By Shweta Tiwari from IT Department

Question Bank Part-1 of "Artificial Intelligence for Engineering(KMC-101)"

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Question Bank Part-1
MS. SHWETA TIWARI

Rajkiya Engineering College | Ambedkar Nagar, UP, India

Faculty Name: Miss. Shweta Tiwari, Subject: Artificial Intelligence for Engineering (KMC101)
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Artificial Intelligence for Engineering

This **(Question Bank Part-1 Easy to Advanced Level (Belong your Syllabus))** only attempts to discover some questions with proper explanation that can be generated in "Artificial Intelligence For Engineering" with the answer to all these questions. There can be some errors to these answers. If you find any errors then please do write to us.

Artificial Intelligence for Engineering

MCQs

PART-1

Q:1. A.M. Turing developed a technique for determining whether a computer could or could not demonstrate the artificial Intelligence, Presently, this technique is called _____

1.Turing Test
2.Algorithm

3.Boolean Algebra

4.Logarithm

Solution- 1. Turing Test

Reason 1- The test is known as after Turing , the founding

father of the Turing Test and an English scientist , cryptanalyst, mathematician and theoretical biologist.

Reason 2- The test is understood as after Turing , the founding father of the Turing Test and an English scientist , cryptanalyst, mathematician and theoretical biologist.

Reason 3- The test is named after Alan Turing , the founding father of the Turing Test and an English scientist , cryptanalyst, mathematician and theoretical biologist.

Q:2. Knowledge based systems comprises of:

1.DENDRAL
2.MYCIN

3.PROSPECTOR

4.All the above

Solution- 1. DENDRAL

Reason 1- The DENDRAL programs were knowledge-driven, within the sense of today's expert systems, with the knowledge principle–that knowledge is power-first articulated within the context of DENDRAL

Reason 2- The DENDRAL programs are knowledge-driven, and within the sense of today's expert systems, with the knowledge principle–that the knowledge is the power-first articulated within the context of DENDRAL

Q:3. Weak AI is

1.A set of computer programs that produce output that would be considered to reflect intelligence if it were generated by humans.
2.Useful for testing hypothesis about minds, but would not actually be minds

3.The embodiment of human intellectual capabilities within a computer.

4.None of the above

Solution- 2.Useful for testing hypothesis about minds, but would not actually be minds

Reason 1- Weak AI lacks human consciousness, although it's going to be ready to simulate it sometimes .

Reason 2- Weak AI lacks human consciousness, although it may be able to simulate it at times.

Reason 3- Weak AI lacks human consciousness, although it's getting to be able to simulate it sometimes.

Q:4. Strong AI is

1.An AI system with generalized human cognitive abilities.
2.Also called as narrow AI.

3.All actions are preprogrammed by human

4.None of the above

Solution- 1.An AI system with generalized human cognitive abilities.

Reason 1- Strong AI include the ability to reason, solve puzzles, make judgments, plan, learn, and communicate. It should also have consciousness, objective thoughts, self awareness, sentience, and sapience. Strong AI is also called True Intelligence or Artificial General Intelligence (AGI)

Reason 2- Strong AI include the power to reason, solve puzzles, make judgments, plan, learn, and communicate. It should even have consciousness, objective thoughts, self awareness, sentience, and sapience. Strong AI is additionally called True Intelligence or Artificial General Intelligence (AGI)

Reason 3- Strong AI include the facility to reason, solve puzzles, make judgments, plan, learn, and communicate. It should even have consciousness, objective thoughts, self-awareness, sentience, and sapience. Strong AI is additionally called True Intelligence or Artificial General Intelligence (AGI)

Q:5. Which of the following could be the approaches to Artificial Intelligence?

1.Strong AI

2.Swarm Intelligence

3.Computational Intelligence

4.All the above

Solution- 4. All of the Above

Reason 1- Artificial Intelligence comprises of the following abilities such as Strong A.I, Swarm Intelligence and computational Intelligence.

Reason 2- Artificial Intelligence comprises of the subsequent abilities like Strong A.I, Swarm Intelligence and computational Intelligence.
Reason 3- Artificial Intelligence comprises of the next abilities like Strong A.I, Swarm Intelligence and computational

Intelligence.

Q:6. AI vs. Human Brain

1.Humans use content memory and thinking whereas, robots are using built-in instructions, designed by scientists.

2.Artificial intelligence cannot beat human intelligence at all

3.The field of Artificial intelligence limits on designing machines that can mimic human behavior.

4.None of the above

Solution- 3.The field of Artificial intelligence limits on designing machines that can mimic human behavior.

Reason 1- Because these machines are harder to implement and requires tons of memory usage and processing power.

Reason 2- Because these machines are harder to implement

and requires a lot of memory usage and processing power.
Reason 3- because these machines are harder to implement and requires plenty of memory usage and processing power.

Q:7. Which of the following is not a stage of AI?

1.Cognitive analytics

2.Predictive analytics

3.Diagnostic analytics

4.None of the above

Solution- 1. Cognitive Analytics

Reason 1- Cognitive Computing tries to replicate how humans would solve problems while AI seeks to create new ways to solve problems that can potentially be better than humans.

Reason 2- Cognitive Computing tries to duplicate how humans would solve problems while AI seeks to make new ways to unravel problems which will potentially be better than humans.

