

CBSE | DEPARTMENT OF SKILL EDUCATION

ARTIFICIAL INTELLIGENCE (SUBJECT CODE - 843)

MARKING SCHEME FOR CLASS XII (SESSION 2024-2025)

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. There is no negative marking.
 - iii. Do as per the instructions given.
 - iv. Marks allotted are mentioned against each question/part.
7. **SECTION B – SUBJECTIVE TYPE QUESTIONS (26 MARKS):**
 - i. This section contains 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. No.	QUESTION	Source Material (NCERT/, PSSCIVE/ CBSE Study Material)	Unit/ Chap. No.	Page no. of source material	Marks
Q. 1	Answer any 4 out of the given 6 questions on Employability Skills (1 x 4 = 4 marks)				
i.	c. To whom?	NCERT	1	17	1
ii.	a. Intrinsic motivation	NCERT	2	24	1
iii.	a. Both Statement1 and Statement2 are correct	NCERT	2	33	1
iv.	b. $A \rightarrow 3; B \rightarrow 1; C \rightarrow 2$	NCERT	3	55	1
v.	b. Perseverance	NCERT	4	103	1
vi.	c. Dispose-off the e-waste with the help of a certified partner	NCERT	5	120	1

Q. 2	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)				
i.	(b) Test	CBSE Study Material	1	5	1
ii.	(c) Understanding the audience	CBSE Study Material	3	35	1
iii.	(a) 1=D, 2=B, 3=E, 4=A, 5=C	CBSE Study Material	1	5	1
iv.	(d) 1 & 4	CBSE Study Material	2	33	1
v.	(b) MSE can here be used as the loss function.	CBSE Study Material	1	29	1
vi.	(d) iterative	CBSE Study Material	2	33	1

Q. 3	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)				
i.	(c) Data Understanding	CBSE Study Material	1	12	1
ii.	(d) engaging	CBSE Study Material	3	35	1
iii.	(b) Scoping	CBSE Study Material	2	33	1
iv.	b. Both A and R are true and R is not the correct explanation of A	CBSE Study Material	3	35	1
v.	(c) Lower RMSE values are not good for the AI model.	CBSE Study Material	1	28	1
vi.	(c) deploy	CBSE Study Material	2	32	1
Q. 4	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)				
i.	(d) Testing	CBSE Study Material	2	34	1
ii.	(a) Narrative (b) Data	CBSE Study Material	3	39	1
iii.	(c) As we need to train on many training sets, cross-validation is computationally expensive.	CBSE Study Material	1	21	1
iv.	True	CBSE Study Material	3	38	1
v.	(d) 3-1-2-4	CBSE Study Material	2	33	1
vi.	(a)Regression functions predict a quantity, and classification functions predict a label.	CBSE Study Material	1	23	1
Q. 5	Answer any 5 out of the given 6 questions (1 x 5 = 5 marks)				
i.	(d) facts	CBSE Study Material	3	35	1
ii.	(a) RMSE	CBSE Study Material	1	28	1
iii.	(b) 1) and 2) only	CBSE Study Material	2	34	1
iv.	(c) Weather forecast	CBSE Study Material	1	13	1
v.	d. (1), (2) and (4)	CBSE Study Material	2	34	1
vi.	c) pattern	CBSE Study Material	1	4	1

SECTION B: SUBJECTIVE TYPE QUESTIONS

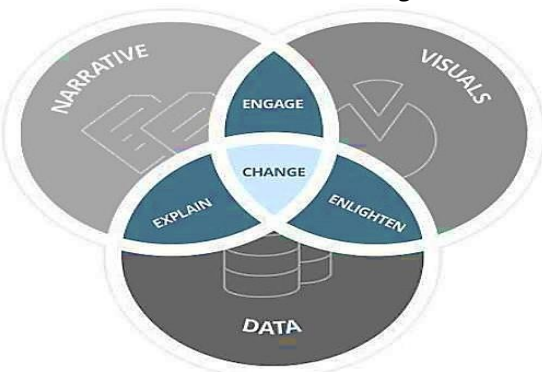
Q. No.	QUESTION	Source Material (NCERT/PSSCIVE/ CBSE Study Material)	Unit/ Chap. No.	Page no. of source material	Marks
Answer any 3 out of the given 5 questions on Employability Skills in 20 – 30 words each (2 x 3 = 6 marks)					
Q. 6	P in Respect stands for - Pay attention and focus on what the speaker is saying. (1 mark for the word 'Pay'; and 1 mark for explanation)	NCERT	1	5	2
Q. 7	Steps to overcome personality disorders <ul style="list-style-type: none"> • Talk to someone. Most often, it helps to share your feelings. • Look after your physical health. A healthy body can help you maintain a healthy mind. • Build confidence in your ability to handle difficult situations. • Engage in hobbies, such as music, dance and painting. These have a therapeutic effect. • Stay positive by choosing words like 'challenges' instead of 'problems'. (Any 2 of the above – 1 mark each)	NCERT	2	37	2

Q. 8	A worksheet is a collection of cells in the form of a grid (a network of lines that intersect each other, making rectangles). When you open a spreadsheet for the first time, you see a blank worksheet with the name 'Sheet1'. A workbook is a spreadsheet that has one or more worksheets. (1 mark each)	NCERT	3	42	2
Q. 9	<ul style="list-style-type: none"> • Government Mudra Yojana • Credit Guarantee Scheme • Stand-Up India Scheme (Any 2 ; 1 mark each)	NCERT	4	92	2
Q. 10	<ul style="list-style-type: none"> • increase the efficiency of energy and raw material. • reduce greenhouse gas emissions. • control waste and pollution. • protect and restore ecosystems. • support adaptation to the effects of climate change. (Any 2 ; 1 mark each)	NCERT	5	114	2

