रोल नं.
Roll No.

परीक्षार्थी प्रश्न-पत्र कोड को उत्तर-पुस्तिका के मुख-पृष्ठ पर अवश्य लिखें ।
Candidates must write the Q.P. Code on the title page of the answer-book.

ARTIFICIAL INTELLIGENCE

निर्धारित समय : *2 घण्टे*
Time allowed : 2 hours

अधिकतम अंक : *50*
Maximum Marks : 50

- कृपया जाँच कर लें कि इस प्रश्न-पत्र में मुद्रित पृष्ठ **7** हैं ।
- प्रश्न-पत्र में दाहिने हाथ की ओर दिए गए प्रश्न-पत्र कोड को परीक्षार्थी उत्तर-पुस्तिका के मुख-पृष्ठ पर लिखें ।
- कृपया जाँच कर लें कि इस प्रश्न-पत्र में **21** प्रश्न हैं ।
- **कृपया प्रश्न का उत्तर लिखना शुरू करने से पहले, उत्तर-पुस्तिका में प्रश्न का क्रमांक अवश्य लिखें ।**
- इस प्रश्न-पत्र को पढ़ने के लिए 15 मिनट का समय दिया गया है । प्रश्न-पत्र का वितरण पूर्वाह्न में 10.15 बजे किया जाएगा । 10.15 बजे से 10.30 बजे तक परीक्षार्थी केवल प्रश्न-पत्र को पढ़ेंगे और इस अवधि के दौरान वे उत्तर-पुस्तिका पर कोई उत्तर नहीं लिखेंगे ।

- Please check that this question paper contains **7** printed pages.
- Q.P. Code given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **21** questions.
- **Please write down the serial number of the question in the answer-book before attempting it.**
- 15 minute time has been allotted to read this question paper. The question paper will be distributed at 10.15 a.m. From 10.15 a.m. to 10.30 a.m., the candidates will read the question paper only and will not write any answer on the answer-book during this period.

General Instructions :

(i) *Please read the instructions carefully.*

(ii) *This question paper consists of 21 questions in two sections : Section A &*
Section B.

(iii) *Section A has objective type questions whereas Section B contains*
subjective type questions.

(iv) *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.

(v) *All questions of a particular section must be attempted in the correct*
order.

(vi) **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.*

(vii) **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.*

Section – A
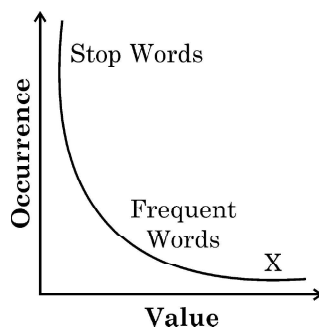## Objective Type Questions

1. Answer any **4** out of given **6** questions.   4 × 1 = 4

  (i)   Which of the following is not a task of an entrepreneur ?   1

     (a)   Sharing of wealth   (b)   Preferably using foreign materials

     (c)   Fulfilling customer needs(d)   Helping society

  (ii)   GUI stands for :   1

     (a)   Graphical User Interaction

     (b)   Graphical User Interface

     (c)   Graphical Upper Interface

     (d)   None of these

  (iii)   Which of the following is a function of an entrepreneur ?   1

     (a)   Following the traditional method of business

     (b)   Innovation

     (c)   Keeping all the profit to himself/herself

     (d)   Avoid taking decisions

(iv) Right clicking on File or Folder opens   **1**

    (a) Main Menu   (b) Shortcut Menu

    (c) Back Menu   (d) Front Menu

(v) Stress management is vital because it leads to following benefits :   **1**

    (a) Improves mood   (b) Boosts immune system

    (c) Promotes longevity   (d) All of the above

(vi) Which of the following is an inner urge to do something, achieve their goals without any external pressure / lure for award or appreciation ?   **1**

    (a) Self-awareness   (b) Self-motivation

    (c) Self-regulation   (d) Self-control

2. Answer any **5** out of given **6** questions.   **5 × 1 = 5**

(i) Two popular examples of pocket assistants are _____ and _____.   **1**

(ii) This is a fact that all human beings have all nine types of intelligences, but at different levels.
Name any two such intelligences.   **1**

(iii) Identify the incorrect statements from the following :   **1**

    (i) AI models can be broadly categorized into four domains.

    (ii) Data sciences is one of the domain of AI model.

    (iii) Price comparison websites are examples of data science.

    (iv) The information extracted through data science can be used to make decision about it.

