CBSE | DEPARTMENT OF SKILL EDUCATION

ARTIFICIAL INTELLIGENCE (SUBJECT CODE: 417)

Blueprint for Sample Question Paper for Class X (Session 2020-2021)

Max. Time: 2 Hours   Max. Marks: 50

PART A - EMPLOYABILITY SKILLS (10 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANSWER TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	
1	Communication Skills-II	1	1	2
2	Self-Management Skills-II	2	1	3
3	Information and Communication Technology Skills-II	1	1	2
4	Entrepreneurial Skills-II	1	1	2
5	Green Skills-II	1	1	2
TOTAL QUESTIONS		6	5	11
NO. OF QUESTIONS TO BE ANSWERED		Any 4	Any 3	Any 7
TOTAL MARKS		1 x 4 = 4	2 x 3 = 6	10 MARKS

PART B - SUBJECT SPECIFIC SKILLS (40 MARKS):

UNIT NO.	NAME OF THE UNIT	OBJECTIVE TYPE QUESTIONS	SHORT ANSWER TYPE QUESTIONS	DESCRIPTIVE/ LONG ANS. TYPE QUESTIONS	TOTAL QUESTIONS
		1 MARK EACH	2 MARKS EACH	4 MARKS EACH	
I	Introduction to Artificial Intelligence (AI)	6	1	1	8
II	AI Project Cycle	6	2	1	9
VI	Natural Language Processing	6	2	2	10
VII	Evaluation	6	1	1	8
TOTAL QUESTIONS		24	6	5	35
NO. OF QUESTIONS TO BE ANSWERED		20	Any 4	Any 3	Any 27
TOTAL MARKS		1 x 20 = 20	2 x 4 = 8	4 x 3 = 12	40 MARKS

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Sample Question Paper for Class X (Session 2020-2021)

Max. Time: 2 Hours   Max. Marks: 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 on Employability Skills (1 x 4 = 4 marks)**	
i	_____ is the final component in the process of communication as it defines the response given by the receiver to the sender. a) Response b) Request c) Feedback d) Notice	1

ii	_____refers to focusing human efforts for maintaining a healthy body and mind capable of better withstanding stressful situations
	   a) Mental Health
	   b) Emotional Health
	   c) Self-Management
	   d) Stress Management
		1

iii	Having conscious knowledge of your own self, capabilities, feelings and one's own character is called _____.
	   a) Self-awareness
	   b) Self-motivation
	   c) Self-control
	   d) Independence
		1

iv	A _____is a software program that attaches itself to other programs and alters their behavior.
	   a) Operating system
	   b) Firewall
	   c) Antivirus
	   d) Computer Virus
		1

v	_____refers to recruitment, employment, selection, training, development and compensation of the employees with an organization.
	   a) Entrepreneurs
	   b) Management
	   c) Human Resource Management
	   d) Employer
		1

vi	_____is caused when natural or a man-made disturbance disrupts the natural balance of an ecosystem.
	   a) Pollution
	   b) Damage
	   c) Natural disaster
	   d) Ecological Imbalance
		1

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

i	A _____is divided into multiple layers and each layer is further divided into several blocks called nodes.
	   a) Neural Networks
	   b) Convolutional Neural Network (CNN)
	   c) Machine learning algorithm
	   d) Hidden Layers
		1

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
		1

iii	_____is a domain of AI that depicts the capability of a machine to get and analyse visual information and afterwards predict some decisions about it.
	    a) NLP
	    b) Data Sciences
	    c) Augmented Reality
	    d) Computer Vision
		1

iv	_____is defined as the percentage of correct predictions out of all the observations.
	    a) Predictions
	    b) Accuracy
	    c) Reality
	    d) F1 Score
		1

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
		1

vi	In_____, the machine is trained with huge amounts of data which helps it in training itself around the data.
	    a) Supervised Learning
	    b) Deep Learning
	    c) Classification
	    d) Unsupervised Learning
		1

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

i	Expand CBT_____
	    a) Computer Behaved Training
	    b) Cognitive Behavioural Therapy
	    c) Consolidated Batch of trainers
	    d) Combined Basic Training
		1

ii	Name any 2 methods of collecting data.
	    a) Surveys and Interviews
	    b) Rumors and Myths
	    c) AI models and applications
	    d) Imagination and thoughts
		1

iii	What is the role of modelling in an NLP based AI model?
	    a) Modelling in NLP helps in processing of AI model
	    b) Modelling is required to make an AI model
	    c) In NLP, modelling requires data pre-processing only after which the data is fed to the machine.
	    d) Modelling is used in simplification of data acquisition
		1

iv	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
		1

v	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
		1

vi	Give 2 examples of Supervised Learning models.
	    a) Classification and Regression
	    b) Clustering and Dimensionality Reduction
	    c) Rule Based and Learning Based
	    d) Classification and Clustering
		1