Reason 3- Cognitive Computing tries to duplicate how humans would solve problems while AI seeks to form new ways to unravel problems which can potentially be better than humans.

Q:8. Steps to process the command are:

1.Trigger word detection

2.Speech recognition

3.Intent recognition

4.All the above

Solution 4- All of the above

Reason 1- All of the command that are written within the

above option are the steps to process the commands.

Reason 2- All of the command that are written in the above option are the steps to process the commands.

Q:9. Which of the following is not an application of AI?
1.Pattern recognition

2.Crop prediction

3.Digital assistant

4.Fund transfer

Solution- 4.Fund transfer

Reason 1- As we know pattern recognition, crop prediction, digital assistant all come under the application of A.I but fund transfer is the process that is done using pre programmed instructions.

Reason 2- As we all know pattern recognition, crop prediction, digital assistant all come under the appliance of A.I but fund transfer is that the process that's done using pre programmed instructions.

Q:10. A method of programming a computer to exhibit human intelligence is called modeling
or……

1.simulation
2.cognitization

3.duplication

4.psychic amelioration

Solution- 1.Simulation

Reason 1- because the production of a computer model of something, especially for the purpose of study is known as Simulation.

Reason 2- because the assembly of a computer model of something, especially for the aim of study is understood as Simulation.

PART-2

Q:1. What is an advantage of Artificial Intelligence?

1.Potential for misuse

2.Highly dependent on machines
3.Requires Supervision

4.Rational Decision Maker

Solution- 4- Rational Decision Maker

Reason 1- This is because Rational choice theory in A.I. states that it rely on rational calculations to make rational choices that result in outcomes aligned with their own best interests.

Reason 2- This is because Rational choice theory during a .I. states that it believe rational calculations to form rational choices that end in outcomes aligned with their own best interests.

Reason 3- This is because Rational choice theory during artificial intelligence states that it believe rational calculations to make rational choices that end in outcomes aligned with their own best interests.

Q:2. Who is known as the “Father of AI”?

1.Fisher Ada

2.Alan Turing
3.John McCarthy

4.Allen Newell

Solution- 3.John McCarthy

Reason 1- John McCarthy, widely recognized as the father of Artificial Intelligence due to his astounding contribution in the field of Computer Science and AI.

Reason 2- John McCarthy, widely known because the father of AI thanks to his astounding contribution within the field of

computing and AI.

Reason 3- John McCarthy, widely known because the father of Artificial intelligence because of his astounding contribution within the sector of computing and AI.

Q:3. Which of the following is not a branch of Artificial Intelligence?

1.Expert systems

2.Robotics
3.Natural language Processing

4.None of the above

Solution- 4.None of the above

Reason 1- This is because Expert System, Robotics and Natural Language processing all have their roles in Artificial Intelligence. There are 6 branches of A.I and these 3 above come under these branches.

Reason 2- This is because Expert System, Robotics and NLP all have their roles in AI . There are 6 branches of A.I and these 3 above come under these branches.

Reason 3- This is because Expert System, Robotics and NLP processing have their roles in AI . There are six branches of A.I and these three above come under these branches.

Q:4. Which of the following is not an application of Unsupervised Learning?

1.Document clustering
2.Speech recognition

3.Image compression

4.Association analysis

Solution- 4. Speech Recognition

Reason 1- This is the kind of application where you teach the algorithm about your voice and it will be able to recognize

you. The most well-known real-world applications are virtual assistants such as Google Assistant and Siri, which will wake up to the keyword with your voice only. That is the reason it comes under supervised learning.

Reason 2-This is the type of application where you teach the algorithm about your voice and it'll be ready to recognize you. the foremost well-known real-world applications are virtual assistants like Google Assistant and Siri, which can awaken to the keyword together with your voice only. that's the rationale it comes under supervised learning.

Reason 3-This is the type of application where you teach the algorithm about your voice and it'll be ready to recognize you. the foremost well-known real-world applications are virtual assistants like Google Assistant and Siri, which can awaken to the keyword in conjunction with your voice only. that's the rationale it comes under supervised learning.

Q:5. The multi-armed bandit problem is a generalized use case for

1.Reinforcement learning

2.Supervised learning

3.Unsupervised learning

4.All the above

Solution- 1.Reinforcement learning

Reason 1- Multi–Arm Bandit is a classic reinforcement learning problem, in which a player is facing with k slot machines or bandits, each with a different reward distribution, and the player is trying to maximise his cumulative reward based on trials.

Reason 2- Multi-Arm Bandit may be a classic reinforcement learning problem, during which a player is facing with k slot machines or bandits, each with a special reward distribution, and therefore the player is trying to maximise his cumulative reward supported trials.

Reason 3- Multi-Arm Bandit could also be a classic

reinforcement learning problem, during which a player is facing with k slot machines or bandits, each with a special reward distribution, and thus the player is trying to maximise his cumulative reward supported trials.

Q:6. Why IOT now?

1.Electronic companies are building Wi-Fi and cellular wireless connectivity into a wide range of devices.

2.Mobile data coverage has improved significantly

3.The size and cost of wireless radios has dropped

4.All the above

Solution- 4.All the above

Reason 1- All of the above options that have provided in this question are correct and helping IOT to evolve in the future.
Reason 2- All of the above options that have provided during this question are correct and helping IOT to evolve within the

future.

