

CBSE | DEPARTMENT OF SKILL EDUCATION

ARTIFICIAL INTELLIGENCE (SUBJECT CODE 417)

CLASS IX (SESSION 2021-2022)

BLUE-PRINT FOR SAMPLE QUESTION PAPER FOR TERM -1

Max. Time Allowed: 1 Hour

Max. Marks: 25

PART A - EMPLOYABILITY SKILLS (05 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1	Communication Skills-I	2
2	Self-Management Skills-I	2
3	Information and Communication Technology Skills-I	2
TOTAL QUESTIONS		6 Questions
NO. OF QUESTIONS TO BE ANSWERED		Any 5 Questions
TOTAL MARKS		1 x 5 = 5 Marks

PART B - SUBJECT SPECIFIC SKILLS (20 MARKS):

UNIT NO.	NAME OF THE UNIT	NO. OF QUESTIONS (1 MARK EACH)
1.	Introduction to AI	13
2.	AI Project cycle	14
TOTAL QUESTIONS		27 Questions
NO. OF QUESTIONS TO BE ANSWERED		20 Questions
TOTAL MARKS		1 x 20 = 20 MARKS

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Max. Time Allowed: 1 Hour

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General Instructions:

1. Please read the instructions carefully
2. This Question Paper is divided into 03 sections, viz., Section A, Section B and Section C.
3. Section A is of 05 marks and has 06 questions on Employability Skills.
4. Section B is of 15 marks and has 20 questions on Subject specific Skills.
5. Section C is of 05 marks and has 07 competency-based questions.
6. Do as per the instructions given in the respective sections.
7. Marks allotted are mentioned against each section/question.
8. All questions must be attempted in the correct order

SECTION A

Answer any 5 questions out of the given 6 questions on Employability Skills

(1 x 5 = 5 marks)

1.	Match the following	1								
	<table border="1"><thead><tr><th>Column A: Barriers</th><th>Column B: Examples</th></tr></thead><tbody><tr><td>1. Language</td><td>A. Trying to read a book when somebody else is watching TV in the same room.</td></tr><tr><td>2. Emotional</td><td>B. In some cultures, wearing shoes and walking inside the kitchen is considered rude and disrespectful.</td></tr><tr><td>3. Environmental</td><td>C. Talking in Hindi when others know only Tamil.</td></tr><tr><td>4. Cultural</td><td>D. Parent is not talking to the child.</td></tr></tbody></table> <p>a) 1 -> D; 2 -> A; 3 -> C; 4 -> B b) 1 -> C; 2 -> D; 3 -> A; 4 -> B c) 1 -> C; 2 -> D; 3 -> B; 4 -> A d) 1 -> C; 2 -> A; 3 -> D; 4 -> B</p>		Column A: Barriers	Column B: Examples	1. Language	A. Trying to read a book when somebody else is watching TV in the same room.	2. Emotional	B. In some cultures, wearing shoes and walking inside the kitchen is considered rude and disrespectful.	3. Environmental	C. Talking in Hindi when others know only Tamil.
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4. Cultural	D. Parent is not talking to the child.									
2.	Which of these sentences use uppercase letters correctly? a) I am Hungry. b) Divya and Sunil are reading. c) The bucket is full of water. d) She lives in Delhi.	1								

