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# SAMPLE PAPER - 1
# 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 here[1].
Happy learning!  .

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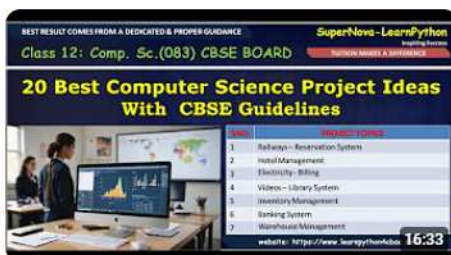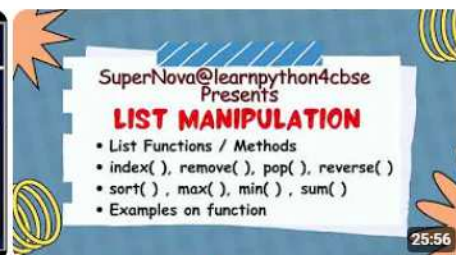Home    Videos    Live    Playlists    Community    🔍

**For You**

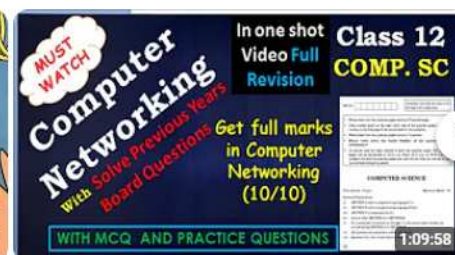| 20 BEST COMPUTER SCIENCE PROJECT IDEAS FOR CLASS 12 WITH GUIDELINES | Class 11 CBSE | List Manipulation in Python| | List Functions | List Methods | | Class11 IP | One Shot Computer Networking with PYQs | cs class 12 | IP |
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Time Allowed: 2 Hours                                                                                          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

**1. Answer any 4 out of the given 6 questions on Employability Skills.**                    **(1x4=4marks)**

(i) 'Prepare yourself for new changes, so that you can transition seamlessly'.  Which term can you relate the given sentence to?

   (a)  Self-awareness                                        (b) Responsibility

   (c) Adaptability                                             (d) Time-management

(ii) _____ are computer programs that can damage the data and software programs or steal the information stored on a computer.

   (a)  Spam                                                     (b) Viruses

   (b)  Junk Mail                                               (d) BIOS

(iii) Which one of the following is Not true for entrepreneurs?

   (a)  They create needs and demands

   (b)  They provide raw materials

   (c)  They do not create jobs

   (d)  They help society by supporting infrastructure development

(iv) Khushi spends all her after-school hours to practice more and more sample question papers.  She wants to score full marks in her exam.  This is an example of _____                      .

   (a)  Self-awareness                                        (b)  Self-Motivation

   (c)  Self-Regulation                                        (d)  Self-Confidence

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(v) Which of the following is Not an element of communication within the communication process cycle?

- (a) Channel
- (b) Receiver
- (c) Sender
- (d) Time

(vi) Statement 1: Economic development is using up resources of the world.

Statement 2: This would have serious environmental problems, much worse than those that we are facing at present.

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

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

(i) Identify the incorrect domain-application pair from the following:

I. Data Science: Price Comparison websites

II. Computer Vision: Image Processing Software

III. Natural Language Processing: Alexa

IV. Artificial Intelligence: Spreadsheet

- (a) Only (IV)
- (b) (I) and (III)
- (c) (II) and (IV)
- (d) (III) and (IV)

(ii) Unscramble the letters and find the correct answer

Machine Learning + _____ = Artificial Intelligence.

- (a) TRNUALA GNLAGAUE CPSISEROGN
- (b) UTECPOMR ISOVNI
- (c) EPED RIGLENAN
- (d) URAENL KNWTEOR

(iii) Name the 4Ws of problem canvas under the Problem Scoping stage of the AI Project Cycle. Choose the correct option:

- (a) Who, What, Where, Why
- (b) Who, What, Where, When
- (c) Who, When, Why, Whom
- (d) Who, What, Why, Whose

(iv) Which of the following is related to function of layers in a neural network?

- (a) Information -> Input Layer -> Output Layer
- (b) Bias -> Output layer -> Hidden Layer
- (c) Hidden Layer -> Algorithms -> Output Layer
- (d) Input Layer -> Output Layer -> Algorithms

(v) What is the main focus of Data Science?