Q:7. Scalability of IoT means:

1.Expandable/reducible in terms of scale or size.

2.Measurable

3.Increasing/decreasing monetary costs.

4.All of these.

Solution- 4.All of these.

Reason 1- This is because the IOT is expandable/reducible in size or to scale. It is also measurable and its cost can be increased or decreased.

Reason 2- This is because the IOT is expandable/reducible in size or to scale. it’s also measurable and its cost are often increased or decreased.

Q:8. Which of the following statement is incorrect for AI?

1.Humans can not evolve as soon as AI evolves to control and handle it

2.The community working towards safe and beneficial superintelligence has grown worldwide.

3.It is typically managed by a peer-to-peer network working simultaneously together to solve complex mathematical problems in order to validate new blocks

4.AI is the new electricity

Solution- 1.Humans can not evolve as soon as AI evolves to control and handle it

Reason 1- We cannot say humans cannot evolve to control and handle it because humans are working on it regularly to make an A.I that will reduce their workload and time to complete a task, which they will adapt later.

Reason 2- We cannot say humans cannot evolve to regulate and handle it because humans are performing on it regularly to form an A.I which will reduce their workload and time to finish a task, which they're going to adapt later.

Reason 3- We cannot say humans cannot evolve to manage and handle it because humans are working on it regularly to make an A.I which can reduce their workload and time to end a task, which they go to adapt later.

Q:9. Overfitting

1.The model remembers a huge number of examples instead of learning to notice features and may fail to predict future observations reliably.

2.Occurs when a statistical model cannot adequately capture the underlying structure of the data.

3.Occurs if the model or algorithm shows low variance but high bias

4.None of the above

Solution- 1.The model remembers a huge number of examples instead of learning to notice features and may fail to predict future observations reliably.

Reason 1- Overfitting is “the production of an analysis that corresponds too closely or exactly to a particular set of data, and may therefore fail to fit additional data or predict future observations reliably”

Reason 2- Overfitting is “the production of an analysis that corresponds too closely or exactly to a specific set of knowledge , and should therefore fail to suit additional data or predict future observations reliably”

Q:10. AI in security will:

1.Not detect threats based on application behavior and a whole network’s activity.

2.Not be able to identify and stop cyber threats with less human intervention than is typically expected or needed with traditional security approaches.

3.Not detect when new threats are imminent

4.Not replace a security analyst's insights or understanding of the field.
Solution- 4. Not replace a security analyst's insights or understanding of the field.

Reason 1- This is because we do not have A.I's that can understand and gathered field intelligence without human intervention.

Reason 2- This is because we don't have A.I's which will understand and gathered field intelligence without human intervention.

PART-3

Q:1. The first usage of Data came in:

1.1640

2.1954

3.1946

4.1940

Solution- 3. 1946
Reason- The first English use of the word “data” is from the 1640s. The word “data” was first used to mean “transmissible and storable computer information” in 1946.

Q:2. DIKW:

1.Stands for Data, Information, Knowledge, Wisdom

2.In 1994 Nathan Shedroff presented the DIKW hierarchy in

an information design context

3.In this context data is considered as symbols representing signals

4.All the above statements are correct

Solution- 1.Stands for Data, Information, Knowledge, Wisdom

Reason 1- Knowledge Pyramid, Wisdom Hierarchy and Information Hierarchy are some of the names referring to the popular representation of the relationships between data, information, knowledge and wisdom in the Data, Information, Knowledge, Wisdom (DIKW) Pyramid.
Reason 2- Knowledge Pyramid, Wisdom Hierarchy and knowledge Hierarchy are a number of the names pertaining to the favored representation of the relationships between data, information, knowledge and wisdom within the Data, Information, Knowledge, Wisdom (DIKW) Pyramid.

Q:3. Classification data type which is not on the basis of measurement:

1.Ratio data

2.Ordinal data

3.Boolean data (True/False)

4.Interval data

Solution- 3. Boolean data (True/False)

Reason- There are four levels of data measurements in classification data type: Nominal, Ordinal, Interval, and Ratio.

Q:4. Not a case of Qualitative vs Quantitative data:

1.Category vs Number

2.Observed vs Measured

3.Smell vs Height

4.Volume vs Color

Solution- 4.Volume vs Color

Reason 1- Quantitative data can be counted, measured, and expressed using numbers. Qualitative data is descriptive and conceptual. Qualitative data can be categorized based on traits and characteristics.

Reason 2- Quantitative data are often counted, measured, and expressed using numbers. Qualitative data is descriptive and conceptual. Qualitative data are often categorized supported traits and characteristics.

Q:5. User driven approach is

1.Data Mining

2.Deep Learning
3.OLTP

4.Machine Learning

Solution- 3.OLTP

Reason 1- Current data warehouse development methods. can fall within three basic groups: data –driven, goal-driven and user–driven. Implementation strategies.

Reason 2- Current data warehouse development methods. can fall within three basic groups: data -driven, goal-driven and user-driven. Implementation strategies.

Q:6. Physical storage of data:

1.CD-ROM

2.Distributed database

3.Cloud storage

4.None of the above
Solution- 1.CD-ROM

Reason 1- Physical (non-electronic) data may be stored in a variety of forms including photographs, film, optical media (e.g. CDs & DVDs), magnetic media (e.g. audio and video tapes or computer storage devices), artworks, paper documents or computer printouts.