3.	Niraj had difficulty in speaking English. He, therefore, avoided talking to his classmates. He believed that he can learn English by joining English speaking classes and in few days he was able to speak English fluently. Which of the following quality is he demonstrating? a) Personal hygiene and grooming b) Self-control c) Self-confidence d) Team work	1
4.	What is the best way to start our day positively? a) Think about all your accomplishment so far and feel good about it. b) Think about all that can go wrong. c) Think about the difficult test you will face during the day. d) Think about the traffic on the road and feel stressed.	1
5.	Put the following units of storage into the correct order, starting with the smallest unit first and going down to the largest unit: (a) Kilobyte (b) Byte (c) Megabyte (d) Terabyte (e) Gigabyte (f) Bit Give your answer from the following code: a) (f) -> (b) -> (a) -> (c) -> (d) -> (e) b) (f) -> (b) -> (a) -> (d) -> (e) -> (c) c) (f) -> (b) -> (a) -> (d) -> (c) -> (e) d) (f) -> (b) -> (a) -> (c) -> (e) -> (d)	1
6.	Which one of the following statements is false? a) You need to create an account before you can send an e-mail. b) You do not need an Internet connection to use your Gmail account. c) You should sign out of your account when you are not using the computer. d) You must not share your password with others.	1

SECTION B

Answer any 15 questions out of the given 20 questions

(1 x 15 = 15 marks)

7.	Statement1: AI is getting integrated into our lives seamlessly. Statement2: Often we do not even realize that we are using AI. a) Statement 2 is correct and Statement 1 is incorrect. b) Statement 1 is correct and Statement 2 is incorrect c) Both Statement1 and Statement2 are correct d) Both Statement1 and Statement2 are incorrect	1
8.	IoT is abbreviated as a) Institute of Technology b) Internet of Things c) Index organized Table d) Inter-operability Test	1

<p>9.</p>	<p>Match column A with Column B</p> <table border="1" data-bbox="207 145 1300 459"> <thead> <tr> <th>Column A</th> <th>Column B</th> </tr> </thead> <tbody> <tr> <td>1. Expert System</td> <td>A. Simulate how a human would behave as a conversational partner.</td> </tr> <tr> <td>2. Chatbot</td> <td>B. Uses knowledge stored in a knowledge base but requires the intervention of human expert.</td> </tr> <tr> <td>3. Digital Assistant</td> <td>C. Autonomous vehicle</td> </tr> <tr> <td>4. self-driving car</td> <td>D. Works on various mobile platforms</td> </tr> </tbody> </table> <p>a) 1 -> B; 2 -> A; 3 -> D; 4 -> C b) 1 -> A; 2 -> B; 3 -> C; 4 -> D c) 1 -> D; 2 -> A; 3 -> B; 4 -> C d) 1 -> C; 2 -> A; 3 -> D; 4 -> B</p>	Column A	Column B	1. Expert System	A. Simulate how a human would behave as a conversational partner.	2. Chatbot	B. Uses knowledge stored in a knowledge base but requires the intervention of human expert.	3. Digital Assistant	C. Autonomous vehicle	4. self-driving car	D. Works on various mobile platforms	<p>1</p>
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<p>10.</p>	<p>1. An application lets you search what you see, get things done faster and understand the world around you – using just your camera or a photo. Which domain does this app belong to?</p> <p>a) Natural Language Processing b) Data Sciences c) Computer Vision d) Artificial Language Processing</p>	<p>1</p>										
<p>11.</p>	<p>A web-based software that is used to create interactive stories in Choose Your Own Adventure Format (CYOA) is</p> <p>a) Chatbot b) Jupyter notebook c) Internet explorer d) Inklewriter</p>	<p>1</p>										
<p>12.</p>	<p>Match the following</p> <table border="1" data-bbox="207 1265 1300 1456"> <thead> <tr> <th>Column A</th> <th>Column B</th> </tr> </thead> <tbody> <tr> <td>1. Smart Mobility</td> <td>i) Resources and Sustainability</td> </tr> <tr> <td>2. Smart Environment</td> <td>ii) Creativity and Social Capital</td> </tr> <tr> <td>3. Smart People</td> <td>iii) Infrastructure and Transport</td> </tr> </tbody> </table> <p>a) 1 -> i) ; 2 -> ii) ; 3 -> iii) b) 1 -> ii) ; 2 -> iii) ; 3 -> i) c) 1 -> iii) ; 2 -> i) ; 3 -> ii) d) 1 -> iii) ; 2 -> ii) ; 3 -> i)</p>	Column A	Column B	1. Smart Mobility	i) Resources and Sustainability	2. Smart Environment	ii) Creativity and Social Capital	3. Smart People	iii) Infrastructure and Transport	<p>1</p>		
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<p>13.</p>	<p>Fill in the blanks with the correct answers given below: The _____ Sustainable Development Goals (SDGs) were launched at the United Nations Sustainable Development Summit in New York in the year _____, forming the _____ Agenda for Sustainable Development.</p> <p>a) 17 , 2015 , 2030 b) 15 , 2010 , 2025 c) 17, 2010 , 2025 d) 15 , 2010 , 2030</p>	<p>1</p>										

