

Marking Scheme
Strictly Confidential
(For Internal and Restricted use only)
Senior Secondary School Examination, 2026 (XIIth)
SUBJECT NAME: - Data Science (Q.P. CODE 844/368)

General Instructions: -

1	You are aware that evaluation is the most important process in the actual and correct assessment of the candidates. A small mistake in evaluation may lead to serious problems which may affect the future of the candidates, education system and teaching profession. To avoid mistakes, it is requested that before starting evaluation, you must read and understand the spot evaluation guidelines carefully.
2	“Evaluation policy is a confidential policy as it is related to the confidentiality of the examinations conducted, evaluation done and several other aspects. Its leakage to public in any manner could lead to derailment of the examination system and affect the life and future of millions of candidates. Sharing this policy/document to anyone, publishing in any magazine and printing in Newspaper/Website, etc. may invite action under various rules of the Board and IPC.”
3	Evaluation is to be done as per instructions provided in the Marking Scheme. It should not be done according to one's own interpretation or any other consideration. Marking Scheme should be strictly adhered to and religiously followed. However, while evaluating, answers which are based on latest information or knowledge and/or are innovative, they may be assessed for their correctness otherwise and due marks be awarded to them. In Class-XII, while evaluating two competency-based questions, please try to understand given answer and even if reply is not from marking scheme but correct competency is enumerated by the candidate, due marks should be awarded.
4	The Marking scheme carries only suggested value points for the answers. These are in the nature of Guidelines only and do not constitute the complete answer. The students can have their own expression and if the expression is correct, the due marks should be awarded accordingly.
5	The Head-Examiner must go through the first five answer books evaluated by each evaluator on the first day, to ensure that evaluation has been carried out as per the instructions given in the Marking Scheme. If there is any variation, the same should be zero after deliberation and discussion. The remaining answer books meant for evaluation shall be given only after ensuring that there is no significant variation in the marking of individual evaluators.
6	Evaluators will mark (✓) wherever answer is correct. For wrong answer CROSS 'X' be marked. Evaluators will not put right (✓) while evaluating which gives an impression that answer is correct and no marks are awarded. This is most common mistake which evaluators are committing.
7	If a question has parts, please award marks on the right-hand side for each part. Marks awarded for different parts of the question should then be totalled up and written in the left hand margin and encircled. This may be followed strictly.
8	If a question does not have any parts, marks must be awarded in the left-hand margin and encircled. This may also be followed strictly.

9	If a student has attempted an extra question, answer of the question deserving more marks should be retained and the other answer scored out with a note " Extra Question "
10	No marks to be deducted for the cumulative effect of an error. It should be penalized only once.
11	A full scale of marks _____ (example 0 to 80/70/60/50/40/30 marks as given in Question Paper) has to be used. Please do not hesitate to award full marks if the answer deserves it.
12	Every examiner has to necessarily do evaluation work for full working hours i.e., 8 hours every day and evaluate 20 answer books per day in main subjects and 25 answer books per day in other subjects (Details are given in Spot Guidelines). This is in view of the reduced syllabus and number of questions in question paper.
13	Ensure that you do not make the following common types of errors committed by the Examiner in the past :- • Leaving answer or part thereof unassessed in an answer book. • Giving more marks for an answer than assigned to it. • Wrong totalling or marks awarded on an answer. • Wrong transfer of marks from the inside pages of the answer book to the title page. • Wrong question wise totalling on the title page. • Wrong totalling of marks of the two columns on the title page. • Wrong grand total. • Marks in words and figures not tallying/not same. • Wrong transfer of marks from the answer book to online award list. • Answers marked as correct, but marks not awarded. (Ensure that the right tick mark is correctly and clearly indicated. It should merely be a line. Same is with the X for incorrect answer.) • Half or a part of answer marked correct and the rest as wrong, but no marks awarded.
14	While evaluating the answer books if the answer is found to be totally incorrect, it should be marked as cross (X) and awarded zero (0) Marks.
15	Any unassessed portion, non-carrying over of marks to the title page, or totalling error detected by the candidate shall damage the prestige of all the personnel engaged in the evaluation work as also as the Board. Hence, in order to uphold the prestige of all concerned, it is again reiterated that the instructions be followed meticulously and judiciously.
16	The Examiners should acquaint themselves with the guidelines given in the " Guidelines for Spot Evaluation " before starting the actual evaluation.
17	Every examiner shall also ensure that all the answers are evaluated, marks carried over to the title page, correctly totalled and written in figures and words.
18	The candidates are entitled to obtain photocopy of the Answer Book on request on payment of the prescribed processing fee. All Examiners/Additional Head Examiners/Head Examiners are once again reminded that they must ensure that evaluation is carried out strictly as per value points for each answer as given in the Marking Scheme.