Reason 2- Physical (non-electronic) data could also be stored during a sort of forms including photographs, film, optical media (e.g. CDs & DVDs), magnetic media (e.g. audio and video tapes or memory devices), artworks, paper documents or computer printouts.

Q:7. Which of the following statement is true for Data Warehouse?

1.It is semi-structured and raw

2.It is less agile with fixed configuration

3.It is designed for low-cost storage

4.All the above

Solution- 2.It is less agile with fixed configuration

Reason 1- A data warehouse is a highly structured data bank, with a fixed configuration and little agility. Changing the structure isn't too difficult, at least technically, but doing so is time consuming when you account for all the business processes that are already tied to the warehouse.

Reason 2- A data warehouse may be a highly structured data bank, with a hard and fast configuration and tiny agility. Changing the structure isn't too difficult, a minimum of technically, but doing so is time consuming once you account for all the business processes that are already tied to the warehouse.

Q:8. Importance of data:

1.It helps to analyze and visualize the performance 2.It

helps to recommend correct options to the customers 3.It

helps to solve complex problems

4.All the above
Solution- 4.All the above

Reason- All of the above steps are true in case of data. It helps us to in all the cases.

Q:9. Choose an incorrect statement:

1.ETL stands for Extraction, Transformation, Loading into repository.

2.Data cleaning is very important in data preparation.

3.Removal of outliers and smoothing of data is required to prepare data for further processing.

4.Data needs to be normalize.

Solution- 4.Data needs to be normalize.

Reason 1- Similarly, the goal of normalization is to change the values of numeric columns in the dataset to a common scale, without distorting differences in the ranges of values. For machine learning, every dataset does not require normalization. It is required only when features have

different ranges.

Reason 2- Similarly, the goal of normalization is to vary the values of numeric columns within the dataset to a standard scale, without distorting differences within the ranges of values. For machine learning, every dataset doesn't require normalization. it's required only features have different ranges.

Q:10. Data visualization tools are:

1.Pie chart

2.Histogram

3.Scatter Plot

4.All the above

Solution- 4.All the above

Reason 1- Because data visualization tools are used to represent data in pictorial form. and all the option above are used to represent data in visual form.
Reason 2- Because data visualization tools are wont to represent data in pictorial form. and every one the choice above are wont to represent data in visual form.

PART-4

Q:1. In Supervised Learning:

1.Input data is called training data and has a known label.

2.It can solve the classification and regression problems.

3.The training process continues until model achieves desired accuracy

4.All the above statements are true.

Solution- 4.All the above statements are true.

Reason 1- All the three 1,2, and 3 statements are true. As in supervised learning input data is called training data and has a known label. This is also used to solve the classification and regression problems. This training process continues until model achieves desired accuracy.

Reason 2- All the three 1,2, and three statements are true. As in supervised learning input file is named training data and

features a known label. this is often also wont to solve the classification and regression problems. This training process continues until model achieves desired accuracy.

Q:2. In Unsupervised Learning, the incorrect statements are:

1.It organize data by similarity.

2.Input data know about results

3.It can solve problem of dimension reduction.

4.None of the above

Solution- 4.None of the above

Reason 1- This is because it organizes data by similarity and the input data know about the result. It is also used to solve dimensionality problem.

Reason 2- This is because it organizes data by similarity and therefore the input file realize the result. it’s also wont to solve dimensionality problem.

Q:3. Data Visualization is:

1.Used to communicate information clearly and efficiently to users by the usage of information graphics such as tables and charts.

2.Helps users in analyzing a large amount of data in a simpler way.

3.Makes complex data more accessible, understandable, and usable.

4.All of the above

Solution- 4. All of the above

Reason 1- All the reason that has been provided above are true. because Data visualization is a process of representing data into pictorial or graphical form.
Reason 2- All the rationale that has been provided above are true. because Data visualization may be a process of representing data into pictorial or graphical form.

Q:4. Data Visualization tool that can be used for displaying hierarchical data:

1.Histogram

2.Treemap

3.Scatter plot

4.Pie chart

Solution- 2.Treemap

Reason 1- Treemaps are visualizations for hierarchical data. They are made of a series of nested rectangles of sizes proportional to the corresponding data value.

Reason 2- Treemaps are visualizations for hierarchical data. they’re made from a series of nested rectangles of sizes proportional to the corresponding data value.

Q:5. Which of the following is a Regression problem?

1.Weather forecasting

2.Spam/Not-Spam emails categorization

3.Sentiment analysis

4.Fraud detection

Solution- 4. Fraud Detection

Reason 1- In order to effectively test, detect, validate, correct error and monitor control systems against fraudulent activities, businesses entities and organizations rely on specialized data analytics techniques such as data mining, data matching, sounds like function, Regression analysis, Clustering analysis and Gap.

Reason 2- In order to effectively test, detect, validate, correct error and monitor control systems against fraudulent activities, businesses entities and organizations believe specialized data analytics techniques like data processing , data matching, seems

like function, multivariate analysis , Clustering analysis and Gap.

Q:6. Which of the following is a Classification problem?

1.Estimating the price of house

2.Credit/loan approval

3.Recommender system

4.Predicts the number of items which a consumer will probably purchase

Solution- 2. Credit/loan approval

Reason 1- Classification algorithms work by predicting the best group to which a data point belongs to by learning from labeled observations. It uses a set of input features for the learning process. Classification algorithms are good for grouping data that are never seen before into their various groupings and are therefore extensively used in machine learning tasks.