14.	<p>2.37 billion people are without food or unable to eat a healthy balanced diet on a regular basis. Which Sustainable Development Goal are we talking about?</p> <p>a) No Poverty b) Zero hunger c) Good health and well-being d) Decent work and economic growth</p>	1										
15.	<p>Statement1: The drone technology help farmers spot intrusions, crop diseases, predict the amount of crop production, and saves time and avoids the difficulties of physical manual inspections.</p> <p>Statement2: The statement given above is an example of Natural Language Processing.</p> <p>a) Both Statement1 and Statement2 are correct b) Both Statement1 and Statement2 are incorrect c) Statement 2 is correct and Statement 1 is incorrect. d) Statement 1 is correct and Statement 2 is incorrect</p>	1										
16.	<p>When you search for 'Doctor' on a search website, the results for Doctor images might mostly come up as 'male'. Whereas for 'Nurse' most results would be 'female'. What does this depict?</p> <p>a) Gender bias b) Data Privacy c) Poor training d) Lack of access</p>	1										
17.	<p>Match column A with Column B</p> <table border="1" data-bbox="204 1084 1362 1361"> <thead> <tr> <th>Column A</th> <th>Column B</th> </tr> </thead> <tbody> <tr> <td>1. Problem Scoping</td> <td>A. implement a suitable model that matches the requirements</td> </tr> <tr> <td>2. Data Acquisition</td> <td>B. interpret some useful information out of data</td> </tr> <tr> <td>3. Data Exploration</td> <td>C. collect data from reliable sources</td> </tr> <tr> <td>4. Modelling</td> <td>D. finalise the aim of the AI project</td> </tr> </tbody> </table> <p>a) 1 -> B; 2 -> A; 3 -> D; 4 -> C b) 1 -> D; 2 -> B; 3 -> C; 4 -> A c) 1 -> D; 2 -> C; 3 -> B; 4 -> A e) 1 -> C; 2 -> D; 3 -> A; 4 -> B</p>	Column A	Column B	1. Problem Scoping	A. implement a suitable model that matches the requirements	2. Data Acquisition	B. interpret some useful information out of data	3. Data Exploration	C. collect data from reliable sources	4. Modelling	D. finalise the aim of the AI project	1
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18.	<p>The 4 Ws of the 4W problem canvas are:</p> <p>a) Who, What, Where and Why b) Who, What, When and Why c) Who, What, Where and When d) Who, Where, When and Why</p>	1										
19.	<p>Statement 1: Where block helps you to focus on the context/situation/location of the problem.</p> <p>Statement 2: What block helps you need to determine the nature of the problem.</p> <p>a) Statement1 is correct and Statement2 is incorrect b) Statement2 is correct and Statement1 is incorrect c) Both Statement1 and Statement 2 are incorrect d) Both Statement1 and Statement 2 are correct</p>	1										

