 5 self-assessment papers also aid a lot in practicing.



Komal
Student

Oswaal Books contains sample papers as per the latest paper pattern issued by CBSE. The Sample Answer sheet of the topper also helped a lot :-)

Rajat Shah
Student



Rajesh Sharma
Teacher

As a tutor I always ask my students to go for Oswaal SQPs. It has many conceptual questions. AI mark in the book also help students to identify the most likely question to be asked in the board examination.



Scan the QR

Part - 1



Part - 2

Hear it from the Toppers!

Exam season is here and it's time for some expert tips to ace your exams. To watch the video,

Reduced Syllabus for Academic Year (2020-21)

Computer Science

CLASS-XII

Code No. 083

1. Prerequisites

Computer Science- Class XI

2. Learning Outcomes

- Apply the concept of functions and recursion.
- Ability to create and use Python libraries.
- Apply the concept of file handling.
- Make use of the concept of efficiency in algorithms and computing in general.
- Ability to use basic data structures: Stacks and Queues.
- Explain the basics of computer networks.
- Ability to use connectivity between Python and SQL.

3. Distribution of Marks

Unit No.	Unit Name	Theory Marks	Periods	
			Theory	Practical
1.	Computational Thinking and Programming - 2	40	50	30
2.	Computer Networks	10	10	---
3.	Data base Management	20	20	10
	Total	70	80	40

Unit I: Computational Thinking and Programming - 2

- Revision of the basics of Python covered in Class XI.
- Functions: scope, parameter passing, mutable/imutable properties of data objects, passing strings, lists, tuples, dictionaries to functions, default parameters, positional parameters, return values, functions using libraries: mathematical and string functions.
- File handling: Need for a data file, Types of file: Text files, Binary files and CSV (Comma separated values) files.
- Text File: Basic operations on a text file: Open (filename – absolute or relative path, mode) / Close a text file, Reading and Manipulation of data from a text file, Appending data into a text file, standard input / output and error streams, relative and absolute paths.
- Binary File: Basic operations on a binary file: Open (filename–absolute or relative path, mode) / Close a binary file, Pickle Module – methods load and dump; Read, Write/Create, Search, Append and Update operations in a binary file.
- CSV File: Import csv module, functions – Open / Close a csv file, Read from a csv file and Write into a csv file using csv.reader () and csv.writerow().
- Using Python libraries: create and import Python libraries.
- Recursion: simple algorithms with recursion: print a message forever, sum of first n natural numbers, factorial, Fibonacci numbers; recursion on arrays: binary search.
- Idea of efficiency: performance measurement in terms of the number of operations.
- Data-structures: Lists as covered in Class XI, Stacks – Push, Pop using a list, Queues – Insert, Delete using a list.

Contd.

Unit II: Computer Networks

- Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching).
- Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps).
- Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.
- Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, WiFi card.
- Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN.
- Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, HTTP, SMTP, POP3, Remote Login (Telnet) and Internet, Wireless / Mobile Communication protocol such as GSM, GPRS and WLL.
- Mobile Telecommunication Technologies: 1G, 2G, 3G, 4G and 5G; Mobile processors; Electronic mail protocols such as SMTP, POP3, Protocols for Chat and Video Conferencing: VoIP, Wireless technologies such as Wi-Fi and WiMax.
- Network Security Concepts:

Threats and prevention from Viruses, Worms, Trojan horse, Spams Use of Cookies, Protection using Firewall, https; India IT Act, Cyber Law, Cyber Crimes, IPR issues, hacking.

- Introduction To Web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Website, Web browser, Web Servers; Web Hosting, Web Scripting – Client side (VB Script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social networking)
- E-commerce payment transactions using online banking, mobile banking, payment apps and services.

Unit III: Database Management

Database Concepts: Introduction to database concepts and its need.

Relational data model: Concept of domain, relation, tuple, attribute, degree, cardinality, key, primary key, candidate key, alternate key and foreign key; Structured Query Language:

General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language; Data Types: number / decimal, character / varchar / varchar2, date; SQL commands: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATESET...., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, LIKE, NULL / IS NULL, ORDER BY, GROUP BY, HAVING; SQL functions: SUM (), AVG (), COUNT (), MAX () and MIN ();

Joins: equi-join and natural join

Interface of Python with an SQL database

- Connecting SQL with Python
- Creating Database connectivity Applications
- Performing Insert, Update, Delete queries
- Display data by using fetchone(), fetchall(), rowcount

Contd.

4. Practical

S. No.	Area	Marks (Total = 30)
1.	Lab Test: 1. Python program (60% logic + 20% documentation + 20% code quality) 2. Small Python program that sends a SQL query to a database and displays the result. A stub program can be provided.	7 5
2.	Report file: Minimum 20 Python programs. Out of this at least 4 programs should send SQL commands to a database and retrieve the result	7
3.	Project (that uses the concepts that have been learnt in Class 11 and 12)	8
4	Viva voce	3

5. Suggested Practical List:

Python Programming

- Recursively find the factorial of a natural number.
- Write a recursive code to find the sum of all elements of a list.
- Write a recursive code to compute the nth Fibonacci number.
- Read a text file line by line and display each word separated by a #.
- Read a text file and display the number of vowels/ consonants/uppercase/ lowercase characters in the file.
- Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
- Create a binary file with roll number, name and marks. Input a roll number and update the marks.
- Remove all the lines that contain the character `a' in a file and write it to another file.
- Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
- Write a Python program to implement a stack and queue using a list data-structure.
- Take a sample of ten phishing e-mails (or any text file) and find most commonly occurring word(s)

Database Management

- Create a student table and insert data. Implement the following SQL commands on the student table:
ALTER table to add new attributes / modify data type / drop attribute
UPDATE table to modify data
ORDER By to display data in ascending / descending order
DELETE to remove tuple(s)
GROUP BY and find the min, max, sum, count and average
- Similar exercise may be framed for other cases.
- Integrate SQL with Python by importing the MySQL module.

Contd.

6. Project

The aim of the class project is to create something that is tangible and useful using Python / Python and SQL connectivity. This should be done in groups of two to three students and should be started by students at least 6 months before the submission deadline. The aim here is to find a real world problem that is worthwhile to solve.

Students are encouraged to visit local businesses and ask them about the problems that they are facing. For example, if a business is finding it hard to create invoices for filing GST claims, then students can do a project that takes the raw data (list of transactions), groups the transactions by category, accounts for the GST tax rates, and creates invoices in the appropriate format. Students can be extremely creative here. They can use a wide variety of Python libraries to create user friendly applications such as games, software for their school, software for their disabled fellow students, and mobile applications. Of course to do some of these projects, some additional learning is required; this should be encouraged. Students should know how to teach themselves.

The students should be sensitized to avoid plagiarism and violations of copyright issues while working on projects. Teachers should take necessary measures for this.



Deducted Portion

Unit I: Computational Thinking and Programming - 2

- Recursion – simple algorithms with recursion : print a message forever, sum of first n natural numbers, factorial, Fibonacci numbers, recursion on arrays : binary search
- Idea of efficiency : performance measurement in terms of the number of operations.
- Data-structures: Lists as covered in Class XI, Stacks – Push, Pop using a list, Queues – Insert, Delete using a list. (One of the data structure Stack or Queue. Note : While setting the question paper a students will have an option between Stack and Queue.)

Unit II: Computer Networks

- Web Scripting Client side (VB Script, Java Script, PHP) and Server side (ASP, JSP, PHP), Web 2.0 (for social networking)
- E-commerce payment transactions using online banking, mobile banking, payment apps and services.

Unit III: Database Management

CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATESET, INSERT, DELETE

1. Suggested Practical List: Python Programming

- Recursively find the factorial of a natural number
- Write a recursive code to find the sum of all elements of a list.
- Write a recursive code to compute the nth Fibonacci number

5 Study Tips to follow amid the Pandemic

Feeling under pressure? Missing your classroom learning?

There's just no denying it that self-learning without enough guidance from the teachers is hard. The coronavirus Pandemic may have completely altered the educational system and left you hooked to the computer screens.

But don't worry, Oswaal Books got you covered! Here are 5 useful ways to make your learning simple.



1. Schedule the Day

"Don't put off things for tomorrow that can be done today". As the schools are closed and there is no hope of them opening any time soon, you might start procrastinating. Chalk out a plan for your day, dividing your time optimally between studies and recreation. It's a great feeling crossing out the tasks that are scheduled for a day.



2. Attend your Classes

Obvious isn't it? But for many students, staying in bed is the most tempting thing to do right now. You should get yourself to every online class and take notes with utmost attention.



3. Keep a Distance from Devices

Although phones and laptops are very useful for having the information on the fingertips, and now for the smooth exchange of classroom resources. But you should keep them at bay while self-studying except during classes.



4. Refer to Help Books

Just going through textbooks for board exam preparation will not suffice. It is imperative to refer to help books, especially now when you don't have your teachers around and thus no access to additional practice material.



5. Keep Yourself Active

You are not meeting friends nor going out for any extra-curricular activities, this is bound to make you inactive and feel lethargic. You need to push yourself and retrain your mind to try new things to boost your creativity. This will not only help you rediscover yourself but will also better your retention and concentration.

MANODARPAN by the ministry of HRD, GOI
Psychosocial Support for Mental
Health & Well Being of Students during the
COVID Outbreak and beyond

Toll-Free Helpline No.
8448440632

This initiative is to address Students'
Mental health & Psychosocial issues



Hearing a lot about NEP 2020?
To get deeper insights into it Scan
this QR Code

Demystifying NEP 2020 :
The Oswaal Way

SCAN THE CODE



POSITIVE AFFIRMATIONS



"Affirmations are like a seed planted in soil. Poor soil, poor growth. Rich soil, abundant growth. The more you choose to think thoughts that make you feel good, the quicker the affirmations work."

- Louise Hay

Our mind starts believing what we repeatedly think or say. We, at Oswaal Books, resonate with this belief.

So, we want all our readers to create their own positive affirmations! A positive affirmation is something spoken aloud that you want to believe or want to be true. Repeating positive affirmations daily can help shift your internal dialogue from negative to positive.

So let's get started!

- I am confident.
- I love who I am.
- I am compassionate.
- I am responsible.
- I am a leader.
- I believe in my dreams.
- I am brave.
- I choose a positive attitude.
- I am enough.
- I am great just the way I am.
- I work hard.
- I radiate joy and love.
- I am honest.
- I am patient.
- I help my family.
- I am forgiving of others and of myself.
- I can achieve my goals.
- I make good decisions.
- I am diligent.
- I am thoughtful.
- I am talented.
- I respect myself and I respect others.
- I am loved.
- I believe in me.
- I am generous.
- I accept and love myself.
- I am unique.
- I am wonderfully made.
- I am creative.
- Challenges are opportunities to grow.
- Good things happen to me.
- I am loving.
- I am kind.
- I am strong.
- I am joyful.
- I care about others.
- I am important.
- I like myself.
- It's going to be a great day.
- I learn from my mistakes.
- I make friends easily.
- I am worthy.
- I am open to new experiences.
- I am beautiful.
- I am deserving of good things.
- I am grateful.
-
-
-
-



MIND mAPS

Learning made SIMPLE



Presenting words and
concepts as Pictures!!



anytime, as frequently as you like
till it becomes a habit!



When?

What?

mIND mAP

AN INTERACTIVE MAGICAL TOOL

Why?

Result

How?



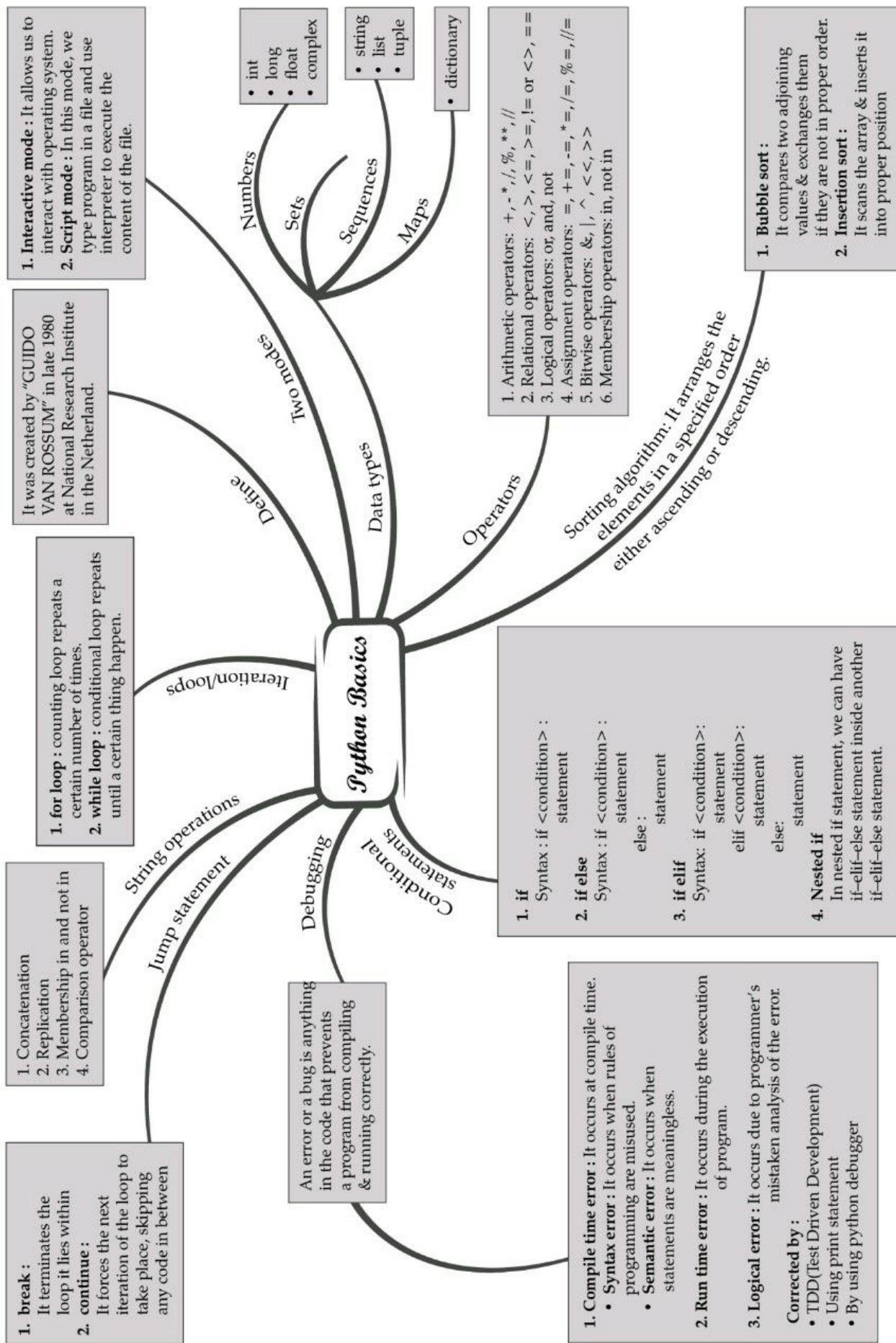
Learning made SIMPLE
'a winning Combination'