MARKING SCHEME
Data Science (Subject Code - 844)
(PAPER CODE: 368) (P3680844)

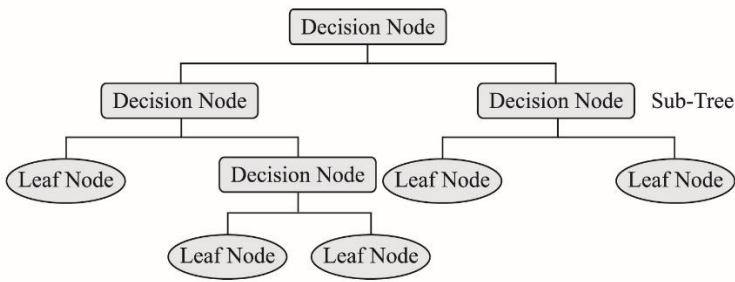
Q.No.	EXPECTED OUTCOMES/VALUE POINTS		Marks
	SECTION – A खण्ड - क		
1.	Answer any 4 out of the given 6 questions on Employability Skills. रोजगार कौशल पर दिए गए 6 प्रश्नों में से किन्हीं 4 के उत्तर दीजिए।		4x1=4
	(i) (B) A group of words that communicates a complete thought or meaning.	U-1 Pg-9	1
	(ii) Stress is a state of feeling upset, annoyed and hopeless. (or any other valid definition)	U-2 Pg-26	1
	(iii) (A) Suspicious	U-2 Pg-34	1
	(iv) (B) Information and Communication Technology	U-3 Pg-39	1
	(v) (D) Work area	U-3 Pg-42	1
	(vi) 'Startup India'	U-5 Pg-89	1
2.	Answer any 5 out of the given 6 questions. दिए गए 6 प्रश्नों में से किन्हीं 5 के उत्तर दीजिए।		5x1=5
	(i) (B) A framework of people, policies, processes, and technologies for managing data effectively. (1 mark for correct answer)	CHAPTER-1 Page : 1	1
	(ii) (A) Box plot (1 mark for correct answer)	CHAPTER-2 Page : 8	1
	(iii) (C) The results of each decision (1 mark for correct answer)	CHAPTER-3 Page : 17	1
	(iv) (C) It helps the algorithm while taking a majority vote. (1 mark for correct answer)	CHAPTER-4 Page : 23	1
	(v) (B) Because the relationship of the dependent variable to the independent variable is a linear function of some parameters. (1 mark for correct answer)	CHAPTER-5 Page : 33	1
	(vi) False (1 mark for correct answer)	CHAPTER-7	1

		Page : 44	
3.	Answer any 5 out of the given 6 questions. दिए गए 6 प्रश्नों में से किन्हीं 5 के उत्तर दीजिए।		5x1=5
	(i) (B) Statement-1 is true and Statement-2 is false. (1 mark for correct answer)	CHAPTER-1 Page : 2	1
	(ii) (B) It helps algorithms produce better insights (1 mark for correct answer)	CHAPTER-2 Page : 10	1
	(iii) (D) Using the mode of the observations (1 mark for correct answer)	CHAPTER-3 Page : 16	1
	(iv) (C) Decision Surface (1 mark for correct answer)	CHAPTER-4 Page : 23	1
	(v) (D) Fitting the line to the data (1 mark for correct answer)	CHAPTER-5 Page : 34	1
	(vi) (B) Shuffling, K (1 mark for correct answer)	CHAPTER-7 Page : 46	1
4.	Answer any 5 out of the given 6 questions. दिए गए 6 प्रश्नों में से किन्हीं 5 के उत्तर दीजिए।		5x1=5
	(i) (A) Individuals have control over how their personal data is collected and used (1 mark for correct answer)	CHAPTER-1 Page : 2	1
	(ii) (D) Both Statement-1 and Statement-2 are false. (1 mark for correct answer)	CHAPTER-2 Page : 10	1
	(iii) (C) The model becomes biased towards the class having majority of training data. (1 mark for correct answer)	CHAPTER-4 Page : 24	1
	(iv) False (1 mark for correct answer)	CHAPTER-5 Page : 34	1
	(v) (B) exponential, logarithmic (1 mark for correct answer)	CHAPTER-6 Page : 41	1
	(vi) False (1 mark for correct answer)	CHAPTER-7	1