Reason 2- Classification algorithms work by predicting the simplest group to which a knowledge point belongs to by learning from labeled observations. It uses a group of input features for the training process. Classification algorithms are good for grouping data that are never seen before into their various groupings and are therefore extensively utilized in machine learning tasks.

Q:7. Decision tree:

1.Belongs to a family of unsupervised learning algorithms

2.Consider all attributes to split at each node, starting from the root node

3.Create a model that can be used to predict the class or value of the target variable by learning simple decision rules inferred from training data

4.All the above

Solution- 3.Create a model that can be used to predict the class or value of the target variable by learning simple

decision rules inferred from training data

Reason 1- because it is used to create a model that can be used to predict the class or value of the target variable by learning simple decision rules inferred from training data
Reason 2- because it's wont to create a model which will be wont to predict the category or value of the target variable by learning simple decision rules inferred from training data

Q:8. Bayesian Classifier:

1.Connects the degree of belief in a hypothesis before and after accounting for evidence

2.Uses conditional and marginal probability

3.Performance can be estimated using accuracy, precision, recall

4.All the above

Solution- 4.All the above

Reason 1- This is because Bayesian Classifier uses conditional and marginal probability. Also it connects the degree of belief in a hypothesis before and after accounting for evidence. And its performance can be estimated using accuracy, precision, recall. That is the reason all the above options are true.
Reason 2- This is because Bayesian Classifier uses conditional and marginal probability. Also it connects the degree of belief during a hypothesis before and after accounting for evidence. And its performance are often estimated using accuracy, precision, recall. that's the rationale all the above options are true.

Q:9. When two clusters have a parent-child relationship then it is called as:

1.K-means clustering

2.Fuzzy c-means clustering

3.Hierarchical clustering

4.Density based clustering

Solution- 3.Hierarchical clustering

Reason 1- When two clusters have parent-child relationship or tree like structure then it is called as Hierarchical Clustering.

Q:10. Recommender system is an example of:
1.Clustering

2.Supervised learning

3.Reinforcement learning

4.Regression

Solution- 2. Supervised learning

Reason 1- The previous recommendation algorithms are rather simple and are appropriate for small systems. Until this moment, we considered a recommendation problem as a supervised machine learning task.

PART-5

Q:1. The possible features of a text corpus in NLP

1.Count of the word

2.Identifying stop words

3.Predicting parts of Speech
4.All the above

Solution- 4.All the above

Reason 1- All of the above options are true.

Reason 2- the above options are true.

Q:2. Normalization techniques in NLP

a. Lemmatization

b. Bag of words

c. Stemming

d. Named entity recognition

1.a,b

2.a,c

3.d,b
4.b,c

Solution- 2. a,c

Reason 1- In NLP a highly overlooked preprocessing step is text normalization. and Lemmatization on the surface is very similar to stemming, where the goal is to remove inflections and map a word to its root form. So these two are the normalization techniques in NLP.

Reason 2- In NLP a highly overlooked preprocessing step is text normalization. and Lemmatization on the surface is extremely almost like stemming, where the goal is to get rid of inflections and map a word to its root form. So these two are the normalization techniques in NLP.

Q:3. NLP Use cases

a. Text summarization

b. Object detection

c. Sentiment analysis

d. Chatbots

1.b,c,d
2.a,b,d

3.a, c, d

4.a,b,c

Solution- 3. a, c, d

Reason 1- Text summarization, Sentiment analysis and chatbots all uses natural language processing.

Q:4. Speech recognition

1.It is a way of encoding and decoding signals

2.It is coupled with AI as deep learning models

3.Both acoustic modeling and language modeling are important parts of modern statistically-based speech recognition algorithms.

4.All the above

Solution- 4. All the above

Reason 1- This is because in speech recognition, encoding and decoding signals is done and it is also coupled with AI as a deep learning model. and both the acoustic modeling and language modeling are important parts of modern statistically-

based speech recognition algorithms.

Reason 2- This is because in speech recognition, encoding and decoding signals is completed and it's also including AI as a deep learning model. and both the acoustic modeling and language modeling are important parts of recent statistically based speech recognition algorithms.

Q:5. Choose an incorrect statement in context of speech recognition

1.In 1952, three Bell Labs researchers built a system called "Audrey"

2.Modern general-purpose speech recognition systems are based on Hidden Markov Models

3.It can identify objects, people, places, and actions in images

4.None of the above

Solution 3- It can identify objects, people, places, and actions

in images

Reason 1- This is because speech recognition do not identify objects, people, places, and actions in images. This identification is done by object recognition and face recognition.

Reason 2- This is because speech recognition don’t identify objects, people, places, and actions in images. This identification is completed by visual perception and face recognition.

Q:6. Natural Language Understanding (NLU)

a. It is the ability of machines to understand the human language

b. It is a branch of Natural Language Processing

c. Natural-language understanding is considered an AI-hard problem.

d. None of the above

1.a,b,c
2.a,c,d

3.b,a,d

4.b,c,d

Solution- 1.a,b,c

Reason 1- NLU is a branch of NLP and it is considered an AI hard problem. It is the ability of machines to understand the human language

Q:7. Speech recognition steps include

1.Feature extraction

2.Spectrum analysis

3.Preprocessing of input signals

4.All the above
Solution- 4. All the above

Reason 1- Speech recognition process takes place in three main steps which are acoustic processing, feature extraction and classification/recognition. It also include spectrum analysis and preprocessing of input signals.