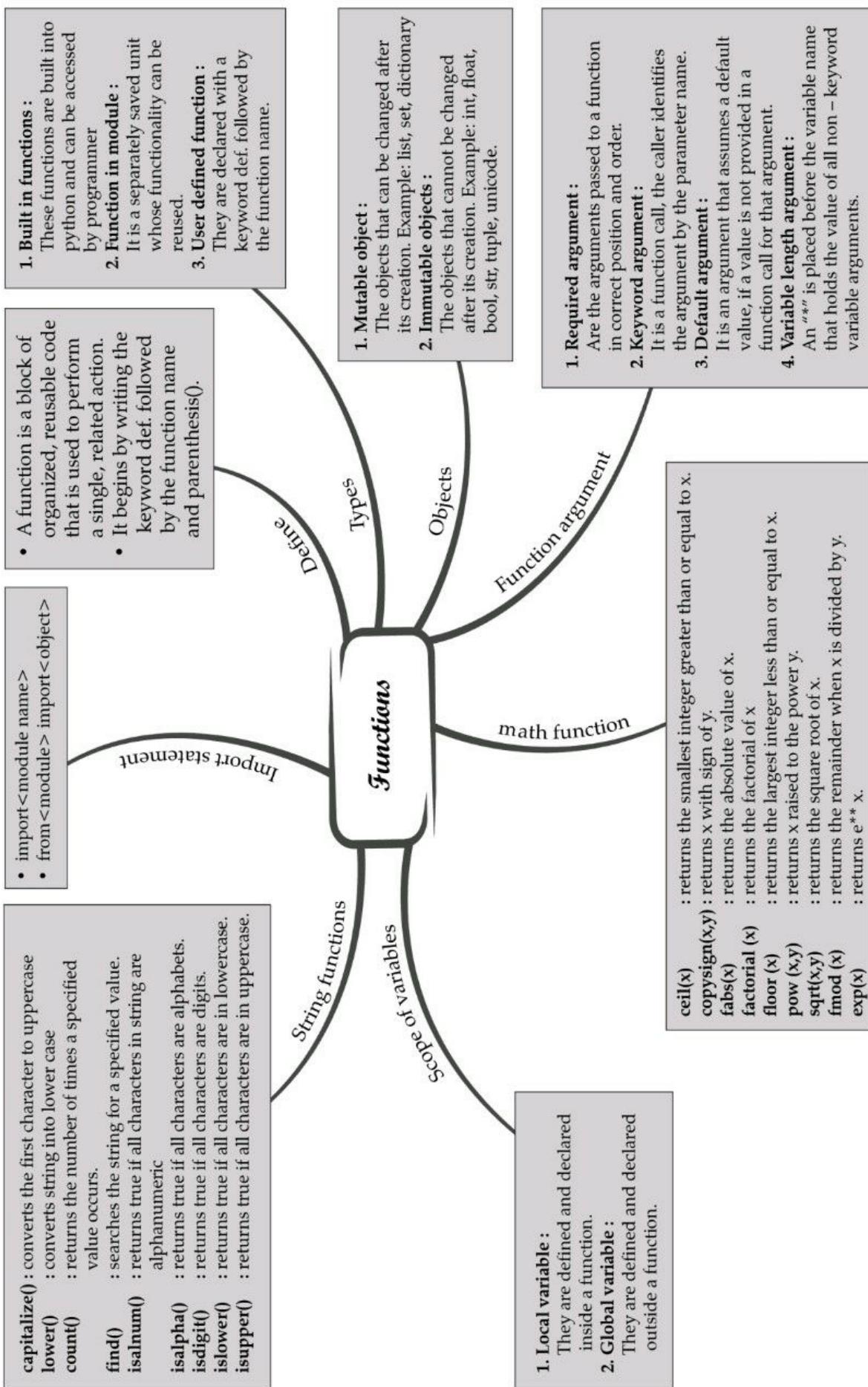


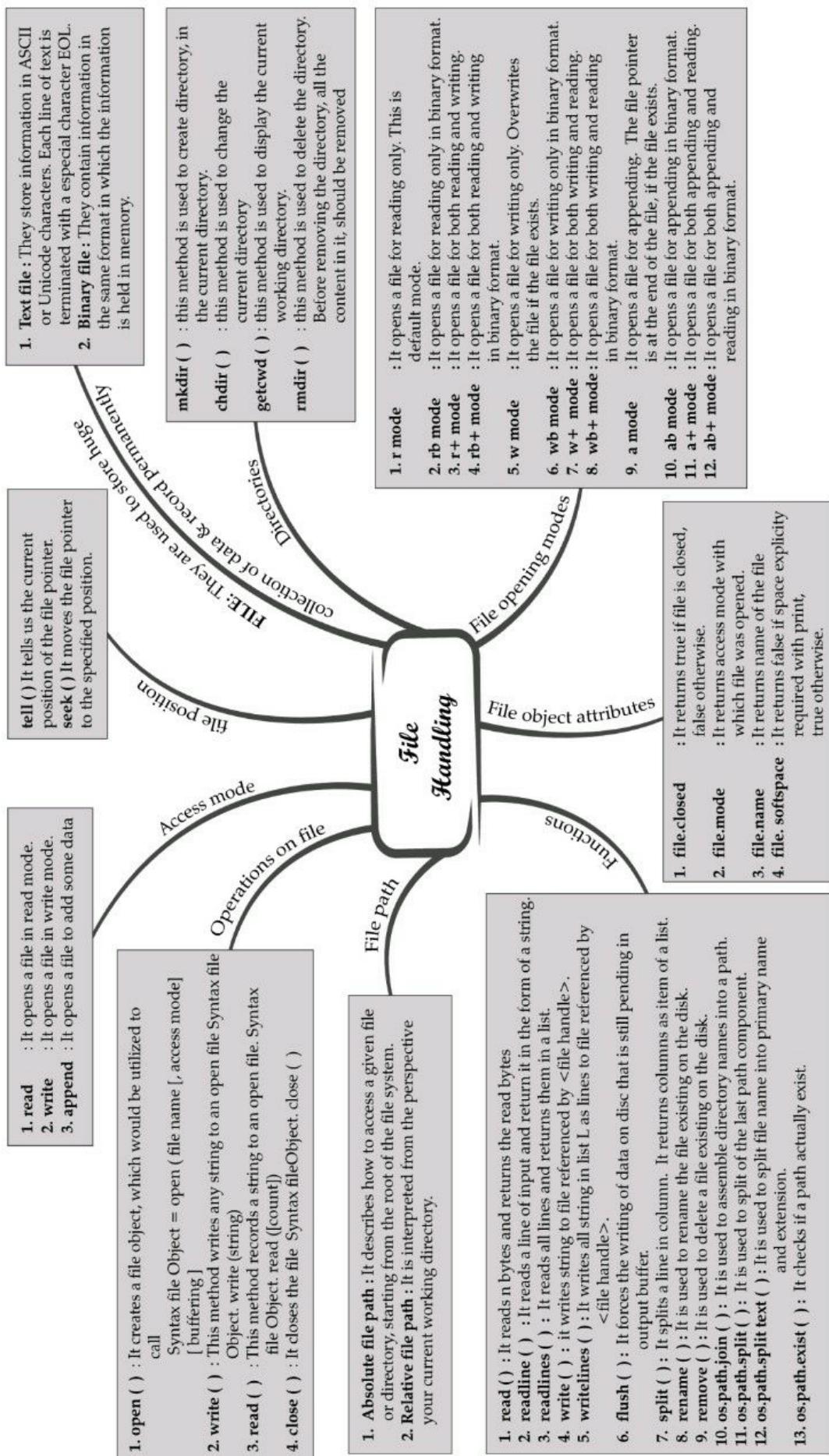
With a blank Sheet of Paper
Coloured Pens and
your Creative imagination!

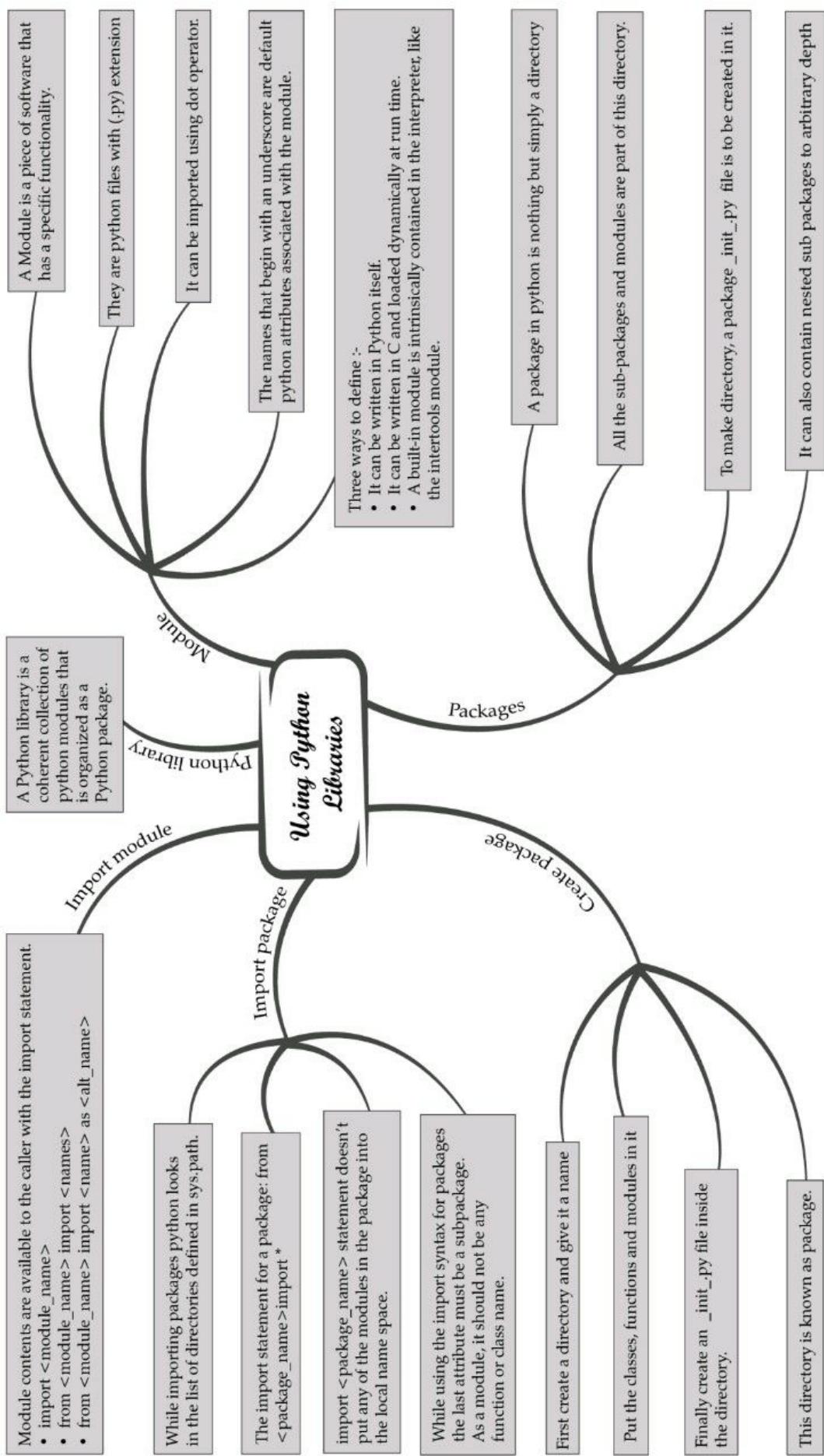
- To unlock the imagination and come up with ideas
- To remember facts and figures easily
- To make clearer and better notes
- To concentrate and save time
- To plan with ease and ace exams

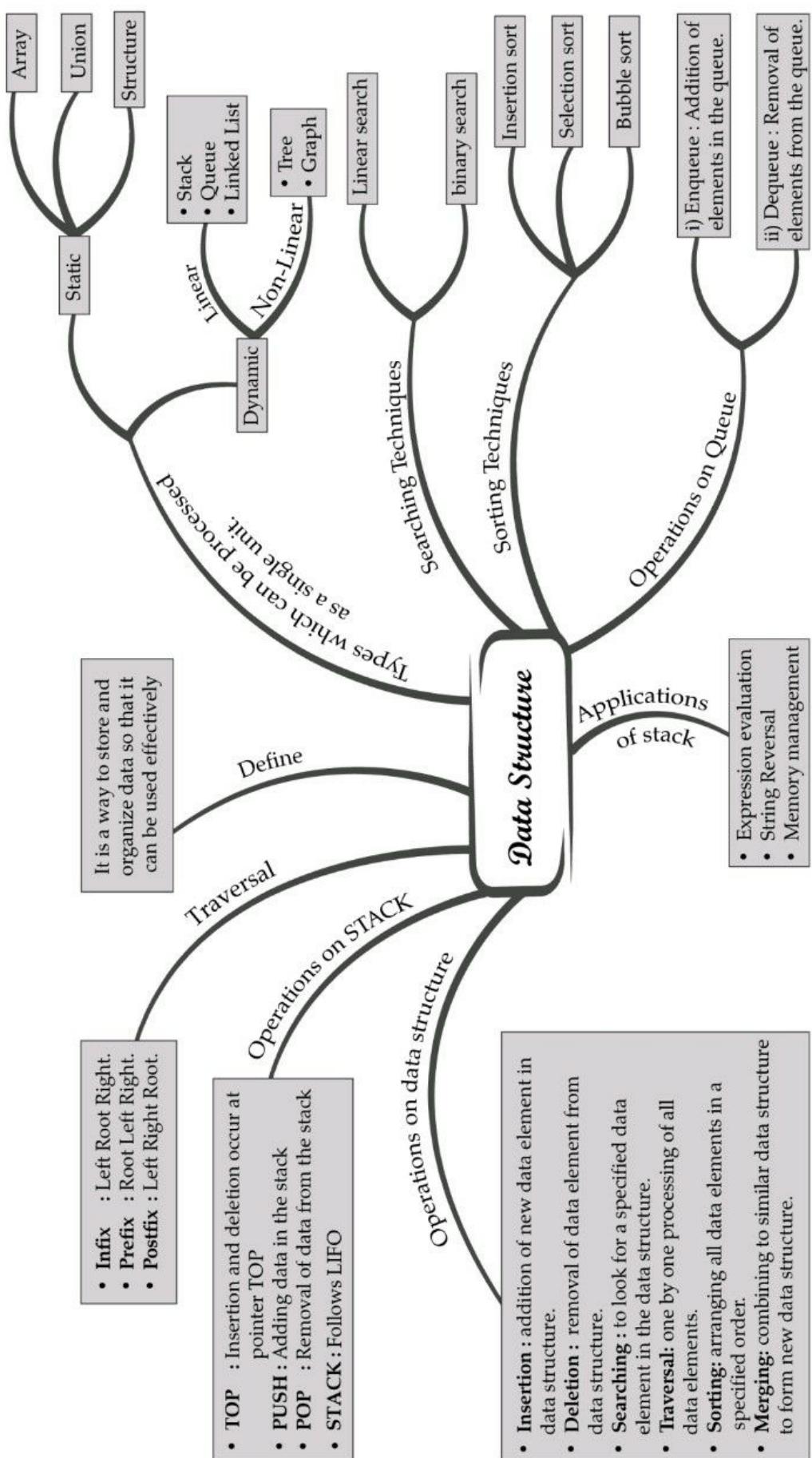
'Mind Maps' are a novel feature of these Sample Question Papers. Mind Maps have been given in the beginning, to help students understand all the topics and concepts better.