		Page : 44	
5.	Answer any 5 out of the given 6 questions. दिए गए 6 प्रश्नों में से किन्हीं 5 के उत्तर दीजिए।		5x1=5
	(i) (B) To protect European Union consumer data (1 mark for correct answer)	CHAPTER-1 Page : 3	1
	(ii) (C) Statement-I is incorrect, but Statement-II is correct. (1 mark for correct answer)	CHAPTER-3 Page : 15, 17	1
	(iii) (A) Because K-NN needs to evaluate all the points in the dataset to make a prediction. (1 mark for correct answer)	CHAPTER-4 Page : 24	1
	(iv) (B) Independent; dependent (1 mark for correct answer)	CHAPTER-5 Page : 33	1
	(v) (C) The i^{th} independent identically distributed normal error. (1 mark for correct answer)	CHAPTER-6 Page : 41	1
	(vi) (B) squared distance (1 mark for correct answer)	CHAPTER-7 Page : 46	1
	SECTION – B खण्ड - ख		
	Answer any 3 out of the given 5 questions on Employability Skills in 20-30 words each. रोजगार कौशल पर दिए गए 5 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर 20-30 शब्दों में दीजिए।		3x2=6
6.	Communication is a two-way process through which information or message is exchanged between individuals using language, symbols, signs or behaviour. Speaking, listening, reading and writing are the parts of communication. (2 mark for correct answer)	U-1 Page : 1	2
7.	1. Openness – Individuals are Creative, Curious, Active, Flexible and adventurous. 2. consciousness – Self disciplined, work on time, take care of others. 3. Extraversion – Love to interact with people. 4. Agreeableness - kind, sympathetic, cooperative, considerate and warm. 5. Neuroticism – Tendency towards anxiety, self-doubt,	U-2 Page : 33	0.5x4 Any four

	depression, Shyness. (any four) (1/2 mark for correct explanation of each (any 4) parameter)		
8.	Sorting Data in ICT refers to the process of arranging data elements in a specific order such as ascending or descending based on pre-defined criterion. (2 mark for correct answer)	U-3 Page : 58	2
9.	Environmental Barriers (Any two). 1. Lack of adequate resources or raw material. 2. Non-availability of skilled labour. 3. Lack of requisite machinery and infrastructure. 4. Unavailability of monetary resources on time. (any other correct answer to be accepted)	U-4 Page 92	2
10	According to UNEP – United Nations Environment Program, green jobs or green collar jobs are works in agricultural, administrative, research and development, manufacturing and service activities that contribute substantially to preserving or restoring environment quality. (2 marks for correct answer)	U-5 Page : 112	2
	Answer any 4 out of the given 6 questions in 20-30 words each. दिए गए 6 प्रश्नों में से किन्हीं 4 प्रश्नों के उत्तर 20-30 शब्दों में दीजिए।		4x2=8
11.	(a) (Any two) • Data Quality • Data Security • Data Architecture • Data integration and Interoperability • Data Storage (b) Software products and data are not always used for purpose that are good for society. Adhering to ethical guidelines provides a set of principles to help us decide what is good or bad and guides us on what is right and wrong. (1 mark for each correct part)	CHAPTER-1 Page : 2	2
12.	Bivariate Analysis : It refers to the analysis of two variables in the dataset to find out if there is a relationship or correlation between them.	CHAPTER-2	2