- (a) Collecting data from various sources

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(b) Analyzing and interpreting the collected data

(c) Developing databases for record maintenance

(d) Only implementing artificial intelligence in data analysis

(vi) 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

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

(i) Artificial Intelligence (AI) is a discipline that aims to create robots that are intelligent enough to do jobs that are typically performed by humans only. Identify which of the following aspects is still beyond the capabilities of artificial intelligence.

I.        Numerical ability

II.       High processing power

III.      Emotional intelligence

IV.       Speech recognition

(a) (I) and (III) only                          (b)(II) and (III) only

(c)(I), (II) and (III)                          (d) Only (III)

(ii) A large number of input features can result in poor performance for machine learning algorithms. Which of the following helps in reducing the number of input features?

(a)Supervised Learning                          (b) Decision Tree

(c) Classification                              (d) Dimensionality Reduction

(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) Assertion (A): Siri and Alexa like smart assistants make use of NLP.

Reason (R) : NLP enables technology to process human languages in the form of text or voice data, to understand its full meaning.

(a)  Both assertion and reason are correct and reason is the correct explanation for assertion

(b)  Both assertion and reason are correct and reason is not the correct explanation for assertion

(c)  Assertion is true but reason is false

(d)  Assertion is false but reason is true

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(vi)_____ is defined as the percentage of correct predictions out of all the observations.

(a) Predictions

(b) Accuracy

(c) Reality

(d) F1 Score

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

(i) A machine is called an intelligent machine only if it can:

    I.    Click photos

    II.    Do complex decision-making

    III.    Do speech recognition

    IV.    Mimic human intelligence

  (a)  (I) and (II)

  (b) (II) and (III)

  (c)  (I), (III) and (IV)

  (d) (II), (III) and (IV)

(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 predictions and reality.

(iii) A _____ refers to a system that is capable of predicting the future preferences of a set of items for a user, and recommending the top items.

  (a)  Targeted advertising

  (b)  Recommender System (RS)

  (c)  Route Planner

  (d)  Digital Advertising

(iv) _____ is the task of assigning an input image one label from a fixed set of categories.

  (a)  Image Classification

  (b)  Localisation

  (c)  Object Detection

  (d)  Instance Segmentation

(v) Identify the type of chatbot with the information given below

These bots work on pre-programmed instructions inside the application/machine and are generally easy to develop. They are deployed in the customer care section of various companies. Their job is to answer some basic queries that they are coded for and connect them to human executives once they are unable to handle the conversation.

(vi) Which of the following statements is Not true about overfitting models?

  (a)  This model learns the pattern and noise in the data to such extent that it harms the performance of the model on the new dataset.

  (b)  Training result is very good and the test result is poor

  (c)  It interprets noise as patterns in the data

  (d)  The training accuracy and test accuracy both are low

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

(i) Which of the following best describes Machine Learning (ML)?

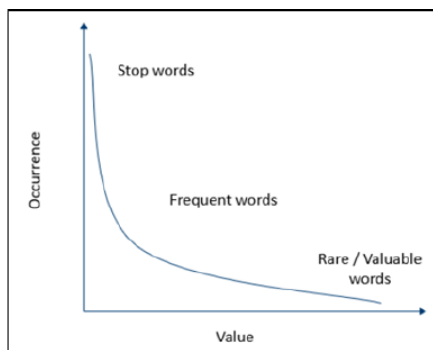  (a)  A technique that enables machines to understand and respond to human voice commands

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(b) A subset of AI that allows machines to improve their accuracy through experience

(c) A technology that designs neural networks for AI

(d) A method to create intelligent machines without using data

(ii) What will be the outcome, if the Prediction is "No" and it does not match with the Reality? What will be the outcome, if the Prediction is "Yes" and it does not match the Reality.

(a) True Negative, False Negative

(b) False Negative, False Positive

(c) True Negative, False Positive

(d) True Positive, False Positive

(iii) Which of the following is Not a task of computer vision?

(a) Guest Recognition             (b) Airline Route Plan

(c) Attendance System             (d) Snapchat Filters

(iv) Ayushi was learning about NLP. She wanted to know the term used for the whole textual data from all the documents altogether. Help her in identifying the term used for it.