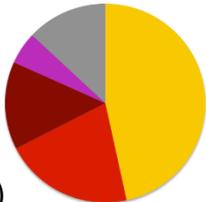
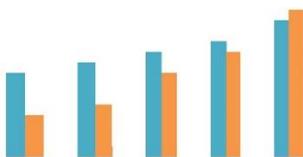
20.	<p>_____ helps us to summarise all the key points into one single Template so that in future, whenever there is need to look back at the basis of the problem, we can take a look at the this and understand the key elements of it.</p> <ul style="list-style-type: none"> a) 4W Problem canvas b) Problem Statement Template c) Data Acquisition d) Algorithm 	1
21.	<p>Which of the following are valid sources for collecting data?</p> <ul style="list-style-type: none"> i) Announcements ii) Surveys iii) Web scraping iv) Application Programming Interface <ul style="list-style-type: none"> a) i) , ii) and iii) b) i) , ii) and iv) c) ii) , iii) and iv) d) i) , iii) and iv) 	1
22.	<p>Statement1 : The data with which the machine can be trained is the testing data Statement2 : The data with which the model is evaluated is the training data</p> <ul style="list-style-type: none"> a) Statement1 is correct and Statement2 is incorrect b) Statement2 is correct and Statement1 is incorrect c) Both Statement1 and Statement 2 are correct d) Both Statement1 and Statement 2 are incorrect 	1
23.	<p>Identify the correct representations in a system map</p> <ul style="list-style-type: none"> a) Circles -> elements; arrowed lines -> relationship b) Squares -> elements ; dotted lines -> relationship c) Circles -> elements ; dotted lines -> relationship d) Squares -> elements ; arrowed lines -> relationship 	1
24.	<p>Which of these is NOT used for visualization in AI?</p> <ul style="list-style-type: none"> a) Sketchy Graph b) Scatter plot c) Ruler d) Bar chart 	1
25.	<p>Which of the following is an example of rule based approach?</p> <ul style="list-style-type: none"> a) Pixel it activity b) Decision trees c) Histogram d) Illustration diagram 	1
26.	<p>Which of the following is incorrect?</p> <ul style="list-style-type: none"> a) In rule based approach, the relationship or patterns in data are defined by the developer. b) Decision tree looks like an upside-down tree. c) Pixel It activity is an example of how computers see images, process them and classify them. d) In learning based approach, the relationship or patterns in data are defined by the developer. 	1

SECTION C
(COMPETENCY BASED QUESTIONS)

Answer any 5 questions out of the given 7 questions

(1 x 5 = 5 marks)

27.	<p>With so many people using electricity on a daily basis—whether it is to charge their cell phones or to use their TV—a lot of cables (made of plastic) must be used. Plastic destroys our ecosystem, yet we continue to produce it. Indispensable as it may seem, it has an adverse effect on the environment. The manufacturing of plastic is not exactly eco-friendly. With a little help from modern technology Elif discovered a way to help curb our plastic problem. She used banana peels as the main ingredient to make bio-plastics. Which of the Sustainable Development Goal does this scenario relate to?</p> <ol style="list-style-type: none"> a) Life on land b) Responsible consumption, and production c) Affordable and clean energy d) Sustainable cities and communities 	1
28.	<p>Air pollution kills an estimated seven million people worldwide every year. WHO data shows that 9 out of 10 people breathe toxic air. From smog hanging over cities to smoke inside the home, air pollution poses a major threat to human health and climate. The major pollution sources include vehicles, power generation, agriculture/ waste incineration, and industry. Harmful gases like SO₂, NO₂, CO are emitted directly into air because of pollution. Deploying an air quality index monitor is one way that would help to know the local air quality and take action to protect their health. Taking this as the problem, choose which of the following would be the ideal problem statement template.</p> <ol style="list-style-type: none"> a) Our WHO have a problem that people breathe toxic air when smog hangs over cities. An ideal solution would be to shut down industries and stop the movement of vehicles in major cities. b) Our people have a problem that they die in accidents when more number of vehicles are used. An ideal solution would be to develop be to stop the movement of vehicles in major cities. c) Our people have a problem that air pollution has damaging effects on human health when harmful gases like SO₂, NO₂, CO are emitted directly into air. An ideal solution would be to develop an air quality index monitor so that one can know the local air quality and take action to protect their health. d) Our WHO have a problem that people die every year when there is an increase in the number of vehicles and industries. An ideal solution would be to make sure people stay indoors to protect their health. 	1
29.	<p>While designing a surveillance system for the premises where a costly diamond was to be kept for exhibition, we do the following tasks.</p> <ol style="list-style-type: none"> a. Get photographs of all the authorised people. b. Get photographs of all the unauthorised people. c. Get photographs of the premises. d. Get photographs of all the visitors. 	1

