

SAMPLE PAPER – 2 (2025) ARTIFICIAL INTELLIGENCE (417) CLASS - 10

SuperNova-LearnPython, a YouTube channel dedicated to helping students to learn Python and computer science concepts.

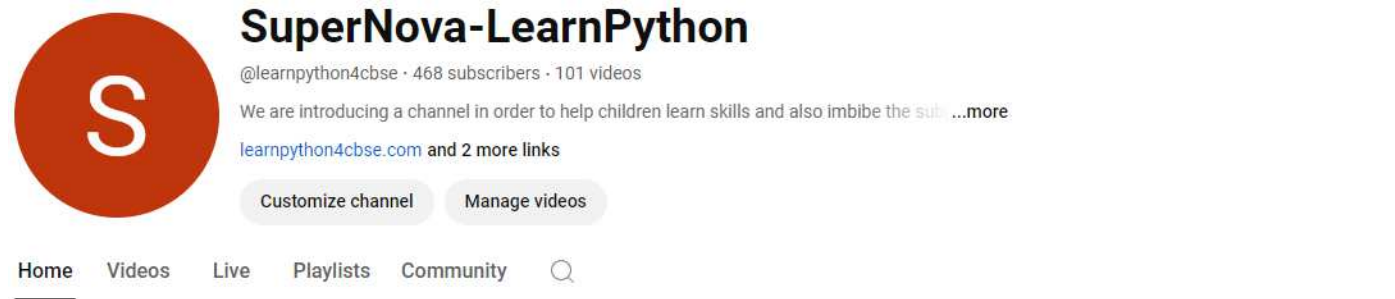
The channel covers various topics related to computer science, including *Python programming, data file handling, computer networking, SQL* and many more.

If you're looking for video descriptions, notes, assignments, and previous years' question papers related to Python and computer science for class 11 and 12, I recommend checking out the **SuperNova-LearnPython** channel on YouTube.

[You can find the channel here¹.](#)

Happy learning! .

Please like, Subscribe and share the Channel

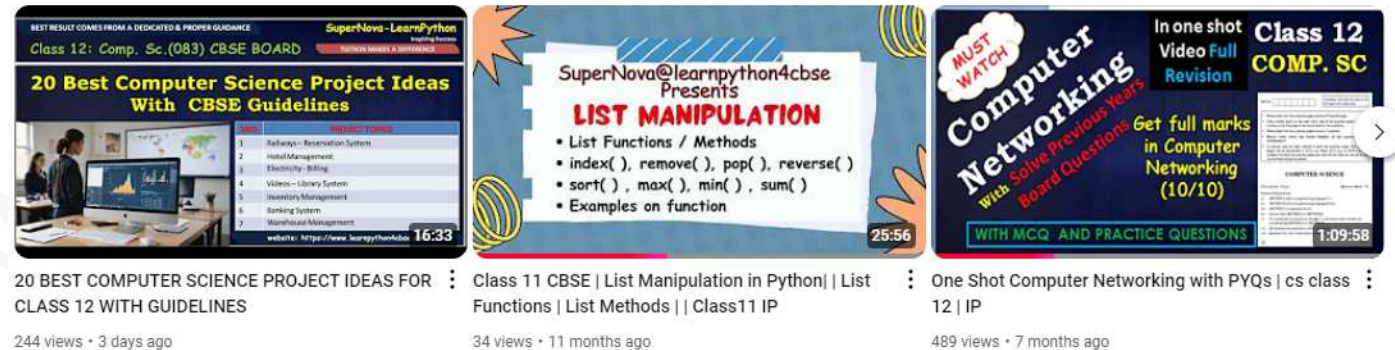


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Time Allowed: 2 Hours

M. M.: 50

General Instructions:

1. Please read the instructions carefully.
2. This Question Paper consists of **21 questions** in two sections: Section A & Section B.
3. Section A has Objective type questions whereas Section B contains Subjective type questions.
4. **Out of the given (5 + 16 =) 21 questions, a candidate has to answer (5 + 10 =) 15 questions in the allotted (maximum) time of 2 hours.**
5. All questions of a particular section must be attempted in the correct order.
6. **SECTION A - OBJECTIVE TYPE QUESTIONS (24 MARKS):**
 - i. This section has 05 questions.
 - ii. Marks allotted are mentioned against each question/part.
 - iii. There is no negative marking.
 - iv. Do as per the instructions given.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
 - i. This section has 16 questions.
 - ii. A candidate has to do 10 questions.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.

SECTION – A: OBJECTIVE TYPE QUESTIONS

Q. 1 . Answer any 4 out of the given 6 questions : (1x4 = 4 marks)

- i. is the inner urge to do something, achieve goals without any external pressure/ lure for award or appreciation.

(a) Self-awareness	(b) Self-motivation
(c) Self-regulation	(d) Self-control
- ii. in communication implies "stepping into the shoes of others"

(a) Consideration	(b) Courtesy
(c) Concreteness	(d) Clarity
- iii. GUI stands for.....