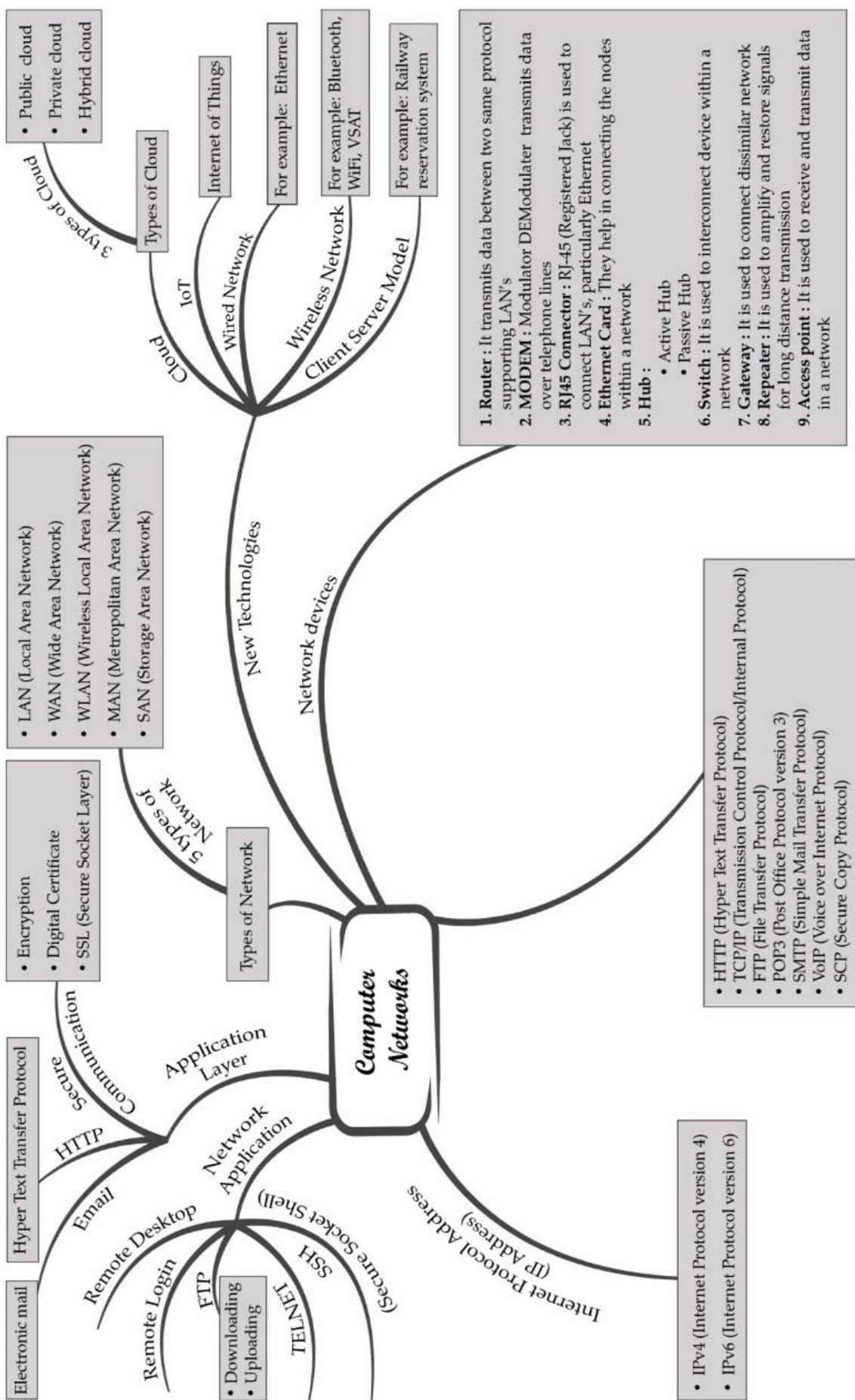






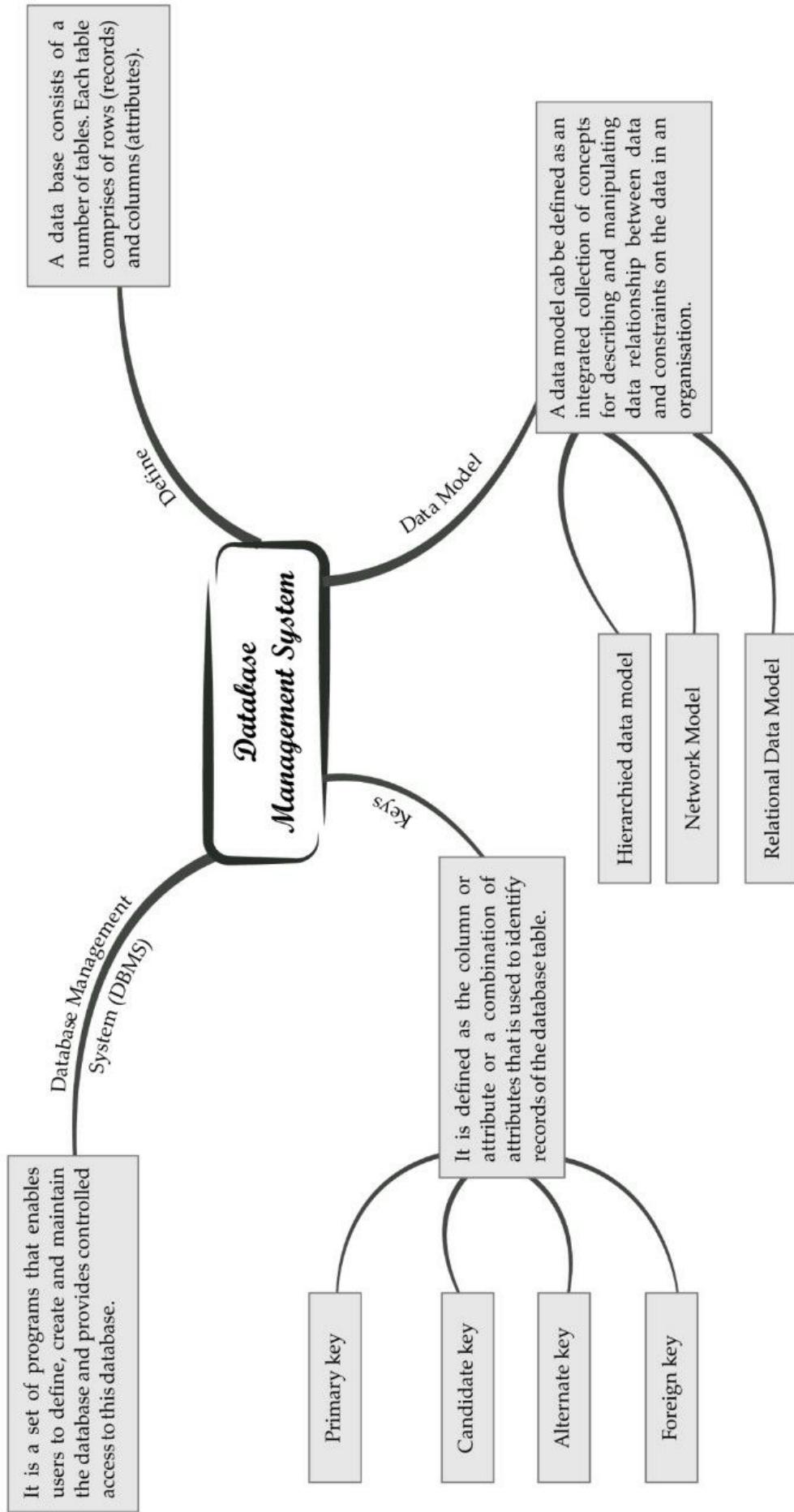


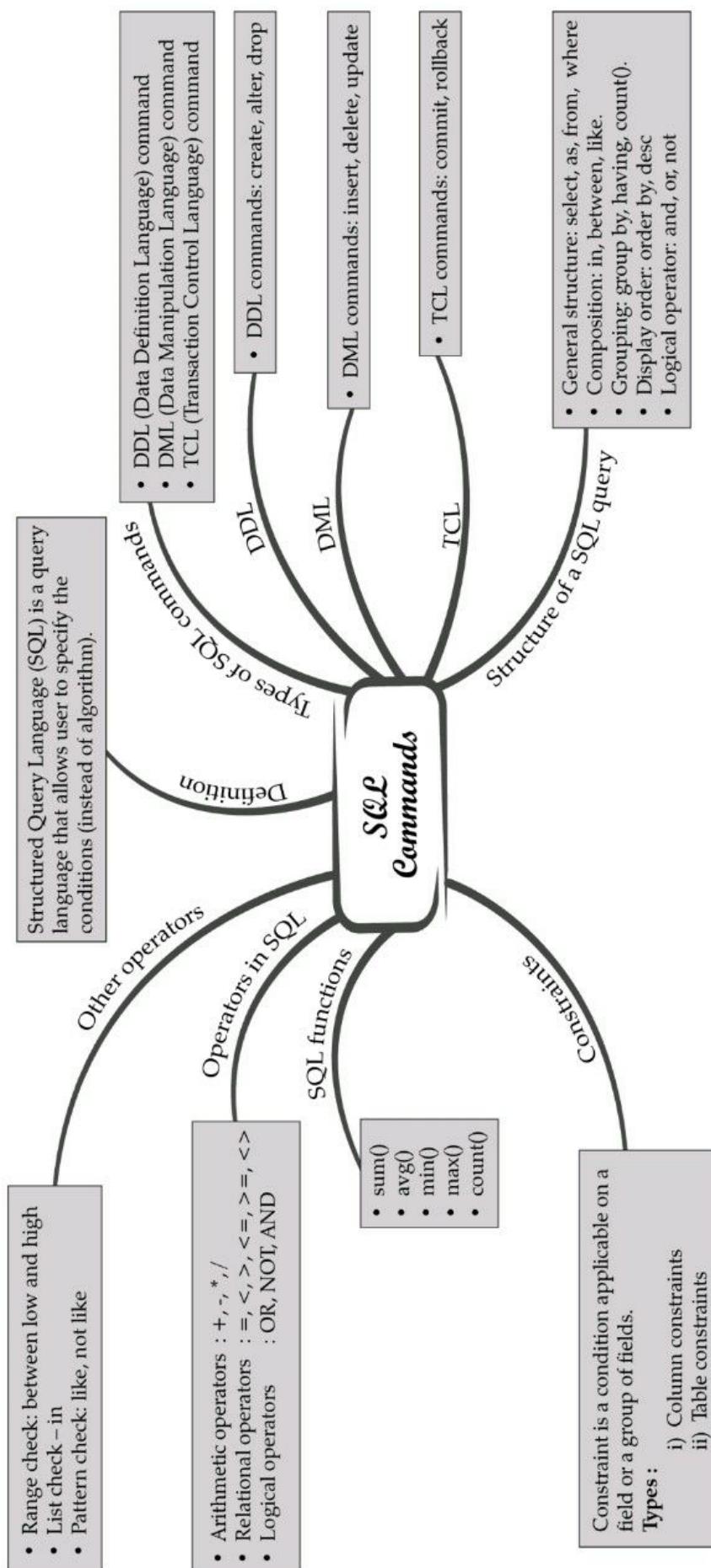


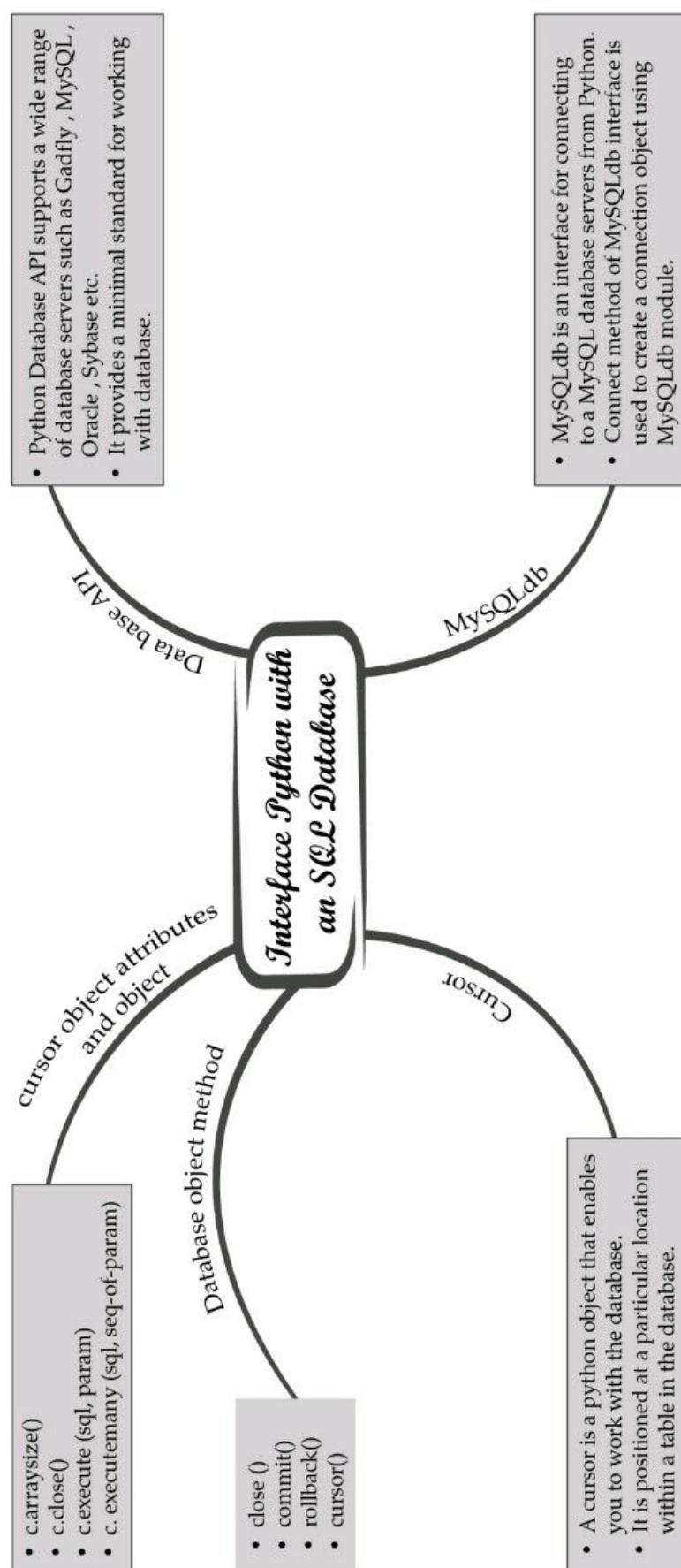


- HTTP (Hyper Text Transfer Protocol)
- TCP/IP (Transmission Control Protocol/Internal Protocol)
- FTP (File Transfer Protocol)
- POP3 (Post Office Protocol version 3)
- SMTP (Simple Mail Transfer Protocol)
- VoIP (Voice over Internet Protocol)
- SCP (Secure Copy Protocol)

- IPv4 (Internet Protocol version 4)
- IPv6 (Internet Protocol version 6)









ON TIPS NOTES

Note taking is a skill that we use in many walks of life : at school, university and in the world of work. However, accurate note making requires a thorough understanding of concepts. We, at Oswaal, have tried to encapsulate all the chapters from the given syllabus into the following ON TIPS NOTES. These notes will not only facilitate better understanding of concepts, but will also ensure that each and every concept is taken up and every chapter is covered in totality. So go ahead and use these to your advantage... go get the **OSWAAL ADVANTAGE!!**

Important Tips for Students:

The major part for achieving success in the python exam paper of computer science students is "Programming". Having good knowledge of programming concepts, any student can get top most success in the exam paper.

Here, we are giving some important key features about python exam paper so that maximum students appearing in the upcoming exam, 2018-19, assure their success with scoring good marks.

I. Key features for preparation the exam

- Create separate notes for the important topics and concepts with the help of books and previous years question papers.
- Learn all the basic concepts and their applications thoroughly.
- For expertise in the programming, practice writing programs with proper formatting as required.
- Point out all the errors, doubts in a separate notebook and clear them as soon as you can.
- Practice all the exercises mentioned at the end of every chapter in the textbook.
- Pay more attention in the programming labs and revise the programs on same day as you have done in the practical session.
- Prepare diagrams, charts and tables for learning the concepts of Boolean algebra, data communication and computer networks.
- Test yourself after completion of each topic by solving the previous years questions and identify your weak areas for giving strength to them.

II. We are giving a key note to every chapter of this book for better understanding the concepts.

CHAPTER 1 : REVISION OF THE BASICS OF PYTHON

- Python was created by Guido van Rossum in late '1980s' (Released in 1991) at National Research Institute in the Netherland.
- It is a case sensitive language.
- Python has a script mode.
- **Indentation :** Blocks of code are denoted by line indentation, which is rigidly enforced.
- **Comments :** A hash sign (#) that is not inside a string literal begins a single line comment.
- **Dynamic Typing :** In Python, while the value that a variable points to has a type.
- **Static Typing :** In static typing, a data type is attached with a variable when it is defined first and it is fixed.
- **Multiple Assignment :** Python allows you to assign a single value to several variables simultaneously.
For example: `a = b = c = 1`
`a, b, c = 1, 2, "john"`

- **Numbers** can be either integers or floating point numbers.
- **Sequence** is an ordered collection of items, indexed by integers starting from 0. Sequences can be grouped into strings, tuples and lists.
- **Strings** are lines of text that can contain any character. They can be declared with double quotes.
- **Lists** are used to group other data. They are similar to arrays.
- A **tuple** consists of a number of values separated by commas.
- A **set** is an unordered collection with no duplicate items.
- A **dictionary** is an unordered set of key value pairs where the keys are unique.
- A conditional is a statement which is executed, on the basis of result of a condition.
- The conditional statements in Python have the following forms.
 - (a) Plain if
 - (b) The if-else conditional
 - (c) The if-elif conditional statement
 - (d) Nested if
- Python provides three types of loops
 - (a) Counting loops repeat a certain number of times e.g. for
 - (b) Conditional loops repeat until a certain thing happens e.g. while.
 - (c) Nested loops.
- **Types of loop constructs in Python**
 - Python for loop
 - Python while loop
 - Python loop control statements
 - Nested for loop in Python
- An error or a bug is anything in the code that prevents a program from compiling and running correctly.
- There are three types of errors
 - (a) **Compile Time errors** occur at compile time.
These are of two types :
 - (i) Syntax errors occur when rules of programming language are misused.
 - (ii) Semantics errors occur when statements are not meaningful.
 - (b) Run Time errors occur during the execution of a program.
 - (c) Logical Errors occur due to programmer's mistaken analysis of the error.
To remove logical errors is called debugging.
- A list is a standard data type of Python that can store a sequence of values belonging to any type.
 - (a) These are mutable (i.e. modifiable), you can change elements of a list in place.
 - (b) The lists are depicted through square brackets.
 - (c) To join two lists use ` + ' (concatenation) operator.
 - (d) List manipulation functions are
append(), insert(), extend(), sort(), remove(), reverse() and pop().
- **Tuples**
 - (a) Tuples are immutable Python sequences, i.e. you cannot change elements of a tuple in place.
 - (b) Tuples store a reference at each index.
 - (c) Tuple manipulation functions are: len(), max(), min(), and tuple().
- **Dictionaries**
 - (a) Dictionaries in Python are a collection of some key-value pairs.
 - (b) These are mutable and unordered collection with elements in the form of a key : value pairs that associate keys to values.
 - (c) To manipulate dictionaries functions are : len(), clear(), has_key(), items(), keys(), values(), update().
 - (d) The membership operators in and not in work with dictionary keys only.