Reason 2- Speech recognition process takes place in 3 main steps which are acoustic processing, feature extraction and classification/recognition. It also include spectrum and preprocessing of input signals.

Q:8. The interpretation capabilities of a language understanding system depend on

1.The semantic Theory

2.The syntactic theory

3.Both a and b

4.None of the above

Solution- 1. The semantic Theory
Reason 1- The interpretation capabilities of a language understanding system depend on the semantic theory it uses. Semantic parsers convert natural-language texts into formal meaning representations.

Q:9. Applications of NLU

a. Automated reasoning

b. Machine translation

c. Network congestion control

d. All the above

1.c,d

2.b,c

3.d,a

4.a,b

Solution- 4.a,b

Reason 1- Before a computer can process unstructured text into a machine-readable format, first machines need to understand the peculiarities of the human language. It gives machines a form of reasoning or logic, and allows them to infer new facts by deduction. Simply put, using previously gathered and analyzed information, computer programs are able to generate conclusions.

Reason 2- Before a computer can process unstructured text into a machine-readable format, first machines got to understand the peculiarities of the human language. It gives machines a sort of reasoning or logic, and allows them to infer new facts by deduction. Simply put, using previously gathered and analyzed information, computer programs are ready to generate conclusions.

Q:10. Methods used in speech recognition systems are

1.Hidden Markov Model (HMM)

2.Neural Networks

3.Both a and b

4.None of the above
Solution- 3. Both a and b

Reason 1- at CMU, Raj Reddy's students James Baker and Janet M. Baker began using the Hidden Markov Model (HMM) for speech recognition. speech recognition was still dominated by traditional approaches such as Hidden Markov Models combined with feedforward artificial neural networks.

PART-6

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1.a,b

2.a,c

3.d,b

4.b,c

Solution- 2. a,c

Reason 1- In NLP a highly overlooked preprocessing step is text normalization. and Lemmatization on the surface is very similar to stemming, where the goal is to remove inflections and map a word to its root form. So these two are the normalization techniques in NLP.

Reason 2- In NLP a highly overlooked preprocessing step is text normalization. and Lemmatization on the surface is extremely almost like stemming, where the goal is to get rid of inflections and map a word to its root form. So these two are the normalization techniques in NLP.

Q:3. NLP Use cases

a. Text summarization

b. Object detection

c. Sentiment analysis

d. Chatbots

1.b,c,d

2.a,b,d

3.a, c, d
4.a,b,c

Solution- 3. a, c, d

Reason 1- Text summarization, Sentiment analysis and chatbots all uses natural language processing.

Q:4. Speech recognition

1.It is a way of encoding and decoding signals

2.It is coupled with AI as deep learning models

3.Both acoustic modeling and language modeling are important parts of modern statistically-based speech recognition algorithms.

4.All the above

Solution- 4. All the above

Reason 1- This is because in speech recognition, encoding and decoding signals is done and it is also coupled with AI as a

deep learning model. and both the acoustic modeling and language modeling are important parts of modern statistically-based speech recognition algorithms.

Reason 2- This is because in speech recognition, encoding and decoding signals is completed and it's also including AI as a deep learning model. and both the acoustic modeling and language modeling are important parts of recent statistically based speech recognition algorithms.

Q:5. Choose an incorrect statement in context of speech recognition

1.In 1952, three Bell Labs researchers built a system called "Audrey"

2.Modern general-purpose speech recognition systems are based on Hidden Markov Models

3.It can identify objects, people, places, and actions in images

4.None of the above

Solution 3- It can identify objects, people, places, and actions in images

Reason 1- This is because speech recognition do not identify objects, people, places, and actions in images. This identification is done by object recognition and face recognition.

Reason 2- This is because speech recognition don’t identify objects, people, places, and actions in images. This identification is completed by visual perception and face recognition.

Q:6. Natural Language Understanding (NLU)

a. It is the ability of machines to understand the human language

b. It is a branch of Natural Language Processing

c. Natural-language understanding is considered an AI-hard problem.

d. None of the above

1.a,b,c

2.a,c,d

3.b,a,d
4.b,c,d

Solution- 1.a,b,c

Reason 1- NLU is a branch of NLP and it is considered an AI hard problem. It is the ability of machines to understand the human language

Q:7. Speech recognition steps include

1.Feature extraction

2.Spectrum analysis

3.Preprocessing of input signals

4.All the above

Solution- 4. All the above

Reason 1- Speech recognition process takes place in three main steps which are acoustic processing, feature extraction and classification/recognition. It also include spectrum analysis and preprocessing of input signals.

Reason 2- Speech recognition process takes place in 3 main steps which are acoustic processing, feature extraction and classification/recognition. It also include spectrum and preprocessing of input signals.

Q:8. The interpretation capabilities of a language understanding system depend on

1.The semantic Theory

2.The syntactic theory

3.Both a and b

4.None of the above

Solution- 1. The semantic Theory

Reason 1- The interpretation capabilities of a language understanding system depend on the semantic theory it uses. Semantic parsers convert natural-language texts into formal meaning representations.