(a) Graphical User Interaction	(b) Graphical User Interface
(c) Graphical Upper Interface	(d) Geographical User Interaction
- iv. "To get success, every business idea needs to be unique or special."Is the above statement a myth or fact?
- v. How food is one of the major problems related to sustainable development? Discuss briefly.



vi. Remy a travelled to Sweden from India to pursue her higher education. But she doesn't know how to speak Swedish (language of Sweden). Because of this, she was unable to find a part time job.

This is an example of

- (a) Interpersonal barrier (b) Physical barrier
(c) Organisational barrier (d) Linguistic barrier

Q.2. Answer any 5 out of the given 6 questions: (1x5 = 5 marks)

i. Radha is good at singing since childhood, she understands keynotes and is composing a song for her college festival but her father wants her to focus on science exams. She possesses skill but her father is not finding it lucrative.

- (a) Naturalist Intelligence (b) Interpersonal Intelligence
(c) Musical Intelligence (d) Spatial Visual Intelligence

ii. Assertion (A): One can be a good singer while the other can be a great athlete.

Reason (R): All humans have all 9 types of intelligences but at different levels.

- (a) Both A and R are correct and R is the correct explanation of A.
(b) Both A and R are correct but R is NOT the correct explanation of A.
(c) A is correct but R is incorrect.
(d) A is incorrect but R is correct.

iii. During Data Acquisition, feeding previous data into the machine is called

- (a) Training Data (b) Predicting Data
(c) Testing Data (d) Evaluating Data

iv. are modelled on the human brain, it is essentially a machine learning , algorithm useful for solving problems when the dataset is large.

- (a) Computer Vision (b) Data Science
(c) Natural Language Processing (d) Neural Network

v. It is a concept to unify statistics, data analysis, machine learning and their related methods in order to understand and analyse actual phenomena with data. The above statement is related to

- (a) Data Science (b) Natural Language Processing
(c) Computer Vision (d) Algebra

vi. Select the correct features of Smart Bot:

- (a) Smart-bots are flexible and powerful
(b) Coding is required to take this up on board
(c) Smartbots work on bigger database and other resources directly
(d) All of the above

Q. 3. Answer any 5 out of the given 6 questions:

i. An AI system uses two broad classes of data namely content data which includes the raw video streams title, description, etc, and user activity data that includes rating a video, favoriting/liking a



video, or subscribing to an uploader, and watch time. Based on this, the AI system measures a user's engagement and happiness. It then starts computing personalized recommendations to the user.

Which of the following applications can you relate to this?

- (a) Self-driving car
- (b) Siri
- (c) email filters
- (d) YouTube

ii. The canvas helps you in identifying the key elements related to the problem.

- (a) Problem scoping
- (b) 4Ws Problem
- (c) Project cycle
- (d) Algorithm

iii. Statement 1: Data Sciences majorly work around analysing the data.

Statement 2 : It employs techniques and theories drawn from many fields within the context of Mathematics, Statistics, Computer Science, and Information Science.

- (a) Both Statement 1 and Statement 2 are correct.
- (b) Both Statement 1 and Statement 2 are incorrect.
- (c) Statement 1 is correct but Statement 2 is incorrect.
- (d) Statement 2 is correct but Statement 1 is incorrect.

iv. How many channels does a colour image have?

v. is the sub-field of AI that is focused on enabling computers to understand and process human languages.

- (a) Deep Learning
- (b) Machine Learning
- (c) NLP
- (d) Data Sciences

vi. Which of the following is defined as the measure of balance between precision and recall?

- (a) Accuracy
- (b) F1 Score
- (c) Reliability
- (d) Punctuality

Q. 4. Answer any 5 out of the given 6 questions : (1x5 = 5 marks)

i. Choose the correct statement related to Machine Learning :

Statement 1 : It is a subset of Artificial Intelligence that enables machines to improve at tasks with experience.

Statement 2 : It enables machines to learn by themselves using the provided data and make accurate Predictions/Decisions.

- (a) Only Statement 1 is correct
- (b) Both statements 1 and 2 are correct
- (c) Both the Statements 1 and 2 are incorrect
- (d) Only Statement 1 is correct

ii. defined as the percentage of correct predictions out of all the observations.

- (a) Predictions
- (b) Accuracy
- (c) Reality
- (d) F1 Score



iii. Companies were fed up of bad debts and losses every year. However, they had a lot of data which use to get collected during the initial paper work while sanctioning loans. They decided to bring in data scientists in order to rescue them from losses. Identify the field of AI application that can be used for the above scenario

- (a) Genetics and Genomics
- (b) Fraud and risk detection
- (c) Internet search
- (d) Targeted Advertising

iv is the process of finding instances of real-world objects in images or videos.

- (a) Instance segmentation
- (b) Object detection
- (c) Classification
- (d) Image segmentation

v. Which of the following is the type of data used by NLP applications?

- (a) Images
- (b) Numerical data
- (c) Graphical data
- (d) Text and Speech

vi. What will be the outcome, if the Prediction is "Yes" and it matches with the Reality? What will be the outcome, if the Prediction is "Yes" and it does not match the Reality?