- **Bubble Sort** – It compares two adjoining values and exchange them if they are not in proper order.
- **Insertion Sort** – Suppose an array A with n elements A[1], A[2],.....A[N] is in memory. The insertion sort algorithm scans A from A[1] to A[N] inserting each element A[x] into its proper position in the previously sorted sub array A[1], A[2].....A[x-1]
- Strings in Python are stored as individual character in contiguous location, with two way index for each location. Strings are immutable and hence item assignment is not supported.
- Following operations can be used on strings.
 - (1) Concatenation `+'
 - (2) Replication `**'
 - (3) Membership in and not in
 - (4) Comparison Operators ==, !=, <, >, <=, >=
- Any Python file can be referenced as a module.
- Modules are accessed by using the import statement.
- **Mathematical functions**
 - (i) `sqrt()` : find the square root of a specified expression
 - (ii) `pow()` : compute the power of a number
 - (iii) `fabs()` : Returns the absolute value of x as a float.
- **Random Functions**
 - (i) `random()`
 - (ii) `choice()`
- Statistics Module
 - (i) `mean()`
 - (ii) `median()`
 - (iii) `mode()`

CHAPTER 2 : FUNCTIONS

- The act of partitioning a program into individual components is called 'Modularity'.
- The Python modules that come preloaded with Python are called "standard library modules".
- A function is a named block of statements that can be invoked by its name.
- Python can have three types of functions i.e., built-in functions, functions in modules and user-defined functions.
- There are two forms of import statements :
 - (i) `import < module name >`
 - (ii) `from < module name> import < object >`
- The math module of Python provides math functionality.
- The command line sys.argv arguments is another way that we can grab input.
- The basic I/O (Input/Output) functions are `input()` and `print()` respectively.
- `ceil(x)` : Returns the ceiling of x as a float, the smallest integer value greater than or equal to x.
- `floor(x)` : Returns floor of x as a float, the largest integer value less than or equal to x.
- `fabs(x)` : Returns the floating point absolute value of x.
- **Examples of Some Built-in Functions**
 - (i) `print()`
 - (ii) `input()`
 - (iii) `sorted()`
 - (iv) `bool()`
 - (v) `min()`
 - (vi) `any()`
- **String Functions**
 - (i) `partition()`

- (ii) join()
- (iii) split()
- **Modules :** It is a file containing Python definitions and statements.
- **Examples of Some Module Functions**
 - (i) fabs()
 - (ii) factorial()
 - (iii) random()
 - (iv) today()

CHAPTER 3 : FILE HANDLING

- Files are used to store huge collection of data and records permanently.
- **Need for a Data File**
 - (a) It is a convenient way to deal with large quantities of data.
 - (b) To avoid input of data multiple times during program execution.
 - (c) To share data between various programs.
- **Types of files**
 - (a) Text files
 - (b) Binary Files
 - (c) CSV files
- **read(), readline() and readlines()** methods are available for reading data from the file.
- **write()** and **writelines()** are used for writing data in the file.
- **pickle** module is used in serialization of data.
- **dump** and **load** functions are used to write and read data from file.
- The **open()** function creates a file object which would be utilized to call other methods associated with it.
- **access _mode :** It mode determines the mode in which the file has to be opened i.e., read, write, append, etc. A complete list of possible values is given below in the table. This is optional parameter and the default file access mode is read (r).
- **file () :** This is same as open () .
- **Types of file path**
 - (a) Absolute file path
 - (b) Relative file path
- Reading from a CSV file is done using the reader object.
- Delimiter specifies the character used to separate each field.
- quotechar specifies the character used to surround fields that contain the delimiter character.
- Escapechar specifies the character used to escape the delimiter character.
- You can also write to a CSV file using a writer object and the **write_row()** methods.
- **Functions :**
 - (a) read()
 - (b) readline()
 - (c) readlines()
 - (d) write()
 - (e) writelines()
 - (f) flush()
 - (g) split()
 - (h) rename()
 - (i) remove()
 - (j) os.path.join()

- (k) os.path.split()
- (l) os.path.splitext()
- (m) os.path.exists()

CHAPTER 4 : USING PYTHON LIBRARIES

- Python has packages for directories and modules for files.
- A python package can have sub-packages and modules.
- A directory must contain a file named `__init__.py` in order for Python to consider it as a package.
- Modules can be imported using dot(.) operator.
- The names that begin with an `_(underscore)` are default Python attributes associated with the module.
- Interpreter looks for a package or module in a list of directories defined in `sys.path`.
- `import <package_name>` statement doesn't put any of the modules in the package into the local namespace.
- `__all__` is a list of all modules that should be imported when the statement is executed.
- A module in one subpackage can reference objects in a sibling subpackage.
- ... refers to a package one level up.

CHAPTER 5 : DATA STRUCTURES

- A data structure is an organized group of data of different data types which can be processed as a single unit.
- Lists are the container which store the heterogeneous elements of any type.
- In Python, you can create different types of list.
 - (i) Empty list
 - (ii) Mixed data types list
 - (iii) Long lists
- **Creating list from existing sequence :**
List can be created from an existing sequence such as tuples, string etc. Elements of list will be represented individually separated by comma.
- **Accessing lists :**
 - (a) With the help of index number, you can access the individual elements from the list.
 - (b) Index number 0 represents the first element of the list, 1 represents the second element and so on. It is called positive indexing.
 - (c) Index number -1 represents the last element of the list, -2 represents the second last element and so on. It is called negative indexing.
- **Traversing a list**
There are two ways to traverse a list as follows:
 - (a) **Using FOR loop:** FOR loop allows to iterate or traverse all the elements of the list.
 - (b) **Using FOR loop with RANGE function:** If you want to traverse specified elements of list, you must use FOR loop with RANGE function.
- **List Operations :**
In Python, some basic operations can be formed on lists as follows:
 - (a) Concatenate lists
 - (b) Replicating lists
 - (c) Slicing
- **Working with lists :**
Various operations can be performed on lists as appending, updating, deleting etc.
 - (a) Appending elements to a list

- (b) Updating elements to a list
- (c) Deleting elements from a list

➤ **List Method :**

There are many methods to manipulate a list in Python. Some of them are as follows:

- (a) extend()
- (b) insert()
- (c) remove()
- (d) reverse()
- (e) sort()

- A stack is a linear data structure implemented in LIFO (Last In First Out) manner.
- Insertion and deletion both occurs only at one end known as TOP.
- Removing data from stack is called POP.
- Adding data into stack is called PUSH.
- Peek refers to inspecting the value at stack's top without removing it.
- Overflow refers to condition when one tries to PUSH an item in a stack that is full.
- Underflow refers to condition when one tries to POP an item from a stack that is empty.
- Prefix notation refers to when operator is placed before its operands.
- Postfix notation refers to when operator is placed after its operands.

CHAPTER 6 : COMPUTER NETWORK (NETWORK, STACK AND QUEUE)

➤ **Evolution of Networking :**

- (a) **ARPANET** : In 1969, US govt. formed an agency named ARPANET (Advanced Research Projects Agency Network) to connect computers at various universities and defense agencies.
- (b) **Internet (INTER-connection NETwork)**: The Internet is a worldwide network of computer networks.

➤ **Switching Techniques :**

- (a) Circuit switching
- (b) Message Switching
- (c) Packet Switching

➤ **Data communication Terminologies**

- (a) Concept of Channel
- (b) Band
- (c) Band width
- (d) Data Transfer Rate

➤ **Transmission Media :**

- (a) **Twisted Pair Cable** : It consists of two identical 1mm thick copper wires insulated and twisted together.

Advantages :

- (i) It is easy to install and maintain.
- (ii) It is inexpensive.

Disadvantages :

- (i) It is incapable to carry a signal over long distances without the use of repeaters.
- (ii) Due to low band width, these are unsuitable for broadband applications.

- (b) **Coaxial Cables** : It consists of a solid wire core surrounded by one or more foil or braided wire shields.

Advantages:

- (i) Data transmission rate is better than twisted pair cables..
- (ii) It is inexpensive.

Disadvantages :

- (i) Expensive than twisted pair cables.
- (ii) Difficult to manage and reconfigure.

(c) **Optical fiber** : It consists of thin glass fibres that can carry information in the form of visible light.

Advantages :

- (i) Transmit data over long distance with high security.
- (ii) Data transmission speed is high.
- (iii) Provide better noise immunity.
- (iv) Bandwidth is up to 10 Gbps.

Disadvantages :

- (i) Expensive as compared to other guided media.
- (ii) Need special care while installation.

(d) **Infrared** : The infrared light transmits data through the air and can propagate throughout a room.

Advantages :

- (i) Power consumption is used.
- (ii) Circuitry cost is less.
- (iii) Secure mode transmission.

Disadvantages :

- (i) Limited in a short range.
- (ii) Can be blocked by common materials like walls, people, plants etc..

(e) **Radio wave** : It is an electromagnetic wave with a wavelength between (0.5) cm and 30,000 m.

Advantages :

- (i) Radio wave transmission offers mobility.
- (ii) It is cheaper than laying cables and fibers.
- (iii) It offers ease of communication over difficult terrain.

Disadvantages :

- (i) Radio wave communication is insecure communication.
- (ii) Radio wave propagation is susceptible to weather effects like rains, thunder storms etc.

(f) **Microwave** : The microwave transmission is a line of sight transmission.

Advantages :

- (i) It is cheaper than laying cable or fiber.
- (ii) It has the ability to communicate over oceans.

Disadvantages :

- (i) Microwave communication is an insecure communication..
- (ii) Microwave propagation is susceptible to weather effects like rains, thunder storms etc.

(g) **Satellite link** : The satellite transmission is also a kind of line of sight transmission that is used to transmit signals throughout the world.

Advantages :

- (i) Area covered is quite large.
- (ii) No line of sight restrictions such as natural mountains, tall buildings, towers etc.
- (iii) Earth station which receives the signals can be fixed position or relatively mobile.

Disadvantages :

- (i) Very expensive as compared to other transmission mediums.
- (ii) Installation is extremely complex.
- (iii) Signals sent to the stations can be tampered by external interference.

➤ **Network Devices :**

These are units that mediate data in a computer network and also called network equipments.

- (a) Modem
- (b) RJ45 Connector
- (c) Ethernet card
- (d) Hub
- (e) Switch
- (f) Gateway
- (g) Repeater

➤ **Network Topologies :**

(a) **Bus Topology :** It uses a common single cable to connect all the workstations

(b) **Star Topology :** It is based on a central which acts as a hub.

(c) **Tree Topology :** It combines the characteristics of the linear bus and star topologies.

➤ **Network Types :**

(a) **LAN(Local Area Network)** : It is a network that is confined to a relatively small area.

(b) **MAN (Metropolitan Area Network)** : It is a network that covers a group of nearby corporate offices in a city.

(c) **WAN (Wide Area Network)** : These are the networks spread over large distances, say across countries or even continents through cabling or satellite uplinks.

(d) **PAN(Personal Area Network)** : It is a computer network organized around an individual person.

➤ **Network Protocol :**

- (a) Hypertext Transfer Protocol (HTTP)
- (b) FTP (File Transfer Protocol)
- (c) TCP/IP (Transmission Control Protocol/ Internet Protocol)
- (d) SMTP(Simple Mail Transfer Protocol)
- (e) POP3 (Post Office Protocol Version3)

➤ **Wireless Technologies :**

(a) GSM (Global System for Mobile communication)

(b) CDMA (Code Division Multiple Access)

(c) WLL(Wireless Local Loop)

(d) Email(Electronic Mail)

(e) Chat

(f) Video Conferencing

(g) SMS (Short Message Service)

(h) 3G and EDGE

CHAPTER 7 : DATABASE MANAGEMENT

- A Database consists of a number of tables.
- The database oriented approach supports multiple views of the same data.
- In database oriented approach, we store the common data in one table and access it from the required tables.
- Multiple views of the same database may exist for different users.
- The logical level of abstraction defines the type of data that is stored in the database and the relationship between them.
- The design of the database is known as the database scheme.
- The database administrator has the total control of the database and is responsible for setting up and maintaining the database.
- A data model is the methodology used by a particular DBMS to organize and access the data.

- Hierarchical, Network and Relational model are the three popular data models.
- **Hierarchical Model :**
 - (a) The hierarchical model was developed by IBM in 1968.
 - (b) The data is organized in a tree structure where the nodes represent the records and the branches of the tree represent the fields.
 - (c) Since the data is organized in a tree structure, the parent node has the links to its child nodes.
 - (d) If we want to search a record, we have to traverse the tree from the root through all its parent nodes to reach the specific record.
 - (e) The hashing function is used to locate the root.
 - (f) SYSTEM2000 is an example of hierarchical database.
- **Network Model :**
 - (a) Recording of relationship in the network model is implemented by using pointers.
 - (b) Recording of relationship implementation is very complex since pointers are used.
 - (c) DBTG Codasyl was the first network database.
- **Relational Model :**
 - (a) The Relational model, organizes data in the form of independent tables (consisting of rows and columns) that are related to each other.
 - (b) A table consists of a number of rows (records/tuples) and columns (attributes).
 - (c) The degree of the table denotes the number of columns.
 - (d) A domain in the relational model is said to be atomic, if it consists of indivisible units.
 - (e) A super key is a type of attribute that collectively identifies an entity in an entire set.
 - (f) A candidate key (also known as primary key) is the smallest subset of the super key.
 - (g) Out of the multiple candidate keys, only one is selected to be the primary key and the remaining are alternate keys.
 - (h) A foreign key is the primary key of a table that is placed into a related table to represent one-to-many relationship among these tables..
 - (i) A primary key is a set of one or more attributes that can uniquely identify the relation.

CHAPTER 8 : STRUCTURED QUERY LANGUAGE (SQL)

- **Purpose behind learning SQL :** When a user wants to get some information from a database file, it can issue a query. A query is a user-request to retrieve data or information with a certain condition. SQL is a query language that allows user to specify the conditions, (instead of algorithms).
- **Types of SQL commands**
 - **Data Definition Language Command (DDL Command) :** All the commands used to create, modify or delete physical structure of an object like table. e.g., Create, Alter, Drop.
 - **Data Manipulation Language Command (DML Command) :** All the commands used to modify contents of a table come under this category. e.g., Insert, Delete, Update commands.
 - **Transaction Control Language Command (TCL Command) :** These commands are used to control transaction of DML commands. e.g., Commit, Rollback.
- **Basic structure of an SQL query :**
 - General structure- SELECT, ALL/DISTINCT, *, AS, FROM, WHERE
 - Comparison- IN, BETWEEN,
 - Grouping- GROUP BY, HAVING, COUNT(), SUM(), AVG(), MAX(), MIN()
 - Display order- ORDER BY, ASC/DESC
 - Logical operators- AND, OR, NOT
- **Types of Constraints :** Constraint is a condition applicable on a field or group of fields.
 - Column constraint: Apply only to individual column.
 - Table constraint: Apply to group of columns.

- Unique Constraint-Primary Key constraint.
- Default constraint-Check constraint.

➤ **SQL Commands :**

- **SELECT Command :** The Select command is a query that is given to produce certain specified information from the database table.

Syntax :

```
SELECT <column-name>, [,<column-name>,.....] FROM <table-name>;
```

➤ **ORDER BY Clause :** The resulting column can be sorted in ascending and descending order using the ORDER BY clause.

Syntax :

```
SELECT <column-name>[,<column-name>.....] FROM <table-name>
```

```
WHERE <condition> ORDER BY <column-name>;
```

➤ **Conditions based on a range :** SQL provides a BETWEEN operator that defines a range of values that the column value must fall for the condition to become true.

Syntax :

```
SELECT <column-name> FROM <table-name>
```

```
WHERE <column-name> BETWEEN <value> AND <value>;
```

➤ **Conditions based on a list :** To specify a list of values, IN operator is used. This operator selects values that match any value in the given list.

Syntax :

```
SELECT * FROM <table-name>
```

```
WHERE <column-name> IN <value1, value2>;
```

➤ **Conditions based on Pattern :** SQL provides two wild card characters that are used while comparing the strings with LIKE operator.

(a) Percent (%) matches any string.

(b) Underscore(_) matches any one character.

Syntax:

```
SELECT <column-name>
```

```
FROM <table-name> WHERE <condition> LIKE "%<value>";
```

➤ **INSERT command :** The tuples are added to relation using INSERT command of SQL.

Syntax :

```
INSERT INTO <table-name> [<column list>] VALUES (<value>,<value>,<value>,.....);
```

➤ **DELETE command :** The delete command removes the tuples from the tables. This command removes the entire row from the table and not the individual field. So, no field argument is needed.

Syntax :

```
DELETE FROM <table-name> WHERE <condition>;
```

➤ **To delete all the record from the table :**

Syntax :

```
DELETE FROM <table-name>;
```

➤ **The UPDATE command :** The UPDATE command is used to change some values in existing rows. The UPDATE command specifies the rows to be changed using the WHERE clause, and new data using the SET keyword.

Syntax :

```
UPDATE <table-name>
```

```
SET <column-name=value>
```

```
WHERE <column-name=value>;
```

➤ **The ALTER TABLE command :** The ALTER command is used to change the definition of existing table.