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

i	Define Machine Learning.
	    a) Machine learning is the study of computer algorithms that improve automatically through experience.
	    b) Refers to any technique that enables computers to mimic human intelligence.
	    c) Machine learning refers to computer systems (both machines and software) enables machines to perform tasks for which it is programmed.
	    d) Machine Learning refers to projects that allow the machine to work on a particular logic.
		1

ii	Give one example of an application which uses augmented reality.	1

iii	Differentiate between Prediction and Reality.
	    a) Prediction is the input given to the machine to receive the expected result of the reality.
	    b) Prediction is the output given to match the reality.
	    c) The prediction is the output which is given by the machine and the reality is the real scenario in which the prediction has been made.
	    d) Prediction and reality both can be used interchangeably.
		1

iv	The term Sentence Segmentation is
	    a) the whole corpus is divided into sentences
	    b) to undergo several steps to normalise the text to a lower level
	    c) in which each sentence is then further divided into tokens
	    d) the process in which the affixes of words are removed
		1

v	Which of the following statements is true for the term Evaluation?
	    a) Helps in classifying the type and genre of a document.
	    b) It helps in predicting the topic for a corpus.
	    c) Helps in understanding the reliability of any AI model
	    d) Process to extract the important information out of a corpus.
		1

vi	Which of the following is not part of the AI Project Cycle?
	    a) Data Exploration
	    b) Modelling
	    c) Testing
	    d) Problem Scoping
		1

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

i	_____ refers to the AI modelling where the machine learns by itself.
	    a) Learning Based
	    b) Rule Based
	    c) Machine Learning
	    d) Data Sciences
		1

ii	Prediction and Reality can be easily mapped together with the help of :
	    a) Prediction
	    b) Reality
	    c) Accuracy
	    d) Confusion Matrix
		1

iii	_____ is an example of Applications of Natural Language Processing.
	    a) Evaluation
	    b) Automatic Summarization
	    c) Deep Learning
	    d) Problem Scoping
		1

iv	_____ is the last stage of the AI project Life cycle.
	    a) Problem Scoping
	    b) Evaluation
	    c) Modelling
	    d) Data Acquisition
		1

v	In _____, the machine is trained with huge amounts of data which helps it in training itself around the data.
	    a) Machine Learning
	    b) Artificial Intelligence
	    c) NLP
	    d) Deep Learning
		1

vi	In _____, input to machines can be photographs, videos and pictures from thermal or infrared sensors, indicators and different sources.
	    a) Computer Vision
	    b) Data Acquisition
	    c) Data Collection
	    d) Machine learning
		1

SECTION B: SUBJECTIVE TYPE QUESTIONS

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

Q. 6	Name the four main categories of Communication Styles.	2
Q. 7	List any 4 activities that help in stress management.	2
Q. 8	What are antivirus? Name any 2 antiviruses.	2
Q. 9	Name any 4 qualities of an entrepreneur.	2
Q. 10	Name any 4 man-made disruptions that cause ecological imbalance.	2

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

Q. 11	Give 2 points of difference between a **script-bot** and a **smart-bot**	2
Q. 12	Define the term Machine Learning. Also give 2 applications of Machine Learning in our daily lives.	2
Q. 13	Differentiate between Classification and Regression.	2
Q. 14	Explain the term Neural Networks.	2
Q. 15	Explain the term Text Normalisation in Data Processing.	2
Q. 16	What is F1 Score in Evaluation?	2

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

Q. 17	Categorize the following under Data Sciences, Machine Learning, Computer Vision and NLP: The latest technological advancements have made our lives convenient. **Google Home, Alexa** and **Siri** have been a huge help to non-tech savvy people. Features like **Facial** recognition and Facelock have added additional security to our gadgets. These advancements have also contributed in making our needs more approachable and convenient. Now you can even check the prices with **Price comparison websites** and order groceries online with **chatbots**. Did you know that you can even find how you are going to look when you grow old? **Faceapps** and **Snapchat filters** have made this possible!	4

| Q. 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. | 4 |
|---|---|---|
| Q. 19 | Differentiate between stemming and lemmatization. Explain with the help of an example. | 4 |
| Q. 20 | Write the applications of NLP (Natural Language Processing). (Any four) | 4 |
| Q. 21 | Imagine that you have come up with an AI based prediction model which has been deployed on the roads to check traffic jams. Now, the objective of the model is to predict whether there will be a traffic jam or not. Now, to understand the efficiency of this model, we need to check if the predictions which it makes are correct or not. Thus, there exist two conditions which we need to ponder upon: Prediction and Reality.

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 the students are not able to reach their school on time.

Considering all the possible situations make a Confusion Matrix for the above situation. | 4 |