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

Q. 11	A capstone project is a project where students must research a topic independently to find a deep understanding of the subject matter. It gives an opportunity for the student to integrate all their knowledge and demonstrate it through a comprehensive project.	CBSE Study Material	1	3	2
Q. 12	The MSE value cannot be negative. The difference between projected and actual values are always squared. As a result, all outcomes are either positive or negative.	CBSE Study Material	1	28	2
Q. 13	Stories are more likely to drive action than are statistics and numbers. Therefore, when told in the form of a narrative, it reduces ambiguity, connects data with context, and describes a specific interpretation – communicating the important messages in most effective ways.	CBSE Study Material	3	35	2
Q. 14	To decompose this task, you would need to know the answer to a series of smaller problems: <ul style="list-style-type: none"> • what kind of app you want to create? • what will your app will look like? • who is the target audience for your app? • what will the graphics will look like? • what audio will you include? 	CBSE Study Material	1	6	2
Q. 15	A training set is a set of historical data in which the outcomes are already known. Train Dataset: Used to fit the machine learning model. Test Dataset: Used to evaluate the fit machine learning model.	CBSE Study Material	1	14	2
Q. 16	The Design phase is essentially an iterative process comprising all the steps relevant to building the AI or machine learning model: data acquisition, exploration, preparation, cleaning, feature engineering, testing and running a set of models to try to predict behaviors or discover insights in the data.	CBSE Study Material	2	33	2

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

<p>Q. 17</p>	<p>Data storytelling is a structured approach for communicating insights drawn from data, and invariably involves a combination of three key elements: data, visuals, and narrative. When the narrative is accompanied with data, it helps to explain the audience what’s happening in the data and why a particular insight has been generated. When visuals are applied to data, they can enlighten the audience to the insights that they wouldn’t perceive without the charts or graphs.</p> <p>Finally, when narrative and visuals are merged together, they can engage or even entertain an audience. When you combine the right visuals and narrative with the right data, you have a data story that can influence and drive change.</p> 	<p>CBSE Study Material</p>	<p>3</p>	<p>37</p>	<p>4</p>																																			
<p>Q. 18</p>	<table border="1"> <thead> <tr> <th>x</th> <th>y (observed)</th> <th>y' (predicted)</th> <th>Residual (predicted- observed)</th> <th>Squared Residuals</th> </tr> </thead> <tbody> <tr> <td>44</td> <td>47</td> <td>48.6</td> <td>1.6</td> <td>2.56</td> </tr> <tr> <td>46</td> <td>48</td> <td>50</td> <td>2</td> <td>4</td> </tr> <tr> <td>48</td> <td>55</td> <td>51.4</td> <td>-3.6</td> <td>12.96</td> </tr> <tr> <td>50</td> <td>58</td> <td>52.8</td> <td>-5.2</td> <td>27.04</td> </tr> <tr> <td>52</td> <td>49</td> <td>54.2</td> <td>5.2</td> <td>27.04</td> </tr> <tr> <td colspan="4" style="text-align: right;">RMSE</td> <td>3.836</td> </tr> </tbody> </table>	x	y (observed)	y' (predicted)	Residual (predicted- observed)	Squared Residuals	44	47	48.6	1.6	2.56	46	48	50	2	4	48	55	51.4	-3.6	12.96	50	58	52.8	-5.2	27.04	52	49	54.2	5.2	27.04	RMSE				3.836	<p>CBSE Study Material</p>	<p>1</p>	<p>24</p>	<p>4</p>
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<p>Q. 19</p>	<p>Considerations:</p> <ul style="list-style-type: none"> • The volume of test data can be large, which presents complexities. • Human biases in selecting test data can adversely impact the testing phase, therefore, data validation is important. • Your testing team should test the AI and ML algorithms keeping model validation, successful learnability, and algorithm effectiveness in mind. <p>Regulatory compliance testing and security testing are important since the system might dealwith sensitive data, moreover, the large volume of data makes performance testing crucial.</p>	<p>CBSE Study Material</p>	<p>2</p>	<p>34</p>	<p>4</p>																																			

<p>Q. 20</p>	<p>In cross-validation, we run our modeling process on different subsets of the data to get multiple measures of model quality.</p> <p>In k-fold cross-validation, the original dataset is equally divided into k subparts or folds. Out of the k-folds, for each iteration, one group is selected as test data, and the remaining (k-1) groups are selected as training data. This process is repeated for k times. The final accuracy of the model is calculated by taking the mean accuracy.</p> <p>When the dataset is smaller, cross-validation procedure should be selected for higher accuracy.</p>	<p>CBSE Study Material</p>	<p>1</p>	<p>20</p>	<p>4</p>
<p>Q. 21</p>	<p>(a) The steps involved in telling an effective data story are given below:</p> <ul style="list-style-type: none"> • Understanding the audience • Choosing the right data and visualisations • Drawing attention to key information • Developing a narrative • Engaging your audience <p>(b) Option A is a better data story.</p> <p>Reasons</p> <p>1. The insight given at the bottom of the visual is giving a clear idea about context which is not therein</p> <p>Option B.</p> <p>Option A visual provides a compelling narrative.</p>	<p>CBSE Study Material</p>	<p>3</p>	<p>35</p>	<p>4</p>