(a) It can be used to add columns to a table. Syntax:

```
ALTER TABLE <table-name> ADD <column name> (<data type> <size>)
```

(b) To modify existing columns of a table :

Syntax :

```
ALTER TABLE <table-name>
MODIFY <column-name new_datatype (newsize)>;
```

- **DROP Command :** The DROP command is used to drop the table from the database. For dropping a table all the tuples should be deleted first i.e., the table should be empty.

Syntax :

```
DROP TABLE <table-name>;
```

- **SQL Functions :** SQL supports functions which can be used to compute and select numeric, character and date columns of relations. These functions can be applied on a group of rows. The rows are grouped on a common value of a column in the table. These functions return only one value for a group and therefore, they are called aggregate or group functions.

- **SUM () :** It returns the sum of values of numeric type of a column. `SELECT Sum <column-name> FROM <table-name>;`
- **AVG () :** It returns the average of values of numeric type of a column. `SELECT AVG <column-name> FROM <table-name>;`
- **MIN () :** It returns the minimum of the values of a column of a given relation. `SELECT MIN <column-name> FROM <table-name>;`
- **MAX () :** It returns the maximum of the values of a column of a given relation. `SELECT MAX <column-name> FROM <table-name>;`
- **Count () :** It returns the number of rows in a relation. `SELECT COUNT (*) FROM <table-name>;`

CHAPTER 9 : INTERFACE OF PYTHON WITH AN SQL DATABASE

- Python's standard for database interfaces is the Python DB-API.
- Python Database API supports a wide range of database servers such as GadFly, mSQL, MySQL, Oracle, Sybase etc.
- You need to download separate DB-API module for each database you need to access.
- DB-API provides a minimal standard for working with databases.
- MySQLdb is an interface for connecting to a MySQL database servers from Python.
- Connect method of MySQLdb interface is used to create a connection object using MySQLdb module.
- A cursor is a Python object that enables you to work with the database. In database terms, the cursor is positioned at a particular location within a table or tables in a database.
- To get a cursor you need to call the cursor method on the database object.
- To save your changes to the database, you must commit the transaction using commit().
- When you are done with the script, close the cursor and then the connection to free up the resources.
- The DB-API's include a defined set of exceptions.



Don't Stop Reading !
You never know what might be asked in the exam.

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OR

SCAN THE CODE



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COMPUTER SCIENCE
CBSE
Sample Question Papers—2020-21
(Issued by CBSE on 9th Oct., 2020)

1

Sample Question Paper

Solved _____

General Instructions :

- (i) This question paper contains two parts A and B. Each part is compulsory.
- (ii) Both Part A and Part B have choices.
- (iii) Part-A has 2 sections :
 - (a) Section-I is short answer questions, to be answered in one word or one line.
 - (b) Section-II has two case studies questions. Each case study has 4 case-based sub-parts. An examinee is to attempt any 4 out of the 5 subparts.
- (iv) Part-B is Descriptive Paper.
- (v) Part-B has three sections.
 - (a) Section-I is short answer questions of 2 marks each in which two questions have internal options.
 - (b) Section-II is long answer questions of 3 marks each in which two questions have internal options.
 - (c) Section-III is very long answer questions of 5 marks each in which one question has internal option.
- (vi) All programming questions are to be answered using Python Language only.

PART-A

Section-I

Select the most appropriate option out of the options given for each question. Attempt any 15 questions from question no 1 to 21.

Question 1.

Find the invalid identifier from the following

- | | | |
|-------------|--------------|---|
| (a) MyName | (b) True | |
| (c) 2ndName | (d) My_Name. | 1 |

Question 2.

Given the list L=[1,3,6,82,5,7,11,92] , write the output of print(L[2:5])

1

Question 3.

Write the full form of CSV.

1

Question 4.

Identify the valid arithmetic operator in Python from the following.

- | | | |
|--------|---------|---|
| (a) ? | (b) < | |
| (c) ** | (d) and | 1 |

Question 20.

Which of the following types of table constraints will prevent the entry of duplicate rows? **1**

- (a) Unique
(c) Primary Key

Question 21.

Rearrange the following terms in increasing order of data transfer rates.

Gbps, Mbps, Tbps, Kbps, Bps

Section-II

Both the Case study based questions are compulsory. Attempt any 4 sub parts from each question. Each question carries 1 mark

Question 22.

A departmental store MyStore is considering to maintain their inventory using SQL to store the data. As a database administrator, Abhay has decided that :

- Name of the database - MyStore
 - Name of the table - STORE
 - The attributes of STORE are as follows:

ItemNo - numeric

ItemName – character of size 20

Scode - numeric

Quantity – numeric

Table : STORE

ItemNo	ItemName	Scode	Quantity
2005	Sharpener Classic	23	60
2003	Ball Pen 0.25	22	50
2002	Gel Pen Premium	21	150
2006	Gel Pen Classic	21	250
2001	Eraser Small	22	220
2004	Eraser Big	22	110
2009	Ball Pen 0.5	21	180

- (a) Identify the attribute best suitable to be declared as a primary key. 1

(b) Write the degree and cardinality of the table STORE. 1

(c) Insert the following data into the attributes ItemNo, ItemName and Scode respectively in the given table STORE. 1

ItemNo = 2010, ItemName = "Note Book" and Scode = 25

(d) Abhay wants to remove the table STORE from the database MyStore. Which command will he use from the following? 1

(a) DELETE FROM STORE; (b) DROP TABLE STORE;

(c) DROP DATABASE MyStore; (d) DELETE Store FROM MyStore;

(e) Now Abhay wants to display the structure of the table STORE, i.e., name of the attributes and their respective data types that he has used in the table. Write the query to display the same. 1

Question 23.

Ranjan Kumar of class 12 is writing a program to create a CSV file "user.csv" which will contain user name and password for some entries. He has written the following code. As a programmer, help him to successfully execute the given task.

```
import _____ #Line 1  
def addCsvFile(UserName, Password): # to write / add data into the CSV file
```

Q1 (b) Find the output of the following code :

```
n = "Python"  
print(3 "n + "Program")
```

Q1 (c) Write the output of the following code

```
l=[3, 5, 3, 7, 3, 4]
```

1

```

    x += t
return t(1)
print(tot//8, 2)
```

- (e) Write a program that prints a list of the integers from 1 to 20 like this

```
1---1  
2---4  
-----  
20---400
```

a digit number and
the number eg. if I

Question 2

- | | |
|---|---|
| d=lambda p:p * 2 | |
| t=lambda p:p * 3 | |
| x=2 | |
| x=d(x) | |
| x=t(x) | |
| x=d(x) | |
| print (x) | |
| (b) What is the use of read() function? | 1 |
| (c) What is sys.path? | 1 |
| OR (d) What is time complexity? | 1 |
| (e) What will be the output of the following code? | 1 |
| <pre>num="Hello" print(3*num) print('3'+7)</pre> | |
| (f) Write equivalent postfix expression for the following infix expression. | 2 |
| a+b*d | |
| OR (g) Name some commonly used built-in modules in Python | 2 |
| What is type conversion in Python? List some of them. | |
| OR (h) What is the use of ** operator? | 2 |
| Write a program in python that takes input from the user until a vowel is entered. | |
| (i) What is the meaning of recursion? Write its advantages and disadvantages. | 3 |
| OR | |
| Describe all file processing modes supported in Python. | |
| OR (j) Write a python program to search the number of times a particular number occurs in a list. | 4 |
| Write a python program to print all the numbers present in a text file and take the name of the file from the user. | |
| SECTION-B | |
| Question 3. | |
| Fill in the blanks from Question 3(a) to 3(d) | |
| (a) _____ refers to a setup where physical cables are used to transfer data between devices and computer systems. | 1 |
| (b) _____ is elapsed time between an inquiry and a response. | 1 |
| OR (c) Internetworking protocol is known as _____. | 1 |
| (d) ATM is an example of _____. | 1 |

The diagram consists of two identical house-shaped outlines side-by-side. Each house has a triangular roof and a trapezoidal base. The word "Zeta" is written in the base of the left house, and the word "Cyber" is written in the base of the right house.

- | Center to Center distances (in Mtrs.) | |
|---------------------------------------|-------|
| Main Wing to Zeta Wing | 80 m |
| Zeta Wing to Cyber Wing | 100 m |
| Cyber Wing to Core Wing | 40 m |
| Main Wing to Cyber Wing | 120 m |
| Zeta Wing to Core Wing | 150 m |
| Main wing to core Wing | 130 m |

Expected Number of Computers to be installed in each center	
Main Wing	50
Zeta Wing	40
Cyber Wing	250
Core Wing	100

(i) Suggest a cable layout of connections between buildings.

placed?

[AI] (a) Which operator is used to test the condition?

[BT] (b) Which SQL keyword is used to retrieve the data?

- (b) Which SQL keyword is used to retrieve a maximum value? 1

(c) Which SQL command is used to retrieve data. 1

(d) A table named as Employee has 10 records. Its Salary column is non-null as well as unique. 1

What is the output of the following SQL statement-

```
SELECT COUNT(*) FROM Employee WHERE Salary > Any(SELECT Salary FROM Employee)
```

Emp_

- Dept
Age.

Write Python code to create the above table and then create an index an Emp_Id.

OR

What is the use of wildcard ?

(f) Write any two columns with their data type for table student. 2

(g) Let us consider table named Employee with column names as empID, Name, deptID, Salary. Answer the following SQL queries. 3

starts with 'Su'.

ItemNo	Item	Scode	Qty	Rate	LastBuy
2005	Sharpener Classic	23	60	8	31-Jun-09
2003	Ball Pen 0.25	22	50	25	01-Feb-10
2002	Gel Pen Premium	21	150	12	24-Feb-10
2006	Gel Pen Classic	21	250	20	11-Mar-09
2001	Eraser Small	22	220	6	19-Jan-09

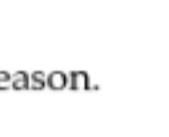
2004	Eraser Big
2009	Ball Pen 0.5

Scode	Sname
21	Premium Stationers
23	Soft Plastics
22	Tetra Supply

- | SECTION-D | |
|---|---|
| Question 5. | |
| a) What is software license? | 1 |
| What is Cyber forensics? | 1 |
| Who is a white hat hacker? What are other two types of hackers? | 2 |

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3

Self Assessment Paper**General Instructions :**

- (i) All questions are compulsory.
- (ii) Question paper is divided into 4 sections A, B, C and D.
- Section A : Unit-1
- Section B : Unit-2
- Section C : Unit-3
- Section D : Unit-4

SECTION-A**Question 1.**

- Q1 (a) What will be the output of the following Python code and why? 1
`age = raw_input("Enter your age")
ageafter10 = age + 10
print(age after)`
- Q1 (b) What is the result of $4+4/2+2$? 1
- (c) Give the output of the following statements: 1
`str='Hello Python'
print(str.lstrip("He"))`
- Q1 (d) Which string method is used to implement the following: 2
(i) To count the number of characters in the string.
(ii) To change the first character of the string in capital letter.
(iii) To check whether all the characters in a given string is alphanumeric or not.
(iv) To change lowercase into uppercase letter.
(v) Change one character into another character.
- (e) Give the output of following 2
`x = 3
x+= x-x
print x`
- (f) Write a program in python to find sum of series with cubes of first n natural numbers 3
- Q1 (g) Write a program in python to find the factors of a number. 2
e.g. 55 has the factors as 1, 5, 11, 55

Sample Question Papers

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Question 2.

- Q1 (a) What gets printed with the following code ?
`test_list = [1, 4, 5, 7, 8]
counter = 0
for i in test_list:
 counter = counter + 1
print(counter)`
- Q1 (b) Write the output from the following code: 1
`t=('a', 'b', 'c', 'A', 'B')
print (max(t))
print (min(t))`
- (c) What is subplot () ? 1
- (d) What will be the output of the following code? 1
`def addEm(x, y, z):
 print(x+y+z)
def prod(x, y, z):
 return x*y*z
a= addEm(6, 16, 26)
b= prod(2, 3, 6)
print(a, b)`
- (e) Are all parameters (arguments) in the Python language passed by reference ? 1
- Q1 (f) What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable number. 2
`import random
string="CBSEONLINE"
number=random.randint(0, 3)
n=9
while(string[n] != 'L'):
 print(string[n]+string[number]+'\#', end='')
 number=number+1
 n=n-1`
- (i) ES#NE#IO#
(ii) LE#NO#ON#
(iii) NS#IE#LO#
(iv) EC#NB#IS#
- (g) Differentiate between Built-in functions and functions defined in modules. 2
OR
Write a python program to print the multiplication table of a number entered by user.

- (h) Write a function to calculate volume of a box with appropriate default values for its parameters. Your function should have the following input parameters: 2
(i) Length of box
(ii) Width of box
(iii) Height of box

OR

What are readline() and readlines() functions?

- Q1 (i) Write a recursive function in Python to find the product of two members. 3
OR
What is Python Path ? What is the reason to use it ?

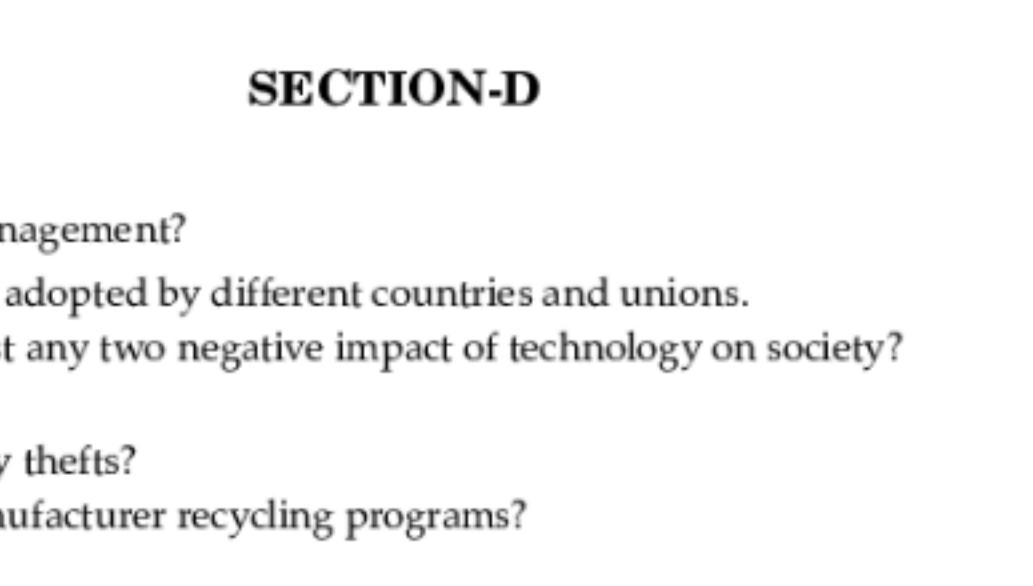
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OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII

- Q1 (j) Write a python program to find the L.C.M. of two numbers entered by user 4
OR
Explain List, Tuple, and Dictionary

SECTION-B**Question 3.**

- Fill in the blanks from Question 3(a) to 3(d)
- (a) In _____, each packet of a message follows the same path from sender to receiver. 1
- Q1 (b) LANs can be connected by a device called _____. 1
- (c) Communication modes that support two-way traffic but in only one direction at a time _____. 1
- Q1 (d) To connect a computer with a device in the same room, you might be likely to use _____. 1
- (e) What is RJ-45 connector? 2
- Q1 (f) What is the meaning of baud? 2
- (g) What is HTTP? Write some of its features. 3
- Q1 (h) Oswaal Services Ltd. is an educational organization. It is planning to set up its India campus at Bangalore with its head office at Agra. The Bangalore campus has 4 main buildings - ADMIN, EDITORIAL, BUSINESS and SALES. A network expert is hired to suggest the best network related solutions for their problems raised in (i) to (iv). Some of the information also given below. 4

**Distances**

ADMIN to EDITORIAL	60 m
ADMIN to BUSINESS	90 m
ADMIN to SALES	50 m
EDITORIAL to BUSINESS	70 m
EDITORIAL to SALES	50 m
BUSINESS to SALES	45 m
HEAD OFFICE to BANGALORE CAMPUS	1500 km

Expected Number of Computers to be installed in each center

ADMIN	110
EDITORIAL	80
BUSINESS	50
SALES	15
HEAD OFFICE	25

- (i) Suggest the most appropriate location of the server inside the BANGALORE campus, to get the best connectivity for maximum number of computer. 1

(ii) To display the maximum and minimum rent for each type of resort from table RESORT. 1

(iii) To display the details of all resorts which were started after 31-DEC-05 from table RESORT. 1

(iv) Display the OWNER of all '5 STAR' resorts from tables RESORT and OWNED BY. 1