	<p>Which stage of AI project cycle are we talking about?</p> <ol style="list-style-type: none"> Problem Scoping Data Exploration Modelling Data Acquisition 	
<p>30.</p>	<p>Match the best choice of graph for the data below.</p> <ol style="list-style-type: none"> Chart to show the number of students in a school over past 5 years. Chart to show the temperature on each day of the week. Chart to show percentage of each sale of ticket type at a concert. <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>i)</p> </div> <div style="text-align: center;">  <p>ii)</p> </div> <div style="text-align: center;">  <p>iii)</p> </div> </div> <ol style="list-style-type: none"> 1 -> i) ; 2 -> ii) ; 3 -> iii) 1 -> ii) ; 2 -> iii) ; 3 -> i) 1 -> iii) ; 2 -> i) ; 3 -> ii) 1 -> iii) ; 2 -> ii) ; 3 -> i) 	<p>1</p>
<p>31.</p>	<p>Information about three games are given below. Identify the game and the respective domain</p> <ol style="list-style-type: none"> The players of this game have to guess what the opponents will choose and make an appropriate shape to defeat them. This is a simple twenty questions game in which the player can ask 20 Yes/No questions to identify the animal. In this game, the computer asks the player to find the objects that match certain images within a time limit. <ol style="list-style-type: none"> 1. Emoji Scavenger Hunt -> Computer vision; 2. Rock, Paper, Scissor -> Natural Language Processing; Mystery Animal -> Data Sciences 1. Mystery Animal -> Data Sciences; 2. Emoji Scavenger Hunt -> Natural Language Processing; 3. Rock, Paper, Scissor -> Computer vision 1. Rock, Paper, Scissor -> Data Sciences; 2. Emoji Scavenger Hunt -> Natural Language Processing; 3. Mystery Animal -> Computer vision 1. Rock, Paper, Scissor -> Data Sciences; 2. Mystery Animal -> Natural Language Processing; 3. Emoji Scavenger Hunt -> Computer vision 	<p>1</p>
<p>32.</p>	<p>Choose the AI applications among the ones given below:</p> <ol style="list-style-type: none"> Gmail uses Smart Compose feature can help you type emails faster as it offers suggestions for words and phrases as you type. Websites make use of a software that simulates human-like conversations with users via text messages on chat. Soap dispensers use infrared sensors with which when hands are placed in the proximity of the sensor, dispense the designated amount of soap. Face recognition technology that identifies and verifies a person using the person's facial features and automatically marks attendance. 	<p>1</p>

	<ul style="list-style-type: none"> a) i), ii) and iv) b) i), ii) and iii) c) ii), iii) and iv) d) i), iii) and iv) 	
33.	<p>Water availability is a major environmental problem in the world. We continue to flush billions of litres of treated fresh water down our toilets every day. Since 40% of the 6 billion people on earth use toilets, it is a lot of water. Rohit, an Indian embarked on a project to redesign the water closet / flush to reduce the consumption of water. He made this possible with a simple mechanism added to the conventional closet that creates a partial vacuum when the user pushes down the flush lever. He called it the Vacu-Flush. Which of the Sustainable Development Goal does this scenario relate to?</p> <ul style="list-style-type: none"> a) Life on land b) Responsible consumption, and production c) Clean water and sanitation d) Partnerships for goals 	1