Chapter: AI Project Cycle

Multiple Choice Questions:

1. _____refers to the AI modeling where the relationship for patterns in the data are not defined by the developer.
   a. Learning based approach.   b. Trends and patterns based approach.
   c. Rule based approach.   d. None of the above.

2. Without _____, successful AI systems cannot be made.
   a. Big data   b. Open data   c. Unstructured data.   d. Machine data

3. Which of the following comes under problem scoping ?
   a. System Mapping   b. 4W Problem Canvas   c. Data Features   d. Web Scraping

4. The 4W problem Canvas helps in_____
   a. Identifying the key elements related to the problem   b. Predicting the mutations
   c. Minimising the spread of diseases   d. Achieving the SDGs in the time frame

5. Which of the following is not an authentic source for data acquisition?
   a. Sensors   b. Surveys   c. web scrapping   d. system hacking

6. _____ works on discrete data sets.
   a. Classification and Clustering   b. Regression and Clustering
   c. Classification and Regression   d. Classification and Evaluation

7. . _____ is divided into multiple layers and each layer is further divided into several blocks
   a. Data set   b. neural network   c. hidden layer   d. none of the above

8. The key advantage of neural network is_____
   a. They extract data features automatically
   b. They need the input of the programmer
   c. They cannot performed better than large amount of data
   d. None of the above

9. AI modelling is all about_____
   a. Writing data   b. Creating algorithms   c. Building block   d. All of the above.

10. In _____ modelling approach we use unlabled datasets.
    a. Classification   b. Regression   c. Clustering   d. Learning

11. The _____ is a machine learning approach where the machine generates its own rules or algorithms.
    a. Clustering   b. Unsupervised   c. Rule based   d. Classification

12. In rule based approach, the relationship in the data are defined by the_____
    a. Developer   b. Data set   c. Machine   d. None of the above

13. _____ is helpful in solving problems for which the data set is very large.
    a. Hidden layer network   b. Output layer network
    c. Input layer network   d. Neural network

14. The quality of data is Defined by features like_____
    a. Relevance and existence   b. Accuracy and validity
    c. Consistency and completeness   d. All of the above

15. This helps in better training of AI machine_____
    a. Relevance   b. Format   c. Age   d. Accuracy

16. _____ is a piece of information or facts and statistics collected together for reference or analysis
    a. Data   b. Acquisition   c. Source   d. None of the above

17. The data accuracy of the collected data depends on the_____
    a. Data source   b. Data features   c. Data quality   d. Data acquisition

18. Problems Scoping involves-
    a. Identifying the problem   b. Setting on goals
    c. Identifying the stakeholders   d. All of the above

19. Clean water, sanitation, good health and well being comes under
    a. Economic issues   b. Environmental issues   c. Social issues   d. Financial issues

20. AI helps in _____
    a. Solving global issues   b. Control epidemics   c. Achieve SDG's   d. All of the above

Fill in the Blanks:

1. A project can also be defined as set of _____ & _____ required to achieve a particular goal.
2. Projects can be implemented by developing new_____ from scratch.
3. AI is playing critical goal in curbing _____ issues
4. _____ can train themselves only when they have lot volumes of data.
5. The _____ the block helps in analysing the people getting affected directly or indirectly.
6. Neural network is a mesh of multiple _____
7. _____ is the last stage of project cycle.
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Assertion- Reason Type Questions:

In the questions given below, there are two statements marked as Assertion (A) and Reason(R)
Read the statements and choose the correct answer from the options given below.

(a) Both Assertion (A) and reason (R) are true and reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and reason (R) are true but reason (R) is not the correct explanation of Assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion A) is false but reason (R) is true.

1. **Assertion (A).** Data is an important part of the AI project.
   Reason (R). The training data should be authentic and relevant to the scoped problem statement.

2. **Assertion (A).** Classification uses labelled datasets so it is type of supervised learning model.
   Reason (R). In a supervised learning model, the dataset which is fed to the machine is labelled.

3. **Assertion (A).** When we explore the data and try to put it uniformly for a better understanding. it is termed as data acquisition.
   Reason (R). Live data is acquired using webcam, CCTVs, satellites, sensors, chatbots etc

4. **Assertion (A).** Last stage of Project cycle includes project evaluation, project review, system tuning.
   Reason (R). Third stage of Project cycle includes Data Requirement and data collection.