SECTION-C**Question 4.**

- Q1 (a) Which command is used to make the updates performed by the transaction permanent in the database? 1
- (b) Write the SQL query to find the cities from the table Weather whose humidity is 90. 1
- Q1 (c) Write the name of any column with its data type for table Employee. 1
- (d) What is Beautiful Soup? 1
- Q1 (e) Write syntax to add column to a table. 2
OR
What is SQL? List the types of SQL commands.
- (f) Explain the following options of _settings.py_file: 2
- (i) DATABASE_ENGINE
(ii) DATABASE_NAME
- Q1 (g) Let us consider table named Employee with column names as empID, Name, deptID, Salary, Hire Date. Answer the following SQL queries: 3
- (i) What is SQL Query to find minimum salary of each department?
(ii) Display the name of employees who have joined in 2016 and salary is greater than 10000?
(iii) Select all records from Employee table where name not in 'Amit' and 'Sharma'.
- Q1 (h) Consider the following tables RESORT and OWNEDBY and write SQL statements for the following conditions: 4

Table : RESORT

RCODE	PLACE	RENT	TYPE	STARTDATE
R001	GOA	15000	5 STAR	12-Jan-02
R002	HIMACHAL	9000	4 STAR	20-Dec-07
R003	KERALA	12500	5 STAR	10-Mar-06
R004	HIMACHAL	10500	2 STAR	25-Nov-05
R005	GUJARAT	8000	4 STAR	01-Jan-03
R006	GOA	18000	7 STAR	30-Mar-08
R007	ORISSA	7500	2 STAR	12-Apr-99
R008	KERALA	11000	5 STAR	03-Mar-03
R009	HIMACHAL	9000	2 STAR	15-Oct-08
R010	GOA	13000	5 STAR	12-APR-06

Table : OWNED BY

Place	Owner
GOA	RAJ RESORTS
KERALA	KTDC
HIMACHAL	HTDC
GUJARAT	MAHINDRA RESORTS
ORISSA	OTDC

- (i) To display the RCODE and PLACE of all '5 STAR' resorts in the alphabetical order of the place from table RESORT. 1

(ii) To display the maximum and minimum rent for each type of resort from table RESORT. 1

(iii) To display the details of all resorts which were started after 31-DEC-05 from table RESORT. 1

(iv) Display the OWNER of all '5 STAR' resorts from tables RESORT and OWNED BY. 1

SECTION-D**Question 5.**

- (a) What is Digital Right Management? 1
- (b) Write one law which has adopted by different countries and unions. 1
- Q1 (c) What is technology? List any two negative impact of technology on society? 2
- (d) What is EPR ? 2
- Q1 (e) How to prevent identity thefts? 2
- (f) What are electronics manufacturer recycling programs? 2

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4**Self Assessment Paper****General Instructions :**

- (i) All questions are compulsory.
- (ii) Question paper is divided into 4 sections A, B, C and D.
 - Section A : Unit-1
 - Section B : Unit-2
 - Section C : Unit-3
 - Section D : Unit-4

SECTION-A**Question 1.**

Q1 (a) If a='cpp', b='buzz' then what is the output of following code ?

```
c = a-b
```

```
print(c)
```

Q1 (b) What is the output of the following code ?

```
a = 8.6
```

```
b = 2
```

```
print a/b
```

Q1 (c) Give the output of the following statements:

```
a = True
```

```
b = False
```

```
c = True
```

```
if not a or b :
```

```
    print ("Aa")
```

```
elif not a or not b and c :
```

```
    print ("Bb")
```

```
elif not a or b or not b and a :
```

```
    print ("Cc")
```

```
else :
```

```
    print ("Dd")
```

Q1 (d) What would be the output of the following code snippets?

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OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII

```
print 4+9
```

```
print "4+9"
```

Q1 (e) Convert the following for loop into while loop.

```
for i in range(10):
```

```
    for j in range(i):
```

```
        print '$'
```

```
    print ''
```

Q1 (f) Write a program in python to find the largest number among the three input numbers.

Q1 (g) Write a program in python to multiply two matrices using nested loops.

Question 2.

Q1 (a) What gets printed with the following code ?

```
a = 10
```

```
while a > 0:
```

```
    print(a)
```

```
else:
```

```
    print("Now the value of a is ", a)
```

```
    break
```

Q1 (b) Suppose list1 is [2, 33, 222, 14, 25], What is list1[-1] ?

Q1 (c) What will be the output of $3^{\wedge} 10$ in python?

Q1 (d) Find the output of the below code :

```
print (2*"world")
```

```
print (2+'world')
```

Q1 (e) Convert following for loop into while loop :

```
for i in range (1, 5, 1):
```

```
    print (i)
```

Q1 (f) What will be the output of the following code?

```
def myWrapper(n) :
```

```
    return lambda a : a * n
```

```
mulFive = myWrapper(5)
```

```
print(mulFive(2))
```

Q1 (g) What is the use of help() and dir() functions?

OR

Write a python program to check whether a number entered by the user is positive, negative or zero.

Q1 (h) Why doesn't Python lambda have any return statement?

OR

How does for loop and while loop differ in Python?

Q1 (i) Write a Python program to find the prime numbers between lower limit and upper limit which entered by user.

OR

How many types of operators Python has? Give brief idea about them.

Q1 (j) Write a python program to create a simple calculator that can add, subtract, multiply or divide depending upon the input from the user

OR

What are the ideal naming conventions in Python?

Sample Question Papers

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SECTION-B**Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

Q1 (a) A _____ is a group of independent computers attached to one another through communication media.

Q1 (b) _____ protocol is used to support electronic mail.

Q1 (c) A place where there is a field of signal through which you can access WiFi internet is called _____.

Q1 (d) _____ enables a client user do access the resources of a server remotely.

Q1 (e) What is the difference between Telnet and FTP?

Q1 (f) Define the following terms:

(i) Baud

(ii) Bandwidth

Q1 (g) Explain the following:

(i) Twisted pair cable

(ii) Coaxial cable

(iii) Fiber-optic cable

Q1 (h) Oswaal Tech Training Ltd. is a Agra based organisation which is expending its office set-up to Bangalore. At Bangalore office, they are planning to have 3 buildings for Admin, Training and Sales related operations. They hire a network expert to suggest the best network related solutions for problems raised by them. These problems are given below. Some of the information such as distance and computers installed are also given below.

Bangalore Office**Center to Center distances**

Admin to Sales	300 m
Sales to Training	150 m
Admin to Training	200 m
Agra Head Office to Bangalore Office	1330 km

Q1 (i) Suggest the most suitable place to house the server in Bangalore office of this organisation with a suitable reason.

Q1 (ii) Suggest a cable layout of connections between buildings in the Bangalore office.

Q1 (iii) Suggest the device or software and its placement that would provide data security in the whole Bangalore office.

Q1 (iv) Suggest the device and the protocol that shall be required to give wireless Internet access to all users in the Bangalore office.

OR

How many types of operators Python has? Give brief idea about them.

Q1 (j) Write a python program to create a simple calculator that can add, subtract, multiply or divide depending upon the input from the user

OR

What are the ideal naming conventions in Python?

Sample Question Papers

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SECTION-C**Question 4.**

Q1 (a) How to select all records from the table?

Q1 (b) Is it possible for a table to have more than one foreign key?

Q1 (c) Which statement is used to add a new row in a database table?

Q1 (d) Which SQL command is used to add, modify or drop columns in a database table?

Q1 (e) What is Django Rest Framework (DRF)?

OR

What are the different DDL commands in SQL?

Q1 (f) Write a Django to download the Wikipedia page on Agra and save it in your PC.

Q1 (g) Let us consider table named Worker with column names as First_Name, Department and EmpID. Answer the following SQL queries:

(i) Write an SQL query for fetching "FIRST_NAME" from the WORKER table using <WORKER_NAME> as alias.

(ii) What is an SQL query for fetching the unique values of the column DEPARTMENT from the WORKER table?

(iii) What is an SQL query for printing all details of the worker table which ordered by FIRST_NAME ascending?

Q1 (h) Consider the following tables Employee and Incentives and answer the questions from (i) to (iv):

Table Name: Employee

Employee_id	First_name	Last_name	Salary	Joining_date	Department
1	John	Abramham	1000000	01-Jan-13 12.00.00 AM	Banking
2	Micheal	Clarke	800000	01-Jan-13 12.00.00 AM	Insurance
3	Roy	Thomas	700000	01-Feb-13 12.00.00 AM	Banking
4	Tom	Jose	600000	01-Feb-13 12.00.00 AM	Insurance
5	Jerry	Pinto	650000	01-Feb-13 12.00.00 AM	Services
6	Philip	Mathew	750000	01-Jan-13 12.00.00 AM	Services
7	TestName1	123	650000	01-Jan-13 12.00.00 AM	Services
8	TestName2	Lname %	600000	01-Feb-13 12.00.00 AM	Insurance

Table Name: Incentives

Employee_id	Incentive_date	Incentive_amount
1	01-Feb-13	5000
2	01-Feb-13	3000
3	01-Feb-13	4000
1	01-Jan-13	4500
2	01-Jan-13	3500

(i) Get all employee details from the employee table order by First_Name descending.

(ii) Get employee details from employee table whose employee name are "John" and "Roy".

(iii) Get employee details from employee table who joined before 1st January 2013.

(iv) Get first name, incentive amount from employee and incentives table for those employees who have incentives.

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Self Assessment Paper**General Instructions :**

- (i) All questions are compulsory.
- (ii) Question paper is divided into 4 sections A, B, C and D.
 - Section A : Unit-1
 - Section B : Unit-2
 - Section C : Unit-3
 - Section D : Unit-4

SECTION-A**Question 1.**

- (a) What is token? 1
- (b) What are the following operators used for? 1
(i) || (ii) **
- (c) Write the while loop to print the series :
3, 6, 9, 12, 30 1
- (d) Find the output of the following code : 2
code
a = 5
while a < 50:
 print(a)
 a = a + 9
print("over")
- (e) Convert the following while loop into for loop. 2
i = 0
while i < 100:
 if i % 2 == 0:
 print(i, "is even")
 else:
 print(i, "is odd")
 i = i + 1
- (f) Write a program in python to calculate the average of numbers in a given list. 3

Sample Question Papers

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- (g) Write a program in Python to reverse a number entered by user. 2

Question 2.

- (a) What gets printed with the following code ? 1
x = True
y = False
x = False
if x or y and z:
 print("OSWAL")
else:
 print("oswal pub")
- (b) What do you mean by modularity? 1
- (c) What does the following code do? 1
def a(b, c, d): pass
- (d) Find the output of the following code : 1
dict 1 = {1: '5', 2: '4', 3: 'k', 4: 'p', 5: '9'}
print(dict 1 (2))
- (e) What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable number. 1
import random
number = random.randint(0, 4)
city = ["KANPUR", "LUCKNOW", "DELHI", "PUNE"]
for i in city:
 for j in range(1, number):
 print()
- | | |
|---|--|
| (i) KANPUR
LUCKNOW
DELHI
PUNE | (ii) KANPURKANPUR
LUCKNOWLUCKNOW
DELHIDELHI
PUNEPUNE |
| (iii) KANPUR
LUCKNOWDELHI
DELHIPUNE | (iv) KANPUR
KANPURLUCKNOW
KANPURLUCKNOWDELHI
KANPURLUCKNOWDELHIPUNE |

- (f) Spot the errors and rewrite the corrected codes. What will be the output of the corrected code? 2

total=0;

def sum(arg1, arg2):

total=arg1+arg2

print "Total:", total

return total

sum (10,20);

print "Total:" total

2

- (g) Write a function that takes a number as argument and calculates cube for it. The function does not return a value. If there is no value passed to the function in function call, the function should calculate cube of 2. 2

OR

What is the utility of built-in function help ()?

- (h) Write a function that: 2

(i) Asks the user to input a diameter of circle in inches.

(ii) Sets a variable called radius to one half of that number.

Write steps to create a package in Python.

- (i) Write a Python program that reads a file and capitalizes the first letter of every word in the file. 3

OR

What will be the status of the following list after the first, second and third pass of the bubble sort method used for arranging the following elements in ascending order?

52, 42, -10, 60, 90

- (j) Write a python program to check whether a string is a palindrome or not using recursion. 4

OR

Find the time complexity of the following recursive implementation of binary search.

"Find returns the smallest index i at which $x \leq a[i]$. If there is no such index, it returns len(a). The slice must be sorted in ascending order."

def binarySearch (alist, item):

first = 0

Last = len (alist)-1

Found = False

while first < = last and not found:

midpoint = (first + last)//2

if alist [midpoint] = = item:

found = True

else:

if item < alist [midpoint]:

Last = midpoint-1

else:

first = midpoint + 1

return found

SECTION-B**Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

- (a) _____ is a message access protocol which allows client to fetch an e-mail from remote mail server. 1
- (b) _____ refers to communication between two parties without any third party knowing about it. 1
- (c) The web server must have an _____ to create an SSL connection. 1
- (d) _____ is a folder that contains emails and information about them. 1

- (e) Expand the following terms : 2

(i) HTTP

(ii) ARPANET

- (f) What is the function of modem? 2

- (g) Write three advantages of optical fiber over ethernet cable. 3

- (h) Oswaal University is a Agra based organisation which is setting up its academic block. This university has three academic blocks and one hostel as shown below. They hire a network expert to suggest the best network related solutions for problems raised by them. These problems are given below. Some of the information such as distance and computers installed are also given below. 4

Medical

Engineering

Law

Hostel

Block to Block distances

Law to Medical	50 m
Law to Engineering	90 m
Law to Hostel	120 m
Medical to Engineering	35 m
Medical to Hostel	40 m
Engineering to Hostel	20 m

Expected Number of Computers to be installed in each Block

Law	20
Engineering	45
Hostel	120
Medical	30

- (i) Suggest the most suitable place to house the server of the university with a suitable reason. 1

- (ii) Suggest a cable layout of connections between buildings for wired connectivity. 1

- (iii) Suggest the device to be placed in each of these blocks to efficiently connect all the computers with in these blocks. 1

- (iv) University also wants to connect its administrator office in the closest big city, which is more than 300 km from university. Which of the following network will be formed? 1

• LAN

• MAN

• WAN

OR

- (f) What is the utility of built-in function help ()? 2

- (g) Let us consider table named Worker with column names as First_Name, Department, EmpID and Salary. Answer the following SQL queries: 3

- (i) What is an SQL Query for fetching the no. of workers in each department in descending order? 1

- (ii) Write an SQL Query for fetching the count of workers in DEPARTMENT with 'Admin'. 1

OR

What is a constraint?

- (f) What is the use of DB-API? 2

- (g) Let us consider table named Worker with column names as First_Name, Department, EmpID and Salary. Answer the following SQL queries: 3

- (i) What is an SQL Query for fetching the no. of workers in each department in descending order? 1

- (ii) Write an SQL Query for fetching the count of workers in DEPARTMENT with 'Admin'. 1

SECTION-C**Question 4.**

- (a) What is Unique key? 1

- (b) What is field in SQL? 1

- (c) The web server must have an _____ to create an SSL connection. 1

- (d) _____ is a folder that contains emails and information about them. 1

- (e) Expand the following terms : 2

(i) HTTP

(ii) ARPANET

- (f) What is the function of modem? 2

- (g) Write three advantages of optical fiber over ethernet cable. 3

- (h) Oswaal University is a Agra based organisation which is setting up its academic block. This university has three academic blocks and one hostel as shown below. They hire a network expert to suggest the best network related solutions for problems raised by them. These problems are given below. Some of the information such as distance and computers installed are also given below. 4

SECTION-D**Question 5.**

- (a) What is the full form of ITA-2000? 1

- (b) Name one secure network protocol which can be used instead of telnet to manage a router 1

- (c) Differentiate phishing and spoofing? 2

- (d) Why should e-waste be handled properly? 2

- (e) Explain the following: 2

(i) Traceroute

(ii) Botnet

- (f) Write some reasons for gender disparity in India. 2

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(iii) Write an SQL Query for printing the details of workers whose SALARY lies between 15000 and 30000.

