



JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM / PGDM (M) / PGDM (SM)

VI TERM (Batch 2021-23)

END TERM EXAMINATIONS, April 2023

Course Name	Artificial Intelligence	Course Code	20829
Max. Time	2 Hours	Max. Marks	40 MM

INSTRUCTIONS: (Read them very carefully)

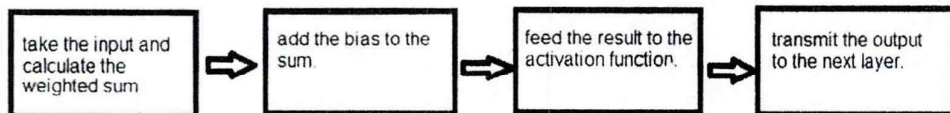
- The mode of the paper is pen and paper.
- All questions are compulsory.
- For question 2, analyze the case in Jupyter Notebook on Python and answer the given questions on the answer sheet provided to you.

- The Strategic Analyst for ZindagiDobara Pvt Ltd, an Insurance company situated in Noida has his quarterly review with National Head next week and the past trends of sales conversion were marked unsatisfactory in previous review meeting. As per his knowledge, the telemarketing team has collected data on the ample number of cold calls they made to potential customers. The snippet of the data is given below:

S No	Age	Affordability	Annual Income	Insurance purchased
1	22	1	400000	0
2	25	0	500000	0
3	47	1	1250000	1
4	52	0	700000	0
5	46	1	600000	1

The strategic analyst is planning to have a meeting with the business analyst to know if this data can be used for any kind of strategy formulation. Answer the following questions based on the above information. (5 * 3 = 15marks)

- Suppose you are the Business Analyst for the company, develop a strategy based on the data which presents your future plan to increase the conversion of sales.
- The basic process carried out by a neuron in neural network is



Combine the above said approach in your strategy as a long term solution for the sales conversion. Discuss the activation functions. Elaborate on why there is a requirement of activation function in neural network.

- c) Choose the right activation function for solving the problem of increasing sales conversion with the light on the advantages and disadvantages of the chosen activation function.

2. The CEO of Building Homes, a real estate company in US is planning to make an app based system for the convenience of the new buyers. He is discussing with its developer team that the major feature of the app would be the price predictor as per the customer preferences for a house. You are hired as a Machine Learning Engineer in the team to build the prediction model for the app. The data provided to you in the file house_data.csv. The data has many features which are given below:

Variable	Variable Description
Date	Date house was sold
Price	Price is prediction target
Bedrooms	Number of Bedrooms/House
Bathrooms	Number of bathrooms/House
Sqft_Living	square footage of the home
Sqft_Lot	square footage of the lot
Floors	Total floors (levels) in house
Waterfront	House which has a view to a waterfront
View	Has been viewed
Condition	How good the condition is (Overall)
Grade	grade given to the housing unit, based on King County grading system
Sqft_Above	square footage of house apart from basement
Sqft_Basement	square footage of the basement
Yr_Built	Built Year
Yr_Renovated	Year when house was renovated
Zipcode	Zip
Lat	Latitude coordinate
Long	Longitude coordinate
Sqft_Living	Living room area in 2015(implies — some renovations)
Sqft_Lot15	lotSize area in 2015(implies — some renovations)

Analyze the case using python and answer the following questions: (5 * 5 = 25marks)

- Design model building process of the above problem.
- Interpret your observations of exploratory data analysis.
- Estimate the features and coefficients in both the models. Explain the algorithm for the estimation.
- Fine tune the hyperparameters for neural network. Defend your selection of hyperparameters with the loss function plot.(Roughly draw the plot you get using python on paper)
- Propose the best model for prediction with supporting reasons.