5. **Assertion (**A). Problem scoping can be considered as a part of a problem-definition phase
    Reason (R). Erroneous problem scoping is one of the most common factor behind the failures and delays of the project.

Case Based Questions

1. An electronic device manufacturer has decided to add sensors to their devices in order to provide customers with a preventive maintenance service. For this the product is monitored and when required servicing is done according to the convenience of the customer. The manufacturer aims for zero failure, standard service life of the product and ultimately building up of the brand.

Fill the 4W canvas for the problem given and create a problem statement template for the same.

2. Create a 4W Project Canvas for the following

As more and more new technologies get into play, risks will get more concentrated intA a common network. Cyber security becomes extrrernely 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.

Short Answer Type Question

1. What do you mean by AI modelling?
2. Write some of the method to acquired data for AI systems.
3. How the AI model to be followed is chosen?
4. What do you mean by data modelling approach?
5. Define data acquisition.
6. Define problems scoping.
7. Define AI project cycle.
8. Define data features.
9. Name the common AI models.
10. Name all the stages of air project cycle.

Long Answer Type Question

1. What is the need of an AI project cycle? Explain.
2. What is problem scoping? Describe your detail each part of problem scoping.
3. Explain briefly the four Ws of problem scoping.
4. Describe Modelling and its approaches.
5. Do ethics in AI hamper data acquisition stage? Justify your answer.
6. Describe data quality and its features.
7. Describe in brief each stage of AI project cycle.
8. Describe any four social issues.
9. Describe the various ways in which data can be collected.
10. What is neural network? Write the features of neural network.

Chapter: Data Science

Multiple Choice Questions:

1. What was one of the earliest applications of data science?
    a. Genetics & Genomics   b. Internet Search
    c. Fraud and Risk Detection   d. Targeted Advertising
2. Which industry uses data science to predict flight delays and drive customer loyalty programs?
    a. Genetics & Genomics   b. Internet Search
    c. Fraud and Risk Detection   d. Airline Route Planning
3. Which search engine(s) make use of data science algorithms to deliver search results?
    a. Google   b. Yahoo   c. Bing   d. All of the above
4. What is the purpose of website recommendations?
    a. To improve user experience   b. To promote products
    c. To suggest similar products   d. All of the above
5. Which field does data science enable an advanced level of treatment personalization through research in?
    a. Genetics & Genomics   b. Internet Search
    c. Fraud and Risk Detection   d. Airline Route Planning
6. Which industry uses data science algorithms to decide on digital advertising placements?
    a. Genetics & Genomics   b. Internet Search
    c. Targeted Advertising   d. Airline Route Planning
7. What is the main goal of data science applications in genetics and genomics?
    a. To understand the impact of DNA on health   b. To find individual biological connections
    c. To analyze reactions to drugs and diseases   d. All of the above
8. Which industry uses data science to analyze customer profiling and past expenditures?
    a. Genetics & Genomics   b. Fraud and Risk Detection
    c. Internet Search   d. Airline Route Planning
9. Which companies use data science to improve user experience through product recommendations?
    a. Amazon, Twitter, Google Play, Netflix, LinkedIn, IMDB   b. Yahoo, Bing, Ask, AOL
    c. All of the above   d. None of the above
10. What is the main purpose of data science?
    a. To analyze data and make machines intelligent   b. To collect and store data for future use
    c. To create new fields of study in science   d. To predict future trends based on historical data
11. In which industry were the earliest applications of data science seen?
    a. Technology   b. Healthcare   c. Finance   d. Agriculture
12. How did data science help banking companies in managing risk?
    a. By collecting customer profiles and past expenditures   b. By creating new banking products
    c. By providing loans to customers with high purchasing power   d. By reducing bad debts and losses
13. What does genetics and genomics research aim to understand?
    a. The impact of DNA on our health
    b. The impact of environment on our health
    c. The relationship between genes and diseases only
    d. The relationship between genes, diseases, and drug response
14. .How does data science contribute to disease research?
    a. It provides a deeper understanding of genetic issues in drug response.
    b. It allows integration of different kinds of data with genomic data.
    c. It helps in personalizing treatments based on individual genetics.
    d. All of the above.
15. How does targeted advertising differ from traditional advertising?

a. It uses data science algorithms to deliver personalized ads.

b. It relies on user's past behavior to determine ad placement.

c. It has a higher Call-Through Rate (CTR).

d. All of the above.