- (h) Consider the following tables ACTIVITY and COACH and write SQL commands for the following statements. 4

Table : ACTIVITY

ACode	ActivityName	Stadium	Participants Num	PrizeMoney	ScheduleDate
1001	Relay 100 x 4	Star Annex	16	10000	23-Jan-2004
1002	High Jump	Star Annex	10	12000	12-Dec-2003
1003	Shot Put	Super Power	12	8000	14-Feb-2004
1005	Long Jump	Star Annex	12	9000	01-Jan-2004
1008	Discuss Throw	Super Power	10	15000	19-Mar-2004

Table : COACH

PCode	Name	ACode
1	Ahmad Hussain	1001
2</		

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Self Assessment Paper**General Instructions :**

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 - Section A : Unit-1
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 - Section C : Unit-3
 - Section D : Unit-4

SECTION-A**Question 1.**

- (a) What is literal? 1
 (b) Write the syntax for range () function. 1
 (c) Which symbol is used for comments in Python? 1
 (d) What would be the output of the following code snippets? 2
- ```
l1 = [2, 4, 6, 8, 10]
l2 = l1
l2[0] = 0
print ("list 1 : ", l1)
```
- (e) Convert the following for loop into while loop. 2
- ```
for i in range (1,100,1):
    if i % 4 == 2:
        print i , "mod" , 4 , " = " 2"
```
- (f) Write the output for the following codes: 4
- ```
A={10:1000,20:2000,30:3000,40:4000,50:5000}
print A.items()
print A.keys()
print A.values()
```

**Question 2.**

- (a) What is a string slice? How is it used? 1  
 (b) What will be the output of the following code? 1

**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII**

- a="Learning Python"
 print(a.split())
- (c) What does the following code do? 1
- ```
a = 15.5
b = 5
print(a/b)
```
- (d) What will be the output of the following code? 1
- ```
t = (3, 5, 7)
print (2 * t)
```
- (e) What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable N. 1
- ```
import random
Diagrams = ("Line", "Triangle", "Rectangle", "Pentagon")
N = random.randint (1, 3)
OUT = ""
for i in range (N, 1, -1):
    OUT = OUT + Diagrams[i]
print(OUT)
```
- (i) PentagonRectangle 1
 (ii) PentagonRectangleTriangle
 (iii) Pentagon
 (iv) Rectangle
- (f) Find the output from the following code: 2
- ```
t=tuple()
t = t +(Python',)
print (t)
print (len(t))
t1=(10, 20, 30)
print (len(t1))
```
- (g) Convert the following loop into for loop : 2
- ```
i = 7
while (i <= 70):
    print(i)
    i = i + 4
```

OR

What are keyword arguments?

- (h) Predict the output of the following codes. 2
- ```
num=1
def myfunc():
 return num
print (num)
print (myfunc ())
print (num)
```

**OR**

What is the use of flush() function?

- (i) Write a Python program to sort the words in alphabetic order using for loop and display it. 3

**Sample Question Papers**

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**OR**

Write a Python program to print the Floyd's triangle. E.g. Floyd's triangle is

|    |    |    |    |    |
|----|----|----|----|----|
| 1  |    |    |    |    |
| 2  | 3  |    |    |    |
| 4  | 5  | 6  |    |    |
| 7  | 8  | 9  | 10 |    |
| 11 | 12 | 13 | 14 | 15 |

- (j) Write a Python programs to remove punctuation from string. 4

**OR**

What is master theorem? Explain.

**SECTION-B****Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

- (a) LAN operates on \_\_\_\_\_ IP address. 1  
 (b) \_\_\_\_\_ are used to connect various electronic devices and computer hardwares to a network so that data can be transmitted in a fast, secured and correct way from different networks. 1

- (c) \_\_\_\_\_ protocol is used to browse web pages of the web site. 1

- (d) 1 Mbps is equal to \_\_\_\_\_ Kbps. 1

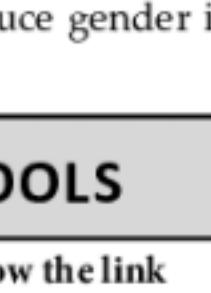
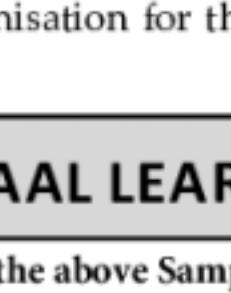
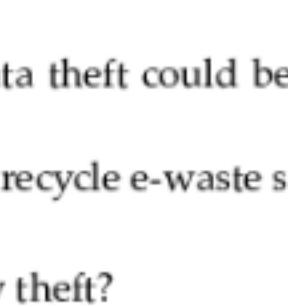
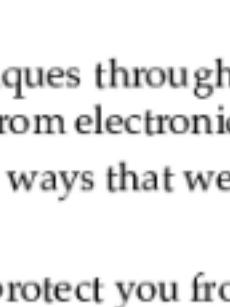
- (e) What is a communication channel? 2

- (f) What is MACA? 2

- (g) Name the protocol: 3

- (i) It allows workstation to access the server on application program.  
 (ii) It is used for accessing and storing mail on a mail server  
 (iii) It is a cryptographic protocol and interface.

- (h) ABC is a company which is setting up its branches. This company has three branches and one head office. They hire a network expert to suggest the best network related solutions for problems raised by them. These problems are given below. Some of the informations such as distance and computers installed is also given below 4

**Block to Block distances**

|                  |       |
|------------------|-------|
| A to B           | 50 m  |
| A to C           | 90 m  |
| A to Head Office | 120 m |
| B to C           | 35 m  |
| B to Head Office | 40 m  |
| C to Head Office | 20 m  |

**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII****Number of Computers to be installed in each branch**

|             |     |
|-------------|-----|
| A           | 20  |
| B           | 45  |
| C           | 120 |
| Head Office | 30  |

- (i) Suggest the most suitable place to house the server of a ABC company with a suitable reason.  
 (ii) Suggest a cable layout of connections between blocks you wired connectivity.  
 (iii) Suggest the device to be placed in each of these blocks to efficiently connect all the computers with in these blocks.

- (iv) Company also wants to connect its administrative office in the closest big city, which is more than 400 km from company. Which of the following network will be formed ?
- LAN
  - MAN
  - WAN

- (g) Name the protocol: 3

- (i) It allows workstation to access the server on application program.  
 (ii) It is used for accessing and storing mail on a mail server  
 (iii) It is a cryptographic protocol and interface.

- (h) Consider the following tables GAMES and PLAYER and give the output of the following SQL queries: 4

**Table: GAMES**

| GCode | GameName     | Type    | Number | PrizeMoney | ScheduleDate |
|-------|--------------|---------|--------|------------|--------------|
| 101   | Carom Board  | Indoor  | 2      | 5000       | 23-Jan-2004  |
| 102   | Badminton    | Outdoor | 2      | 12000      | 12-Dec-2003  |
| 103   | Table Tennis | Indoor  | 4      | 8000       | 14-Feb-2004  |
| 105   | Chess        | Indoor  | 2      | 9000       | 01-Jan-2004  |
| 108   | Lawn Tennis  | Outdoor | 4      | 25000      | 19-Mar-2004  |

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- (h) Consider the following tables GAMES and PLAYER and give the output of the following SQL queries: 4

**Table: PLAYER**

| PCode | Name       | GCode |
|-------|------------|-------|
| 1     | Nabi Ahmad | 101   |
| 2     | Ravi Sahai | 108   |
| 3     | Jatin      | 101   |
| 4     | Nazneen    | 103   |

- (i) SELECT COUNT(DISTINCT Number) FROM GAMES;

- (ii) SELECT MAX(ScheduleDate), MIN(ScheduleDate) FROM GAMES;

- (iii) SELECT Name, GameName FROM GAMES G, PLAYER P WHERE G.GCode=P.GCode AND G.PrizeMoney>10000;

- (iv) SELECT DISTINCT GCode FROM PLAYER;

**SECTION-C****Question 4.**

- (a) Name the operator that defines a range of values that the column value must fall for the condition to become true. 1

- (b) \_\_\_\_\_ are used to connect various electronic devices and computer hardwares to a network so that data can be transmitted in a fast, secured and correct way from different networks. 1

- (c) \_\_\_\_\_ protocol is used to browse web pages of the web site. 1

- (d) 1 Mbps is equal to \_\_\_\_\_ Kbps. 1

- (e) What is a communication channel? 2

- (f) What is MACA? 2

- (g) Name the protocol: 3

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**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII****Number of Computers to be installed in each branch**

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**Self Assessment Paper**

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**General Instructions :**

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- (ii) Question paper is divided into 4 sections A, B, C and D.
  - Section A : Unit-1
  - Section B : Unit-2
  - Section C : Unit-3
  - Section D : Unit-4

**SECTION-A****Question 1.**

- Q1** (a) Give the output of the following statements: 1  
`str='Hello Python'  
str.title()`
- Q1** (b) Write for statement to print the series. 1  
`10,20,30.....300`
- Q1** (c) Which built-in function produces an integer between the limit arguments ? 1
- Q1** (d) Find and write the output of the following Python code : 2  
`TXT = ["20", "50", "30", "40"]  
CNT = 3  
TOTAL = 0  
for C in [7, 5, 4, 6] :  
 T = TXT[CNT]  
 TOTAL = float(T) + C  
 print(TOTAL)  
 CNT = 1`
- Q1** (e) Write the output from the following code: 2  
`T1=(10, 20, 30, 40, 50)  
T2=(10, 20, 30, 40, 50)  
T3=(100, 200, 300)  
print cmp(T1, T2)`

**Sample Question Papers**

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- Q1** (f) Write a program in Python to determine how many times a given letter occurs in a string recursively : 3
- Q1** (g) Write a method in Python to write multiple line of text contents into a text file diary.txt. 2
- Question 2.**
- Q1** (a) How is method write() different from writelines() in Python? 1
- Q1** (b) What will be the output of the following code, if user enters the number 56? 1  
`val = int(input("Guess a Number :"))  
if(val>10 and val<100):  
 print("What a guess..! !n")  
else:  
 print("Opps.. ! !n")`
- Q1** (c) What does the following code do? 1  
`x=8  
y=4  
z=x/y  
print(z)`
- Q1** (d) What will be the output of the following code? 1  
`i = 0  
while i < 2:  
 print(i)  
 i += 1  
else:  
 print(0)`
- Q1** (e) What will be the output of the following code? 1  
`tuple = (1, 2, 3, 4)  
tuple.append((5, 6, 7))  
print(len(tuple))`
- Q1** (f) Find the output from the following code: 2  
`for i in [5, 4, 3, 2, 1][:-1]:  
 print(i)`
- Q1** (g) Rewrite the following while loop into for loop: 2  
`i=88  
while(i>=8):  
 print i  
 i -= 8`

**OR**

What is the use of negative indices in slicing?

- Q1** (h) What are the possible outcome(s) expected from the following python code? Also specify maximum and minimum value, which we can have. 2  
`import random  
def main():  
 p = 'MY PROGRAM'  
 i = 0  
 while (p[i] != 'R'):  
 l = random.randint(0, 3) + 5  
 print(p[l], '-'),  
 i += 1`

**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII**

- (i) R - P - O - R -  
(ii) P - O - R - Y -  
(iii) O - R - A - G -  
(iv) A - G - R - M -

**OR**

What are the advantages of dividing a program into modules?

- (i) Write a Python program that takes a string and counts the occurrence of each word in the given sentence. 3

**OR**

Write a Python program to find the maximum EVEN number from numbers which are entered by user.

- (j) Write a Python program to count the occurrences of a letter in a text file. 4

**OR**

Write a Python program to count the number of lowercase letters and uppercase letters in a string.

**SECTION-B****Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

- Q1** (a) \_\_\_\_\_ media has the slowest transmission speed. 1
- Q1** (b) In CRC, there is no error if the remainder at the receiver is \_\_\_\_\_. 1
- Q1** (c) \_\_\_\_\_ device separates a single network into two segments but lets the two segments appear as one to higher protocols. 1
- Q1** (d) FTP is built on \_\_\_\_ architecture. 1
- Q1** (e) Enlist the error detection techniques in data communication. 2
- Q1** (f) Write the expanded names for the following abbreviated terms used in Networking and Communications: 2
- (i) GPRS  
(ii) WiFi  
(iii) POP  
(iv) SMTP
- Q1** (g) What is RTS/CTS handshaking? 3
- Q1** (h) Go-Fast corporation is a Hyderabad based company, which is planning to set up training campuses in various cities in next 3 years. Their first campus is coming up in Pune. At Pune campus, they are planning to have 4 different blocks for HR, WebDesign Training, Programming Training and Hardware Training. Each block has number of computers, which are required to be connected in a network for communication, data and resource sharing. 4

As a network consultant of this company, you have to suggest the best network related solutions for issues/problems raised in (i) to (iv), keeping in mind the distances between various blocks/locations and other given parameters.



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**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII****CUSTOMER**

| CUSTID | NAME           | CITY   | PRODUCTNAME |
|--------|----------------|--------|-------------|
| 101    | ROHAN SHARMA   | DELHI  | TV          |
| 102    | DEEPAK KUMAR   | MUMBAI | MOBILE      |
| 103    | MOHAN KUMAR    | DELHI  | TV          |
| 104    | SAHIL BANSAL   | MUMBAI | MOBILE      |
| 105    | NEHA SONI      | MADRAS | MOBILE      |
| 106    | SONAL AGGARWAL | DELHI  | LAPTOP      |
| 107    | ARUN SINGH     |        |             |

- (i) SELECT COUNT(\*), CITY FROM COMPANY GROUP BY CITY;  
(ii) SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY > 10;  
(iii) SELECT AVG(QTY) FROM CUSTOMER WHERE PRICE > 400000;  
(iv) SELECT PRODUCTNAME, CITY, PRICE FROM COMPANY, CUSTOMER WHERE COMPANY.CID = CUSTOMER.CID AND PRODUCTNAME = "MOBILE";

**SECTION-C****Question 4.**

- Q1** (a) Name the command remove the entire row from the table and not the individual field. 1

- Q1** (b) Write the SQL to display the names of employees who are working as clerk, salesman or analyst and drawing a salary more than 3000. 1

- Q1** (c) List the constraint types used in SQL. 1

- Q1** (d) Write the any column for table Department with their data type. 1

- Q1** (e) What is the usage of Django-admin.py and Manage.py? 2

**OR**

What is a column in a table?

- Q1** (f) Write some benefits of using Django. 2

- Q1** (g) Let us consider table name student with column Names as name, Address, Subject and Percentage. Answer the following SQL queries : 3

- (i) Write an SQL query to print the details of student 'Akash'. 1

- (ii) Write an SQL query for printing the details of students whose percentage more than 80%. 1

- (iii) Write an SQL query for printing Name, Address and subject of those students whose subject is science. 3

- Q1** (h) Write output for (i) & (iv) based on a table COMPANY and CUSTOMER: 4

**COMPANY**

| CID | NAME       | CITY   | PRODUCTNAME |
|-----|------------|--------|-------------|
| 111 | SONY       | DELHI  | TV          |
| 222 | NOKIA      | MUMBAI | MOBILE      |
| 333 | ONIDA      | DELHI  | TV          |
| 444 | SONY       | MUMBAI | MOBILE      |
| 555 | BLACKBERRY | MADRAS | MOBILE      |
| 666 | DELL       | DELHI  | LAPTOP      |

- (i) SELECT COUNT(\*), CITY FROM COMPANY GROUP BY CITY;

- (ii) SELECT MIN(PRICE), MAX(PRICE) FROM CUSTOMER WHERE QTY > 10;

- (iii) SELECT AVG(QTY) FROM CUSTOMER WHERE PRICE > 400000;

- (iv) SELECT PRODUCTNAME, CITY, PRICE FROM COMPANY, CUSTOMER WHERE COMPANY.CID = CUSTOMER.CID AND PRODUCTNAME = "MOBILE";

**SECTION-D****Question 5.**

- Q1** (a) Which act govern the Cyber crime in India? 1

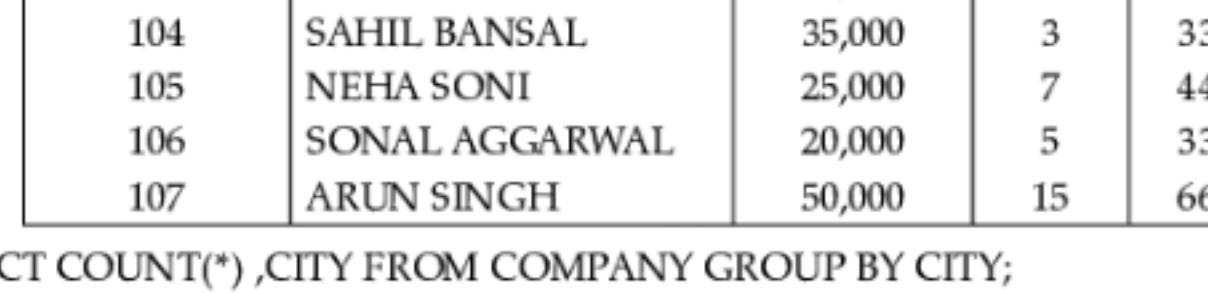
- Q1** (b) From which products, e-waste is created? 1

- Q1** (c) Who is an hacker? 2

- Q1** (d) Write the benefits of biometrics. 2

- Q1** (e) What is the meaning of Plagiarism? 2

- Q1** (f) What is digital rights management? What is the purpose of it? 2

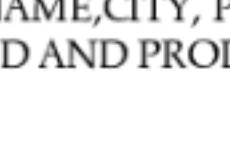


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Scan the Code



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- Section A : Unit-1
- Section B : Unit-2
- Section C : Unit-3
- Section D : Unit-4

**SECTION-A****Question 1.**

- Q1** (a) Is Python case sensitive language? 1  
**(b)** Why can't lists be used as keys? 1  
**(c)** The convention for indentation within a block is four spaces. Is it true? 1  
**Q1** (d) What are the possible outcome(s) executed from the following code? Also specify the maximum and minimum values that can be assigned to variable N. 2

import random

x = 3

N = random.randint(1, x)

for i in range(N):

print(i, "#")

i+=1

(i) 0 #     (ii) 0 #

1 #

(iii) 0 #     (iv) 0 #

1 #

2 #

3 #

- (e)** Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. 2

def Tot(Number)

Sum=0

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**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII**

for C in Range (1, Number+1)

Sum+=C

Return Sum

print Tot[3]

print Tot[6]

- Q1** (f) Write a Python program to calculate discount based on the sale amount using nested if else 3

Discount rates are:

Amount      Discount

0-500      2%

500-1500      5%

1500-2500      10%

above 2500      15%

- Q1** (g) Write a function to find factorial of a number using recursion. 2

**Question 2.**

- (a)** What is worst case time complexity? 1  
**(b)** What does the following code mean? 1
- ```
import matplotlib.pyplot as plt
plt.subplot (2,2)
```

- (c)** What are nonlinear data structures? 1

- Q1** (d) What will be the output of the following code? 1

print 'Ram's tie is looking nice'

- Q1** (e) What will be the output of the following code? 1

for x in range (3, 12, 4):

print(x)

- Q1** (f) Find the output from the following code: 2

a=1

a, b=a+1, a+1

print(a, b)

- (g)** Rewrite the following while loop into for loop: 2

i=10

while(i<150):

print i

i = i+10

OR

What does the title() method do in Python?

