

Class: X
MM: 50

Subject: Artificial Intelligence
Time: 2 hrs.

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):
 - a. This section has 05 questions.
 - b. Marks allotted are mentioned against each question/part
 - c. There is no negative marking
 - d. Do as per the instructions given.
7. SECTION B-SUBJECTIVE TYPE QUESTIONS (26 MARKS):
 - a. This section has 16 questions
 - b. A candidate has to do 10 questions
 - c. Do as per the instructions given
 - d. Marks allotted are mentioned against each question/part

Q1 Answer any 4 out of the given 6 questions on Employability Skills (1x4=4 marks)

- i) Which method of communication is effective for informing a group of workers about a change in duty hours, if Ananya is the manager of a store?
 - a) E-mail
 - b) Notices/Posters
 - c) Face to Face
 - d) Business Meetings
- ii) Ram performs at the annual day function and learns a new skill, such as dancing or singing. What type of motivation does this exemplify?
 - a) Internal
 - b) External
 - c) Intermediate
 - d) None of the above
- iii) The SDGs have been framed with the objective to address vital issues facing businesses, governments and society, such as _____.
 - a) Gender Equality
 - b) Energy & Climate change
 - c) Biodiversity
 - d) All of the above
- iv) Sometimes we get mails from companies who are advertising a product or trying to attract you to their website. Such mails are called _____.
 - a) Trash
 - b) Inbox
 - c) Spam
 - d) None of the above
- v) Assertion 1: Regular self-assessment can help identify areas for improvement.
Assertion 2: Procrastination helps in achieving goals effectively.
A) Both are true
B) Both are false

- ~~C) 1st is true, 2nd is false~~
D) 1st is false, 2nd is true

- vi) Assertion(A): For a trading organization, the operating cycle will be shorter.
Reasoning(R): There is no manufacturing in a trading organization.
- a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A)
 - b) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A)
 - c) Assertion (A) is true but Reason (R) is false
 - d) Assertion (A) is false but Reason (R) is true

Q2 Answer any 5 out of the given 6 questions (1x5=5 marks)

- i) teach the difference between right or wrong and has a guideline for moral conduct.
- ii) ____ involves collecting data from various authentic sources such as reliable websites, observations, and surveys.
 - a) Data Acquisition
 - b) Data Evaluation
 - c) Data Testing
 - d) Data Modelling
- iii) Name any 2 methods of collecting data.
 - a) Surveys and Interviews
 - b) Rumors and Myths
 - c) AI models and applications
 - d) Imagination and thoughts
- iv) Which algorithms result in two things, a vocabulary of words and frequency of the words in the corpus?
 - a) Sentence segmentation
 - b) Tokenisation
 - c) Bag of words
 - d) Text normalisation
- v) You inform your friend that you want to buy new shoes and you are trying to search on the internet, after some time the online retailers start sending you reminders to buy shoes. What type of technology is used?
 - a) Artificial Intelligence
 - b) Auto Search technology
 - c) Google Automation
 - d) None of the above
- vi) 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 prediction out of all the observations.
 - d) Comparison between the prediction and the reality.

Q3 Answer any 5 out of the given 6 questions (1x5=5 marks)

- i) Email Filters is an application of:
 - a) Computer Vision
 - b) Data Science
 - c) Natural Language Processing
 - d) Neural Network
- ii) Under _____ stage of AI Project Cycle, we look at various parameters which affect the problem we wish to solve so that the picture becomes clearer.
 - a) Modelling
 - b) Evaluation
 - c) Problem Scoping
 - d) Data Exploration

- iii) Aditi, a student of class XII developed a chatbot that clarifies the doubts of Economics students. She trained the software with lots of data sets catering to all difficulty levels. If any student would type or ask questions related to Economics, the software would give an instant reply. Identify the domain of AI in the given scenario.
- a) Computer Vision b) Data Science
c) Natural Language Processing d) None of these
- iv) _____ 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
- v) Which of the following statement is correct for training data:
- i) Data should be relevant
ii) Data should be authentic
iii) Data should be downloaded only
iv) Data can be anything
- a) i, and ii b) i, ii and iii
c) ii, iii and iv d) All of them
- vi) When the prediction is no and the reality is yes then this condition is called as_____