16. Which companies use website recommendations to improve user experience?

a. Amazon, Twitter, and Google Play   b. Netflix, LinkedIn, and IMDB

c. All of the above   d. None of the above

17. What can airline companies do with the help of data science?

a. Predict flight delays   b. Determine which class of airplanes to buy

c. Decide whether to take a halt during a flight   d. All of the above

18. From the given options, which statement accurately describes data science?

a. Data science is a new field that solely focuses on analyzing data.

b. Data science is used only in AI applications.

c. Data science helps in making machines intelligent by analyzing data.

d. Data science has no major applications in today's world.

19. How did data science help banking companies reduce losses?

a. By collecting customer profiles and past expenditures

b. By dividing and analyzing customer data variables

c. By pushing banking products based on customer purchasing power

d. All of the above

20. What is the main goal of genetics and genomics research?

a. To understand the impact of DNA on our health only

b. To acquire reliable personal genome data

c. To find individual biological connections between genetics, diseases, and drug response

d. All of the Above

21. What is one benefit of using data science in finance?

a. It helps in reducing bad debts and losses.

b. It allows companies to collect more data for future use.

c. It improves customer service in banking industry.

d. It enables companies to offer heavy discounts to customers.

22. What is data collection?

a. A new concept introduced in our society

b. A tedious process that requires technological knowledge

c. An exercise that does not require technological knowledge

d. An exercise that involves analyzing numbers and alpha-numerical data

23. .What does Data Science do?

a. Provides a clearer idea around the dataset

b. Maintains records in institutions

c. Incorporates AI into the data analysis process

d. Generates predictions and suggestions by machines

24. Which type of data is commonly used in data domain-based projects?

a. Textual data   b. Graphical data

c. Numerical or alpha-numerical data   d. Audio-visual data

25. Examples of Common datasets include all of the following except:

a. Databases of loans issued, account holder, locker owners, employee registrations, bank visitors, etc.

b. Usage details per day, cash denominations transaction details, visitor details, etc.

c. Movie details, tickets sold offline, tickets sold online, refreshment purchases, etc.

d. Bunkers of International armies, Secret Space Missions ,Satellite Missions etc

26. What kind of databases are commonly found in banks?
  a. Databases related to movie details   b. Databases related to Salary of Teachers
  c. Databases related to employee registrations   d. Databases related to locker owners

Fill in the Blanks

1. _____ data is expressed in the form of numbers.
2. _____ is one of the main domains of AI.
3. The data which consists of only whole numbers is termed as _____ data.
4. Data needed for _____ is prepared using data science.
5. The concept of data science can be used for developing _____ around AI.

True or False

1. Data science is one of the main domains of AI.
2. The structured data has a predefined model.
3. Real time data becomes available after the event takes place.
4. Data science tools cannot be used for fraud detection.
5. Chatbots can be used for online shopping.
6. In social media ample opportunities are available for data science.
7. Data science involves working and analysing collected data.
8. Data science does not include IT and machine learning.
9. Data science does not include IT learning.
10. Textual data includes sentences, phrases, words etc.
11. Healthcare is one of the sector where data science is playing significant role.

Short Answer Type Questions

1. What are the common applications of data science in the field of electronics?
2. How does data science help in the world of games?
3. What does data science deal with?
4. What do you mean by real time data?
5. How is AI helpful in eCommerce?
6. How is data science helpful in the field of manufacturing sector?
7. What are the various applications of data science in the field of healthcare?

Long Answer Type Questions

1. How can Data Science be used in banking and finance?
2. Why do we need Data Science?
3. How many types of Structured Data are there? Name and explain each one of them with an example.
4. Explain the following plots in brief
   a) Bar plot
   b) Boxplot
   c) Histogram
   d) Line plot
   e) Scatterplot
5. Explain the concept of outliers.