    (a) Only (iv)   (b) (iii) and (iv)

    (c) Only (i)   (d) (ii) and (iii)

(iv) During Data Acquisition, feeding previous data into the machine is called :   **1**

    (a) Training Data   (b) Predicting Data

    (c) Testing Data   (d) Evaluating Data

(v) Regression is one of the type of supervised learning model, where data is classified according to labels and data need not to be continuous. (True / False)   **1**

(vi) Which of the following is defined as the measure of balance between precision and recall ?   **1**

    (a) Accuracy   (b) F1 Score

    (c) Reliability   (d) Punctuality

3. Answer any **5** out of given **6** questions. **5 × 1 = 5**

(i) Email filters, spam filters, smart assistants are the examples of : **1**
(a) Pocket Assistants   (b) CV
(c) NLP   (d) Evaluation

(ii) Select the correct features of Smart Bot : **1**
(a) Smart-bots are flexible and powerful
(b) Coding is required to take this up on board
(c) Smart bots work on bigger databases and other resources directly
(d) All of the above

(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. **1**
(a) Text Regulation   (b) Sentence Segmentation
(c) Tokenisation   (d) Stemming

(iv) _____ helps to find the best model that represents our data and how well the chosen model will work in future. **1**

(v) While evaluating a model's performance, recall parameter considers _____.

(i) False positive   (ii) True positive
(iii) False negative   (iv) True negative
Choose the correct option : **1**
(a) only (i)   (b) (ii) and (iii)
(c) (iii) and (iv)   (d) (i) and (iv)

(vi) With reference to NLP, consider the following plot of occurrence of words versus their value : **1**

In the given graph, X represents :
(a) Rare / valuable words   (b) Punctuation words
(c) Popular words   (d) Pronoun

4. Answer any **5** out of given **6** questions. **5 × 1 = 5**

 (i) Which of the following is a feature of document classification ? 1
   (a) Helps in classifying the type and genre of a document.
   (b) Helps in creating a document.
   (c) Helps to display important information of a corpus.
   (d) Helps in including the necessary words in the text body.

 (ii) Two conditions when prediction matches with the reality are true positive and _____. 1

 (iii) Which of the following is the correct feature of Neural network ? 1
   (a) It can improve the efficiency of two models.
   (b) It is useful with small dataset.
   (c) They are modelled on human brains and nervous system.
   (d) They need human intervention.

 (iv) With reference to AI domain, expand the term CV. 1

 (v) Under _____, one looks at various parameters which affect the problem we wish to solve, as this would make many lives better. 1

 (vi) In this learning model, the data set which is fed to the machine is labelled. Name the model. 1

5. Answer any **5** out of given **6** questions. **5 × 1 = 5**

 (i) _____ is a term used for any word or number or special character occurring in a sentence. (Token / Punctuator) 1

 (ii) When the prediction matches the reality, the condition is termed as _____. 1

 (iii) Smart Assistants such as Alexa, Siri are the examples of : 1
   (a) Natural Language Processing
   (b) Data Science
   (c) Machine Learning
   (d) Computer Vision

 (iv) 4Ws Problem Canvas is a part of : 1
   (a) Problem Scoping (b) Data Acquisition
   (c) Modelling (d) Evaluation

 (v) It refers to the unsupervised learning algorithm which can cluster the unknown data according to the patterns or trends identified out of it. 1
   (a) Regression (b) Classification
   (c) Clustering (d) Dimensionality reduction

(vi) Which of the following talks about how true the predictions are by any model ? **1**

    (a)   Accuracy   (b)   Reliability

    (c)   Recall   (d)   F1 score

Section – B
Subjective Type Questions

Answer any **3** out of given **5** questions on Employability Skills.   **3 × 2 = 6**

6. How does mediation help in Managing Stress ? Discuss briefly.   **2**

7. Give any two key roles performed by an entrepreneur.   **2**

8. Mention any two benefits of working independently.   **2**

9. 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.   **2**

10. Define the term agricultural entrepreneurship. How are farmers benefitted from it ?   **2**

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

11. Explain any one example of AI bias.   **2**

12. What is Dimensionality Reduction ?   **2**

13. Define Chatbot. What are its types ?   **2**

14. Define Confusion Matrix.   **2**

15. Face lock feature of a smartphone is an example of computer vision. Briefly discuss this feature.   **2**

16. With reference to data processing, expand the term TFIDF. Also give any two applications of TFIDF.   **2**

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

17. Ms. Sooji is a beginner in the field of Artificial Intelligence. She got confused among the core terms like Artificial Intelligence (AI), Machine Learning (ML) and Deep Learning (DL). Many a times, these terms are used interchangeably but are they the same ? Justify your answer. Help her in understanding these terms by drawing a well labelled diagram to depict the interconnection of these three fields.   **4**

18. What is the significance of AI project cycle ? Also explain in detail about how Data Acquisition is different from data exploration.   **4**

19. Create a document vector table from the following documents by implementing all the four steps of Bag of words model. Also depict the outcome of each step.
    Document 1 : Sameera and Sanya are classmates.
    Document 2 : Sameera likes dancing but Sanya loves to study mathematics.   **4**

20. 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 the daily life which are commonly misunderstood as AI.   **4**

21. Recently the country was shaken up by a series of earthquakes which has done a huge damage to the people as well as the infrastructure. To address this issue, an AI model has been created which can predict if there is a chance of earthquake or not. The confusion matrix for the same is :   **4**

Confusion Matrix		Reality	
		Yes	No
Predicted	Yes	50	05
	No	25	20

   (i)   How many total cases are True Negative in the above scenario ?
   (ii) Calculate precision, recall and F1 score.

___