Q:9. Applications of NLU

a. Automated reasoning

b. Machine translation

c. Network congestion control

d. All the above

1.c,d

2.b,c

3.d,a

4.a,b

Solution- 4.a,b

Reason 1- Before a computer can process unstructured text into a machine-readable format, first machines need to understand the peculiarities of the human language. It gives machines a form of reasoning or logic, and allows them to infer new facts by deduction. Simply put, using previously gathered and analyzed information, computer programs are able to generate conclusions.

Reason 2- Before a computer can process unstructured text into a machine-readable format, first machines got to understand the peculiarities of the human language. It gives machines a sort of reasoning or logic, and allows them to infer new facts by deduction. Simply put, using previously gathered and analyzed information, computer programs are ready to generate conclusions.

Q:10. Methods used in speech recognition systems are

1.Hidden Markov Model (HMM)

2.Neural Networks

3.Both a and b

4.None of the above

Solution- 3. Both a and b
Reason 1- at CMU, Raj Reddy's students James Baker and Janet M. Baker began using the Hidden Markov Model (HMM) for speech recognition. speech recognition was still dominated by traditional approaches such as Hidden Markov Models combined with feedforward artificial neural networks.

PART-7

Q:1. Choose an incorrect statement in context to Natural Language Generation (NLG)

1.Transforms structured data into natural language 2.Markov

chains can be used for generating natural language 3.It converts

a text into structured data

4.None of the above

Solution- 1.Transforms structured data into natural language

Reason 1- Natural Language Generation (NLG), a subcategory of Natural Language Processing (NLP), is a software process that automatically transforms structured data into human readable text.

Q:2. In natural-language understanding, the system needs to disambiguate the input sentence to produce the machine representation language, in NLG the system needs to make

decisions about how to put a concept into words

1.True

2.False

Solution- 1. True

Reason 1- In natural language understanding the system needs to disambiguate the input sentence to produce the machine representation language, whereas in Natural Language Generation the system needs to make decisions about how to put a concept into words.

Q:3. Applications of Natural Language Generation

a. Smartphone

b. Analysis of business intelligence

c. IOT devices

d. Chatbots

1.a, b, c, d

2.a,c,d

3.b,c

4.a,b,c

Solution- 1.a, b, c, d

Reason 1- All the above application given in the option are true and these are the applications of NLG.

Q:4. Choose correct options

a. NLU takes up the understanding of the data based on grammar, the context in which it was said and decide on intent and entities.

b. NLP converts a text into structured data.

c. NLG generates a text based on structured data. d.

None of the above

1.b,c,d
2.a,c

3.a,b,c

4.a,b,d

Solution- 3.a,b,c

Reason 1-

The way these three of them work hand in hand are given as NLU takes up the understanding of the data based on grammar, the context in which it was said and decide on intent and entities. NLP will convert the text into structured data. NLG generates text generated based on structured data.

Q:5. Chatbots

a. Can be used for E-commerce

b. Can be used to solve people's travel related problems
c. Need not to pass the industry standard Turing test at any level

d. Require a large amount of conversational data to train

1.b,c,d

2.a,c

3.a, b, c

4.a,b,d

Solution- 4.a,b,d

Reason 1- Chatbots can be used for E-commerce and to solve people's travel related problems but it require a large amount of conversational data to train.

Q:6. Machine translation

a. Is the process of using computer programs to translate a text/speech from one natural language to another relevant to context

b. It has the ability to translate in many languages c. It is required for web content and web page translation d. None of the above

1.a,b,d

2.b,c,d

3.c,d,a

4.a,b,c

Solution- 4.a,b,c

Reason 1-Machine translation is the process of using computer programs to translate a text/speech from one

natural language to another relevant to context. It has the ability to translate in many languages and also required for web content and web page translation

Q:7. A brief history of Machine Translation includes:

a. Rule based Machine Translation (RBMT)

b. Example based Machine Translation (EBMT)

c. Statistical Machine Translation (SMT)

d. Neural Machine Translation (NMT)

1.a,b,c

2.c,d,a

3.a,b,c,d

4.b,c,d

Solution- 3.a,b,c,d

Reason 1-RBMT (Rule based Machine Translation) was in 1950, EBMT (Example based Machine Translation) was in 1980, SMT was in 1990, and NMT was in 2015.

Q:8. Which of the following includes major tasks of NLP?
1.Automatic Summarization

2.Natural language understanding

3.Natural language generation

4.All the above

Solution- 1. Automatic Summarization

Reason 1- By utilizing NLP, developers can organize and structure knowledge to perform tasks such as automatic summarization, translation, named entity recognition, relationship extraction, sentiment analysis, speech recognition, and topic segmentation.

Q:9. Google translator is the application of

1.Machine Translation

2.Text summarization

3.Information extraction
4.None of the above

Solution- 1.Machine Translation

Reason 1- Google translator is an application of Statistical and neural machine translation

Reason 2- Google has made Google translator application by using Statistical and neural machine translation.

Q:10. Applications of NLP are

a. Chatbots

b. Voice assistants

c. Virtual assistant

d. None of the above

1.a,b,d

2.a,b,c
3.b,c,d

4.a,c,d

Solution- 2.a,b,c

Reason 1- All the three chatbot, virtual assistant and voice assistant are the application of NLP.