(v) A corpus contains 12 documents. How many document vectors will be there for that corpus?

(a) 12                             (b) 1

(c) 24                            (d) 1/12

(vi) Assertion (A): The confusion Matrix is a performance measuring technique for an AI model.

Reason (R) : The confusion Matrix lists the predicted value of an AI Model and the actual / correct outcome values.

(a) Both assertion and reason are correct and reason is the correct explanation for assertion

(b) Both assertion and reason are correct and reason is not the correct explanation for assertion

(c) Assertion is true but reason is false

(d) Assertion is false but reason is true

## 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.**

6. Discuss any two barriers of effective communication.

7. How does meditation help in managing stress? Discuss briefly.

8. Enlist any two methods to protect our data on the computer.

9. "Entrepreneurs are born, not made." Do you agree with this statement? Justify your answer.

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.

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

11. Discuss briefly any two possible reasons of AI-bias.
12. Differentiate between data acquisition and data exploration.
13. What is the role of data science in modern search engines like Google and Bing?
14. Computer vision tasks refer to the internal processing of image that helps in understanding and describing a scene encapsulated in an image.  Briefly list four basic computer vision tasks.
15. Explain from the given graph, how the value and occurrence of a word are related in a corpus?



16. Draw the confusion matrix for the following data

    the number of true positive = 10

    the number of true negative = 86

    the number of false positive = 4

    the number of false negative = 0

**Answer any 3 out of the given 5 questions in 50-80 words each.**                    **(4x3=12marks)**

17. A scenario is given to you below. Read it and answer the questions that follow:
    Late one night, a car ran over a pedestrian in a narrow by street and drove away without stopping. A policeman who saw the vehicle leave the scene of the accident reported it moving at very high speed. The accident itself was witnessed by six bystanders. They provided the following conflicting accounts of what had happened:

    - It was a blue car driven by a man
    - The car was moving at high speed and its headlights were turned off
    - The car did have license plates; it wasn't going very fast
    - It was a Toyota and its headlights were turned off;
    - The car didn't have license plates; the driver was a woman; - It was a grey Ford

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When the car and its driver were finally apprehended, it turned out that only one of the six eyewitnesses gave a fully correct description. Each of the other five provided one true and one false piece of information. Keeping that in mind, can you determine the following:
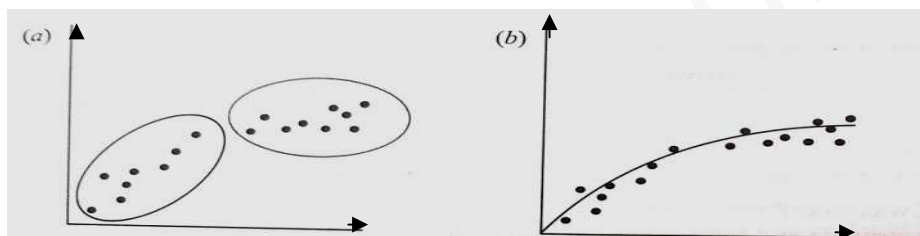
    a. What was the car's brand?
    b. Did it have license plates?
    c. Was the car going fast or slow?
    d. Was the driver a man or a woman?

18.    Create a 4W project Canvas for the following:
As more and more new technologies get into play, risks will get more concentrated into a common network. Cybersecurity becomes extremely complicated in such scenarios and goes beyond the control of firewalls. It will not be able to detect unusual activity and patterns including the movement of data.

Think how AI algorithms can scrape through vast amounts of logs to identify susceptible user behaviour. Use an AI project cycle to clearly identify the scope, how you will collect data, model and evaluation parameters.

19. Observe the following images and explain the related models:



20.    Samiksha, a student of class X was exploring the Natural Language Processing domain. She got stuck while performing the text normalisation. Help her to normalise the text on the segmented sentences given below:
**Document 1:** Akash and Ajay are best friends.
**Document 2:** Akash likes to play football but Ajay prefers to play online games.

21.    Calculate Accuracy, Precision, Recall and F1 Score for the following Confusion Matrix on water shortage in school.

| The Confusion Matrix | Reality:1 | Reality:0 |
|---|---|---|
| Prediction:1 | 75 | 5 |
| Prediction:0 | 5 | 15 |

# LINK TO OPEN THE MARKING SCHEME OF THE SAMPLE PAPER -1