- (a) True Positive, True Negative
- (b) True Negative, False Negative
- (c) True Negative, False Positive
- (d) True Positive, False Positive

Q.5. Answer any 5 out of the given 6 questions : (1x5 = 5 marks)

i . If you do an image search for vacations on a popular search engine, the first few searches mostly return the picture of beaches. This is an example of

- (a) Data Privacy
- (b) AI access
- (c) AI Bias
- (d) Data Exploration

ii . Recall-Evaluation method is

- (a) defined as the fraction of positive cases that are correctly identified.
- (b) defined as the percentage of true positive cases versus all the cases where the prediction is true.
- (c) defined as the percentage of correct predictions out of all the observations.
- (d) comparison between the prediction and reality

iiimeans a picture element which is the smallest unit of information that makes up a picture.

- (a) Vision
- (b) Pics
- (c) Pixel
- (d) Piskel

iv helps in assigning a predefined category to a document, organize it in such away that helps customers to find information they want. For example spam filtering in email, auto tagging on social media, categorization of news articles etc

v. What is NLP?

vi. With reference to evaluation process of understanding the reliability of any AI model, define the term True Positive.

**SECTION B****SUBJECTIVE TYPE QUESTIONS**

Answer any 3 out of the given 5 questions on Employability Skills (2x3 = 6 marks)

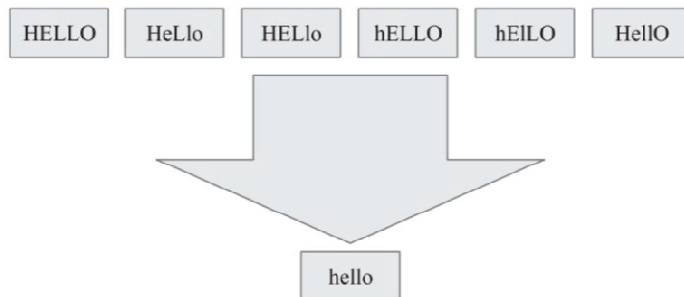
Answer each question in 20 - 30 words.

- Q.6. List two best practices for effective communication.
- Q.7. How does meditation help in managing stress? Discuss briefly.
- Q.8. Gurmeet has just bought a new computer for his office. Suggest him any two points which he should keep in mind to prevent his computer from virus infection.
- Q.9. Write any four common functions of an entrepreneur.
- Q.10. Sustainable development can actually happen only when each one of us works towards it. Mention any four ways which we can do at our end to reduce inequality.

Answer any 4 out of the given 6 questions in 20 - 30 words each (2x4 = 8 marks)

Answer each question in 20 - 30 words.

- Q. 11. Explain any one example of AI bias.
- Q.12. What is dimensionality reduction?
- Q.13. Ajay wants to access data from various sources. Suggest him any two points that he needs to keep in mind while accessing data from any data source.
- Q.14. Explain the term resolution with an example.
- Q.15. Explain the following picture which depicts one of the processes on NLP. Also mention the purpose which will be achieved by this process.



- Q.16. With reference to evaluation stage of AI project cycle, explain the term Accuracy. Also give the formula to calculate it.

Answer any 3 out of the given 5 questions in 50 - 80 words each (4 x 3 =12 marks)

Answer each question in 20 - 30 words.

- Q.17. Will it be valid to say that not all the devices which are termed as smart are AI-enabled? Justify this statement. Explain any two examples from daily life which are commonly misunderstood as AI.
- Q. 18. What is the significance of the AI project cycle? Also, explain in detail about how data acquisition is different from data exploration.



Q.19. The world is competitive nowadays. People face competition in even the tiniest tasks and are expected to give their best at every point in time. When people are unable to meet these expectations, they get stressed and could even go into depression. We get to hear a lot of cases where people are depressed due to reasons like peer pressure, studies, family issues, relationships, etc. and they eventually get into something that is bad for them as well as for others. So, to overcome this, Cognitive Behavioural Therapy (CBT) is considered to be one of the best methods to address stress as it is easy to implement on people and also gives good results. This therapy includes understanding the behaviour and mindset of a person in their normal life. With the help of CBT, therapists help people overcome their stress and live a happy life. For the situation given above,

1. Write the problem statement template
2. List any two sources from which data can be collected.
3. How do we explore the data?

Q.20. With reference to NLP, explain bag of words algorithm in detail with the help of suitable example.

Q.21. Traffic Jams have become a common part of our lives nowadays. Living in an urban area means you have to face traffic each and every time you get out on the road. Mostly, school students opt for buses to go to school. Many times the bus gets late due to such jams and students are not able to reach their school on time. Thus, an AI model is created to predict explicitly if there would be a traffic jam on their way to school or not. The confusion matrix for the same is:

The Confusion Matrix	Actual: 1	Actual: 0
Predicted : 1	50	50
Predicted : 0	0	0

Explain the process of calculating F1 score for the given problem :

Note : [Calculations are optional as the question is to explain the process; Hence, writing the formula for precision, recall and F1 score is sufficient for this question]

LINK TO OPEN THE MARKING SCHEME OF THE SAMPLE PAPER -2