Q4 Answer any 5 out of the given 6 questions

- i) Mr. Ajit is capable of making calculations and using logic in their project. This skill relates to _____.
 - a) Linguistic Intelligence
 - b) Mathematical Intelligence
 - c) Spatial Visual Intelligence
 - d) Existential Intelligence
- ii) The concept of computer vision was first introduced in
 - a) 1970s
 - b) 1980s
 - c) 1990s
 - d) 2010s
- iii) Classification and localization are used for
 - a) Single Objects
 - b) Only two objects
 - c) Three objects
 - d) Multiple objects
- iv) Which of the following is an application of data science?
 - a) Text summarization
 - b) Target Advertisements
 - c) Face lock in smartphones
 - d) Email filters
- v) What do you mean by syntax of a language?
 - a) Meaning of a sentence
 - b) Grammatical structure of a sentence
 - c) Semantics of a sentence
 - d) Synonym of a sentence
- vi) If model will simply remember the whole training set, and will therefore always predict the correct label for any point in the training set. This is known as _____.
 - a) Overfitting
 - b) Overriding
 - c) Over remembering
 - d) None of the above

Q5 Answer any 5 out of the given 6 questions (1x5=5 marks)

- i) Evaluation is the process of understanding the reliability of any AI model, based on outputs by feeding the test dataset into the model and Therefore comparing it with actual answers. it must be followed by:
- | | |
|---------------------|---------------------|
| a) Problem Scoping | b) Data Acquisition |
| c) Data Exploration | d) Modelling |
- ii) ____ is not a Learning-based Approach where the AI model gets trained on the data fed to it and then is able to design a model which is adaptive to the change in data.
- | | |
|---------------------------|--------------------------|
| a) Supervised Learning | b) Unsupervised Learning |
| c) Reinforcement Learning | d) Enforcement Learning |
- iii) For ____ the whole corpus is divided into sentences. Each Sentence is taken as a different data so now the whole corpus gets reduced to sentences.
- | | |
|--------------------|--------------------------|
| a) Text Regulation | b) Sentence Segmentation |
| c) Tokenisation | d) Stemming |
- iv) Which of the following are correct statements about pixels?
- (i) A picture element
(ii) It makes every digital photograph or image
(iii) Smallest unit of information
(iv) Round or square arranged in a 2D grid
- | | |
|-----------------------|-----------------------------|
| a) (i) & (ii) | b) (ii), (ii) & (iii) |
| c) (ii), (iii) & (iv) | d) (i), (ii) , (iii) & (iv) |
- v) Which feature of NLP helps in understanding the emotions of the people mentioned with the feedback?
- | | |
|------------------------|----------------------------|
| a) Virtual Assistants | b) Sentiment Analysis |
| c) Text classification | d) Automatic Summarization |
- vi) ____ helps to find the best model that represents our data and how well the chosen model will work in future.

Answer any 3 out of the given 5 questions on Employability Skills (2X3=6 marks)

- Q6 Name the four main categories of Communication Styles.
- Q7 What is time management and how can you manage your time?
- Q8 Neha computer has been infected by the computer virus and she is unable to delete the virus. Help her by telling what steps she should follow in order to remove the computer virus.
- Q9 Raj has a small convenience store in his locality. There are many other convenience stores in the area. Yet, Raj's store survives the competition and does well. Which stage of an entrepreneur's career process can you relate this to? Explain.
- Q10 List some ways in which we can use resources sensibly?

Answer any 4 out of the given 6 questions (2X3=8 marks)

- Q11 Draw the graphical representation of Regression AI model. Explain in brief.
- Q12 Define the term Machine Learning. Also give 2 applications of Machine Learning in our daily lives.
- Q13 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.
- Q14 Explain the term resolution with an example.
- Q15 Give two points of difference between a script-bot and a smart-bot
- Q16 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

(4X3=12 marks)

- Q17 Your grandmother watches you using AI applications. She wants to understand more about it. Help her understand the term artificial intelligence by giving the right definition and explain to her with an example how machines become artificially intelligent.
- Q18 Sunita has been assigned a task to work on a AI project to be implemented in her organization. She was earlier working on IT projects but now she has to plan for AI project. Suggest and explain her in brief the stages of AI project cycle her project has to go through.
- Q19 An electronic device manufacturer has decided to add sensors to their devices in order to provide customers with a preventive maintenance service. For this the product is monitored and when required servicing is done according to the convenience of the customer. The manufacturer aims for zero failure, standard service life of the product and ultimately building up of the brand.
Fill the 4W canvas for the problem given.
- Q20 Consider the text of following documents :
Document 1 : Sahil likes to play cricket
Document 2 : Sajal likes cricket too
Document 3 : Sajal also likes to play basketball
Apply all the four steps of Bag of words model of NLP on the above given documents and generate the output.
- Q21 In today's scenario, people receive constant mails from the organizations they are connected with and they have to be classified into spam and non-spam as required. Now it has to be decided which mails to be categorized and set as spam mails according to the mails received till date, The Confusion Matrix for the same is as follows.

The Confusion Matrix	Reality :1	Reality: 0
Prediction: 1	40	24
Prediction: 0	10	36

- How many total tests have been performed in the above scenario?
- Calculate Precision, Recall and F1 score.