PART-8

Q:1. Applications of Deep Learning are:

1.Self-driving cars

2.Fake news detection

3.Virtual Assistants

4.All the above

Solution- 4. All the above
Reason- Self-driving cars, Fake news detection and virtual assistants all are the applications of deep learning including healthcare, fraud detection etc..

Q:2. The inputs for a single layer neural network are 1, 3, 2 and the weights of links connecting input neurons to the output neuron are 2, 2, and 3 then the output will be (Identity activation function is used in output neuron):

1.6

2.14

3.12

4.None of the above

Solution- 2. 14

Reason- by using this formula – Output = w1 * x1 + w2 * x2 + w3 * x3

Q:3. Which of the following is not a type of Artificial Neural Network?
1.Perceptron

2.Radial Basis Functions

3.Random Forest

4.Autoencoder

Solution- 3. Random Forest

Reason- Both the Random Forest and Neural Networks are different techniques that learn differently but can be used in similar domains. Random Forest is a technique of Machine Learning while Neural Networks are exclusive to Deep Learning.

Q:4. What is the limitation of deep learning?

1.Amount of data

2.Computational expensive
3.Data Labeling

4.All the above

Solution- 4. All the above

Reason- Amount of data, computational expenses and data labelling all three are the limitation of deep learning.

Q:5. The number of nodes in the hidden layer is 8 and the output layer is 5. The maximum number of connections from the hidden layer to the output layer are:

1.40

2.Less than 40

3.More than 40

4.It is an arbitrary value

Solution- 1. 40
Reason- it is a fully connected direct graph, the number of connections are multiple of nodes in hidden layer and output layer.

Q:6. Recurrent Neural Networks (RNN) are used for

1.Businesses Help securities traders to generate analytic reports

2.Detecting fraudulent credit-card transaction

3.Providing a caption for images

4.All of the above

Solution- 4. All of the above

Reason- All of the above options are true. This is because RNN is used to Help securities traders to generate analytic reports, Detecting fraudulent credit-card transaction and to provide a caption for images.

Q:7. Types of RNN are:
1.LSTM

2.Boltzman machine

3.Hopfield network

4.a and b

Solution- 4. a and b

Reason- A Boltzmann machine (also called stochastic Hopfield network with hidden units or Sherrington– Kirkpatrick model with external field or stochastic Ising-Lenz Little model) is a type of stochastic recurrent neural network. LSTM networks are a type of RNN that uses special units in addition to standard units.

Q:8. What is perceptron?

1.a single layer feed-forward neural network with pre processing
2.an auto-associative neural network

3.a double layer auto-associative neural network

4.a neural network that contains feedb

Solution- 1. a single layer feed-forward neural network with pre-processing

Reason- It is the simplest type of feedforward neural network , a feedforward neural network with no hidden units. Thus, a perceptron has only an input layer and an output layer.

Q:9. Which of the following architecture has feedback connections?

1.Recurrent Neural network

2.Convolutional Neural Network

3.Restricted Boltzmann Machine

4.None of these
Solution- 2.Convolutional Neural Network

Reason- CNN is a feed forward neural network that is generally used for Image recognition and object classification.

Q:10. Bidirectional RNN:

1.Trained to predict both the positive and negative directions of time simultaneously.

2.Applications are speech recognition, handwritten recognition etc.

3.After forward and backward passes are done, the weights are updated

4.All the above

Solution- 4. All the above

Reason- All the above options are true.

PART-9

Q:1. The incorrect statement for a Convolutional Neural Network are:

1.The height and width of the filter in CNN must be less than the size of input

2.The Pooling layer progressively increases the spatial size of the representation

3.It uses both linear and non-linear activation functions

4.The last few layers are fully connected layers and computation on these layers are very time consuming

Solution- 1.The height and width of the filter in CNN must be less than the size of input

Reason- This is because the height and width of the filter in CNN must not be less than the size of input.

Q:2. A Convolutional Neural Network is able to successfully capture the Spatial and Temporal dependencies:
1.True

2.False

Solution- 1.True

Reason- Yes this true, because a ConvNet is able to successfully capture the Spatial and Temporal dependencies in an image through the application of relevant filters.

Q:3. Different types of normalization in Deep Neural Networks are

a. Output

b. Batch

c. Group

d. Instance

1.a,b,c

2.b,c,d

3.d,a,b
4.d,a,c

Solution- 2.b,c,d

Reason- Different types of normalization in Deep Neural Networks are batch, group, instance, layer, weight etc..

Q:4. Applications of CNNs are:

a. Recommender systems

b. AlexNet

c. Natural Language Processing

d. Pooling

1.a,b

2.b,d

3.a,c

4.a,d

Solution- 4.a,d
Reason- This is because recommender system is an application of CNN and Pooling layers are used to reduce the dimensions of the feature maps in CNN.

Q:5. Which of the following statements are correct for GAN?

a. GANs are useful for unsupervised learning, supervised learning, semi-supervised learning, and reinforcement learning

b. Generative model technique learns to generate the data with the same statistics of training data

c. At each iteration the goal of generator is to minimize the classification error and the goal of discriminator is to maximize the classification error.

d. The discriminator could tell the difference between images

of a cat and a dog and generative model could generate new images of animals that look like real animals.

1.a,b,c

2.a,b,d