	Example : In a market survey, analysing the relationship between the price and sales of a product to see if they influence each other. (1 mark for correct answer) (1 mark for correct real life example)	Page : 9	
13	Pros of K-NN : (Any two valid Pros) • Simple and easy to understand and implement. • No training step is required; • Good for Multi-class problems Cons of K-NN : (Any two valid cons) • Slow and memory inefficient, especially with large datasets. • Sensitive to outliers • Can give inaccurate results with imbalanced data. (½ mark each for any two correct pros) (½ mark each for any two correct cons)	CHAPTER-4 Page : 24	2
14.	Definition : A Decision Tree is a diagrammatic representation of the decision-making process and has a tree-like structure. Internal Node : Denotes a question on choosing a particular class. Branch : Represents the outcome of the test. (1 mark for each correct part)	CHAPTER-3 Page : 13	2
15.	(a) The Root Mean Square Division is used to determine how close the observed points are to the model's predicted values. Mathematically, it is the square root of the variance of the residuals. (b) Mean Absolute Error (MAE) measures the average magnitude of the errors in a set of predictions, without considering their direction. (1 mark for each correct part)	CHAPTER-5 Page : 35	2
16.	(a) Unsupervised learning helps organizations identify common purchasing habits and create customer persona profiles, enabling better-targeted sales and advertisements. (b) Unsupervised learning is used to categorize news articles into sections such as sports, entertainment, and international news. (1 mark for each correct part)	CHAPTER-7 Page : 44, 45	2
	Answer any 3 out of the given 5 questions in 50-80 words each. दिए गए 5 प्रश्नों में से किन्हीं 3 प्रश्नों के उत्तर 50-80 शब्दों में दीजिए।		3x4=12
17.	(a) HIPAA was passed in the United States to protect healthcare information from fraud and theft, and to help manage Personally Identifiable information stored by healthcare and insurance companies. It returns control of data to individuals by giving them the option to see their data at any time, ask for corrections, and report any violations of privacy that they might suspect. (b) COPPA protects children who are less than the age of 13. It details what must be included in a privacy policy for	CHAPTER-1 Page : 3, 4	2+2=4

	children, addresses when and how to seek consent from parents or guardians for certain services, and outlines the responsibilities a company has to protect children's privacy and safety online. (2 marks for each correct part)		
18.	(a) Exploratory Data Analysis is the process of carrying out an initial analysis of the available data to find out more about the data, specifically trying to find patterns, spot anomalies, and test any hypotheses or assumptions we may have. (b) Any two : Canonical Correlation Analysis, Cluster Analysis, contour plots, and Principal Component Analysis. (c) Technique (Any two) : Scaller plots, line charts, or pair plots. (d) It ensures that the model learns from good, relevant data (1 mark for each correct part)	CHAPTER-2 Page : 7, 9, 10	4
19.	(a) Decision trees are highly versatile because : • They can be applied to both classification and regression problems. • Unlike linear models, they map both linear and non-linear relationships quite well. (b) Their graphical representation is very intuitive, and users can easily relate to their hypothesis. They do not require any statistical knowledge to read and interpret. (c)  (2 marks for each correct part-a) (1 mark for each correct part-b) (1 mark for each correct part-c)	CHAPTER-3 Page : 15, 16, 17	2+1+1=4
20.	(a) Multiple Linear Regression uses multiple independent variables to predict the outcome of a dependent variable. (b) True (c) $Y \sim f(x, \beta)$ where x is a vector of independent variables and y is the dependent variable	CHAPTER-6 Page : 40, 41	4

	(d) The graph of linear regression follows the equation of a line, whereas the graph of non-linear regression follows the equation of a curve. (1 mark for each correct part)		
21.	(a) Well-labelled data. (b) Clustering is the process of dividing data into groups so that data Points in the same group are similar, while those in different groups are different. Real-life Example : In a supermarket, vegetables are grouped in one section and fruits in another section based on their similarities. (c) Image detection, classification, and segmentation (Any two) (1 mark for each correct part-a) (2 marks for each correct part-b) (1 mark for each correct part-c)	CHAPTER-7 Page : 44, 45	1+2+1=4
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