- Q1** (h) Write a Python program to find the largest element in the list. 2

OR

When should you use the "break" in python?

- Q1** (i) Write a Python program to create lists with EVEN and ODD numbers. 3

OR

Define the file attributes.

- (j)** Write a Python program to find the sum of a even factor a number. 4

OR

Write a Python program to find smallest K-digit number divisible by X. Number X and K are given.

Sample Question Papers

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SECTION-B**Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

- Q1** (a) In the network, HTTP resources are located by _____. 1
(b) If 5 files are transferred from server A to client B in the same session. The number of TCP connection between A and B is _____. 1
(c) The entire hostname has a maximum of _____. 1

- Q1** (d) Wildcard domain names start with label _____. 1

- Q1** (e) Give two examples of LAN type of Network. 2

- Q1** (f) Two advantages of 4G over 3G mobile telecommunication technologies. 2

- Q1** (g) Identify the domain name, URL and protocol from the following: 3

http://www.oswal.in/test.html

- Q1** (h) Ravya Industries has set its new center at Kaka Nagar for its office and web based activities. The activity compounds has 4 buildings as shown in the diagram below: 4

Center to center distances between various buildings is as follows:

Harsh Building to Raj Building	50 m
Raj Building to Fazz Building	60 m
Fazz Building to Jazz Building	25 m
Jazz Building to Harsh Building	170 m
Harsh Building to Fazz Building	125 m
Raj Building to Jazz Building	90 m

Number of computers in each of the building is as follows:

Harsh Building	15
Raj Building	150
Fazz Building	15
Jazz Building	25

- (i)** Suggest a cable layout of connections between the buildings.

- (ii)** Suggest the most suitable place (i.e., buildings) to house the server of this organization with a suitable reason.

- (iii)** Suggest the placement of the following devices with justification:
- Internet Connecting Device/Modem
 - Switch

- (iv)** The organization is planning to link its sale counter suitable in various parts of the same city. Which type of network out of LAN, MAN or WAN will be formed? Justify your answer.

OR

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Sample Question Papers

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Sample Question Papers

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9

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SECTION-A**Question 1.**

- Q1** (a) What is set? 1
 (b) Why can't we apply slicing and concatenation on dictionaries? 1
 (c) What is the use of pickle module? 1
 (d) What will be the output of the following code? 2
`str="Honesty is the best policy"
print(str.replace('o', '*'))`
- Q1** (e) Find the errors from the following code: 2
`for i in 1 to 100:
 print I`
- Q1** (f) Write a Python program to read a number n and print an inverted star pattern of the required size. 3
Q1 (g) Study the following program and select the possible output(s) from the option (i) to (iv) following it. Also write the maximum and the minimum values that can be assigned to the variable Num. 2
`import random
Num=random.randint(0, 3)
text=["AB", "CD", "EF", "GH", "IJ"]
for I in text:
 for J in range(1, Num):
 print(I, end = "")
print()`

Sample Question Papers

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(i) AB AB CD CD EF EF GH GH IJ IJ	(ii) AB AB CD AB CD EF AB CD EF GH
(iii) AB CD EF GH IJ	(iv) AB CD CD EF EF EF GH GH GH GH

Question 2.

- Q1** (a) What is the use of remove() function? 1
 (b) What do the following stand for? 1
 (i) distutils
 (ii) sdist
 (c) Rewrite the following code in Python after removing all syntax error(s). Underline each correction done in the code. 1
`Text = ""Good
Time""
for I in range[0,3]:
 print Text(I)
print I, Text`
- Q1** (d) What will be the output of the following code? 1
`s="i love python"
r=s.capitalize()
print(r)`
- Q1** (e) What will be the output of the following code? 1
`a=20
if not(a == 2):
 print('a is not equal to 2')
else:
 print("a is equal to 2")`
- Q1** (f) Find the output from the following code: 2
`numbers = [4, 8, 12, 16]
for num in numbers:
 for n in range(1, num%3):
 print(n, "$", end="")
 print()`
- Q1** (g) What are jump statements in Python? 2

OR

Find the output from the following code:
 for val in "Python":
 if val == "0":
 break
 print(val)
 print ("Finish")

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OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII

- Q1** (h) Write a Python program to form an integer that has the number of digits at the ten's place and the most significant digit in the one's place. Eg, 2
 Enter the number: 456
 The new number formed: 36

OR

Define Membership Operators with example in Python.
Q1 (i) Write a python program to find the sum of series: $1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{N}$. 3

OR

Define the types of loops in Python.
Q1 (j) Write a python program to count the number of lines in a text file. 4

Consider the following key set : 32, 19, 64, 01, 55, 48 use insertion sort to sort the data in ascending order and indicate the sequences of steps required.

SECTION-B**Question 3.**

Fill in the blanks from Question 3(a) to 3(d)

- (a) Private cloud storage is also known as _____ storage. 1
 (b) A driverless car (now a prototype) where taxis work based on AI and take the passengers safely and accurately to the desired destination is an application of _____. 1
Q1 (c) _____ is the unique identifier that is assigned by the manufacturer to a piece of network hardware (like a wireless card or an Ethernet card). 1
Q1 (d) _____ was set up by the American government for defense purpose. 1
 (e) Give one feature each for 2G and 3G mobile technology. 2
Q1 (f) Give one advantage and one disadvantage of optical fiber cable used in communication. 2
Q1 (g) Identify the client-side and server-side scripts from the following: 3

- (i) Java Script
- (ii) ASP
- (iii) VB Script
- (iv) JSP

- Q1** (h) "Hindustan Connecting World Association" is planning to start their offices in four major cities in India to provide regional IT Infrastructure support in the field of Education Culture. The company has planned to set up their head office in New Delhi in three locations and have named their New Delhi offices as "Sales office", "Head office" and "Teach office". The company's regional offices are located at: "Coimbatore", "Kolkata" and "Ahmedabad". A rough layout of the same is as follows: 4

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OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII

- Q1** (i) Display the maximum salary being paid to clerk. 1
 (ii) Display the department numbers with more than three employees in each dept. 1
Q1 (h) Consider the following tables and write SQL commands for the statements (i) to (iv) : 4

Table: Books

Book_Id	Book_Name	Author_Name	Publishers	Price	Type	Quantity
C0001	Fast Cook	Lata Kapoor	EPB	355	Cookery	5
F0001	The Tears	William Hopkins	Arst Publ.	650	Fiction	20
T0001	My First C++	Brian & Brooke	EPB	350	Text	10
T0002	C++ Brain works	A.W. Rossaine	TDH	350	Text	15
F0002	Thunder bolts	Anna Roberts	First Publ.	750	Fiction	50

- (i) To show Book name, Author name and Price of Books of First Publ.

- (ii) To list the names from books of Text type.

- (iii) To display the names and price from books in ascending order of their price.

- (iv) To increase the price of all books of EPB publishers by 50.

SECTION-C**Question 4.**

- Q1** (a) Which operator is used to check for values contained in specific sets? 1
Q1 (b) A special purpose programming language to manage databases is known as what? 1
 (c) What is the meaning of degree and cardinality of a table? 1
 (d) Write the syntax to access MySQL with Python. 1
 (e) What do you mean by data integrity? 2

OR

When one can use GET and POST method in Django based web application.

- Q1** (f) Is Django a high-level web framework or low-level framework? 2

- Q1** (g) Write the SQL statement for the following statements: 3

- (i) Display the names of employees from emp table working in department number 10 or 20 or 40 or employees working as clerks, salesman or analyst.

SECTION-D**Question 5.**

- Q1** (a) What is creative common license? 1
Q1 (b) What is open source software? 1

- Q1** (c) Give some examples of gadgets that are classified as white, brown and grey goods. 2

- Q1** (d) What should be the immediate steps we have to take after identity theft? 2

- Q1** (e) How can anyone steal the identity? 2

- Q1** (f) Explain Retina scanner and Iris scanner biometrics. 2

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Self Assessment Paper**General Instructions :**

- (i) All questions are compulsory.
- (ii) Question paper is divided into 4 sections A, B, C and D.
 - Section A : Unit-1
 - Section B : Unit-2
 - Section C : Unit-3
 - Section D : Unit-4

SECTION-A**Question 1.**

- Q1** (a) Which operator is used for power(x^y)? 1
Q1 (b) Is python support unary operator? 1
Q1 (c) Name the Python library modules which need to be imported to invoke the following functions: 1
 (i) sin()
 (ii) search()
Q1 (d) Name the function / method required for: 2
 (i) Finding second occurrence of m in madam.
 (ii) Get the position of an item in the list.
Q1 (e) Find the errors from the following code: 2

```
1=i
while [i < 100]:
    if i % 4 = 2:
        print i, "mod", 4, "= 2"
    i +1
```


Q1 (f) Write a Python program to print all words with even length in the given string. 3
Q1 (g) What possible output(s) are expected to be displayed on screen at the time of execution of the program from the following code? Also specify the maximum values that can be assigned to each of the variables a and b. 2

```
import random
list1=[20, 90, 30, 40, 60]
```

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OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII

```
a=random.randint(1, 3)
b=random.randint(2, 4)
for i in range(a, b+1):
    print(list1[i], end= "#")


|                |             |
|----------------|-------------|
| (i) 40#60#     | (ii) 90#30# |
| (iii) 60#20#90 | (iv) #20    |


```

Question 2.

- (a) What is profiling? 1
 (b) How can you write output to the monitor? 1
 (c) What value will be return by cos(x) ? 1
Q1 (d) What will be the output of the following code? 1

```
def greater(a, b):
    if a>b :
        return a
    else :
        return b
print(greater(3, 4, 5))
```


Q1 (e) What will be the output of the following code? 1

```
for i in range(4):
    if i == 4:
        break
    else :
        print(i)
else :
    print("Python")
```


Q1 (f) Find the output from the following code: 2

```
string = "This is python"
for i in string.split():
    print (i, end=", ")
```


Q1 (g) Write a Python program to split the string into words and also print the length of the each word. 2
OR
 Write an algorithm to implement pop operation.
Q1 (h) Evaluate the expression 3, 7, 8, +, *, 24, 3, 1, - in tabular form showing stock status after every step. 2
OR
Q1 (i) Write a python program to find the area of triangle. 3
Q1 (j) Write a Python program to count the number of vowels present in given string using Sets. 3
OR
 Find the output

```
list 1 = [12, 25, 44, 65, 23, 88]
print("original list:")
print(list1)
for i in list 1:
    if (i % 2==0):
```

Sample Question Papers

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- ```
list1.remove(i)
print("New list :")
print (list1)
```
- 
- (j) Write a Python program to change the decimal number into binary number. 4  
**OR**  
 Write a Python program to print full triangle pyramid pattern using an Asterisk(star).  
**For example,**  

```
*
**
* *
* * *
* * * *
```

  
**Q1** (k) Consider the following tables and give outputs for SQL queries (i) to (iv): 4  
**Table: Item**

| I_Id | Manufacturer | Price | ItemName          |
|------|--------------|-------|-------------------|
| PC01 | ABC          | 35000 | Personal Computer |
| LC05 | ABC          | 55000 | Laptop            |
| PC03 | YXZ          | 32000 | Personal Computer |
| PC06 | COMP         | 37000 | Personal Computer |
| LC03 | PQR          | 27000 | Laptop            |

  
**Table: Customer**

| C_Id | City     | I_ID | CustomerName |
|------|----------|------|--------------|
| 01   | Delhi    | LC03 | N Roy        |
| 06   | Mumbai   | PC03 | H Singh      |
| 12   | Delhi    | PC06 | R Pandey     |
| 15   | Delhi    | LC03 | C Sharma     |
| 16   | Banglore | PC01 | K Agarwal    |

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**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII**

|             |     |
|-------------|-----|
| Building 3  | 125 |
| Head Office | 10  |

- (i) Suggest the most suitable place to house the server of this organization. Also give a reason to justify your suggested location. 1

- (ii) Suggest a cable layout connections between the buildings inside the campus. 1

- (iii) Suggest the placement of the following devices with justification. 2

- Repeater
- Switch

- (iv) The organization is planning to provide a high speed link with its head office situated in Kolkata using a wired connection. Which of the following cable will be the most suitable for this job? 2

- Optical fiber
- Coaxial cable
- Ethernet cable

**SECTION-C****Question 4.**

- (a) Give the order of SQL SELECT 1  
**Q1** (b) Identify the primary key and foreign key in the following tables: 1  
 STUDENT(StudentID, FirstName, LastName, BirthDate, FacultyID, Phone)  
 FACULTY(FacultyID, Name, Phone, Dept)  
 (c) Write the syntax of HAVING clause. 1  
 (d) Why aggregate functions are used in database? 1  
 (e) Explain how you can setup static files in Django. 2  
**OR**  
**Q1** (f) How to test for NULL values? 2  
 (g) What is render\_to\_response? 3  
**Q1** (h) Consider the following tables and give outputs for SQL queries (i) to (iv): 4  
**Table: Item**

| I_Id | Manufacturer | Price | ItemName          |
|------|--------------|-------|-------------------|
| PC01 | ABC          | 35000 | Personal Computer |
| LC05 | ABC          | 55000 | Laptop            |
| PC03 | YXZ          | 32000 | Personal Computer |
| PC06 | COMP         | 37000 | Personal Computer |
| LC03 | PQR          | 27000 | Laptop            |

  
**Table: Customer**

| C_Id | City     | I_ID | CustomerName |
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| 15   | Delhi    | LC03 | C Sharma     |
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**OSWAAL CBSE Sample Question Papers, COMPUTER SCIENCE, Class-XII**

|             |     |
|-------------|-----|
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- (ii) Suggest a cable layout connections between the buildings inside the campus. 1

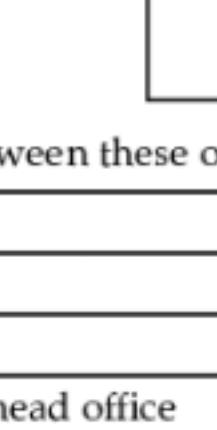
- (iii) Suggest the placement of the following devices with justification. 2

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- Optical fiber
- Coaxial cable
- Ethernet cable

**SECTION-D****Question 5.**

- (a) Apache Web server software is also known as what? 1  
**Q1** (b) Which term is used to describe any fraudulent business or scheme that takes money or other goods from an unsuspecting person? 1  
**Q1** (c) Write the two ways for protecting intellectual property. 2  
 (d) How does new technology affect the privacy? 2  
**Q1** (e) Write the precautions we should take before donating or recycling your electronics. 2  
 (f) What is ethical hacker? 2  
**OR**  
**Q1** (g) For Solutions of the above Sample Paper, follow the link 3  
 Visit : <https://qrqo.page.link/z7gd>  
**OR**  
 Scan the Code 

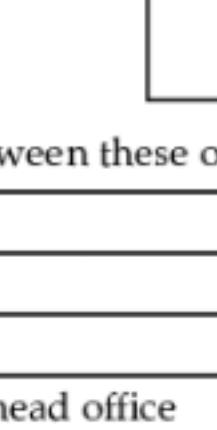
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**Sample Question Papers**

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- (i) SELECT DISTINCT City FROM Customer; 1
- (ii) SELECT ItemName, MAX (Price) FROM Item GROUP BY ItemName; 1
- (iii) SELECT CustomerName, Manufacturer FROM Item, Customer WHERE Item.I\_Id = Customer.I\_Id; 1
- (iv) SELECT ItemName, Price \*100 FROM Item WHERE Manufacturer = 'ABC'; 1

**SECTION-D****Question 5.**

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