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# PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR

Even Semester Session 2021-22 Pre-University

B. Tech II Semester

## Artificial Intelligence for Engineers (KMC-201)

| CO Number | Course Outcome |
|---|---|
| CO1 | Underline [L1. Knowledge] the evolution, emerging technologies and ethical concerns in Artificial Intelligence. |
| CO2 | Discuss [L2. Comprehension] Data and Algorithms, basics of AI, NLP and ANNs. |
| CO3 | Illustrate [L3. Application] the various applications of AI. |

Time: 3 Hrs. M. M. 100

### Section A

**Q1. Attempt all questions:** (2X10 =20 Marks)

| | | |
|---|---|---|
| a) | Define Artificial Intelligence. | CO1 |
| b) | List the ethical concerns in the field of AI. | CO1 |
| c) | Define data visualization and its types. | CO2 |
| d) | Explain recommender system and its benefits. | CO2 |
| e) | Define NLU and NLG. | CO1 |
| f) | List four applications that use speech recognition. | CO1 |
| g) | Compare CNN and RNN. | CO2 |
| h) | List two advantages and disadvantages of deep learning. | CO1 |
| i) | Define Pixel. | CO1 |
| j) | List any two applications that use computer vision. | CO1 |

### Section B

**Q2. Attempt all questions.** (10X3 = 30 Marks)

| | | |
|---|---|---|
| a | Explain the difference in artificial intelligent systems and traditional systems. Explain the skills required to be an AI Engineer. | CO2 |
| b - i) | Illustrate the data clustering with its applications. Also explain any two methods for data clustering. | CO2 |
| | **OR** | |
| ii) | Illustrate machine translation and its application for differently-abled persons. List the limitations of machine translation. | CO2 |
| c - i) | Explain the Universal Approximation Theorem. | CO2 |
| | **OR** | |
| ii) | Explain the need and use of Image and Face recognition. Discuss the advantages and challenges of face recognition system. | CO2 |

### Section C

**Q3. Attempt all questions:** (10X5 = 50 Marks)

| | | |
|---|---|---|
| a i) | Explain the four categories under which AI is classified on the basis of functionality with example. | CO2 |
| | **OR** | |
| ii) | Discuss classification of data with its types. Compare Regression and Classification. | CO2 |
| b i) | Discuss Natural Language Processing and the steps for Natural Language Processing. | CO2 |
| | **OR** | |
| ii) | Explain Generative Adversarial Network with its applications. | CO2 |
| c i) | Illustrate Robots and Robotics along with the components used in Robots and applications of Robotics. | CO3 |
| | **OR** | |
| ii) | Illustrate any four emerging technologies in the field of AI. | CO3 |
| d i) | Discuss different stages in Data Processing. | CO2 |
| | **OR** | |
| ii) | Explain chatbot and its working. List the importance of chatbot. | CO2 |
| e i) | Discuss Deep learning. Explain its working and applications. | CO2 |
| | **OR** | |
| ii) | Explain<br>a) Object Recognition and its process b) Speech Recognition and its types | CO2 |

# B TECH
# (SEM II) THEORY EXAMINATION 2021-22
# AI FOR ENGINEERING

***Total Marks: 100***

***Time: 3 Hours***

**Note:** 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

**1. Attempt *all* questions in brief.**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | Define Artificial Intelligence and discuss its role. | 2 | 1 |
| b. | Explain the different domains of AI. | 2 | 1 |
| c. | Define data and its importance. | 2 | 2 |
| d. | Identify the challenges faced by speech recognition system. | 2 | 2 |
| e. | How NLP can be beneficial in real life situation? | 2 | 3 |
| f. | What are the limitations of machine translation? | 2 | 3 |
| g. | Explain how deep learning is different from machine learning. | 2 | 4 |
| h. | What is the meaning of learning in artificial neural network? | 2 | 4 |
| i. | What is the difference between speech recognition and voice recognition? | 2 | 5 |
| j. | Define computer vision. | 2 | 5 |

## SECTION B

**2. Attempt any *three* of the following:**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | How artificial intelligence systems are different from traditional system? | 10 | 1 |
| b. | Discuss the importance of Data Visualization. List out various tools for Data Visualizations in detail. | 10 | 2 |
| c. | Compare regression, classification and clustering with example. | 10 | 3 |
| d. | *Explain the working of Convolutional Neural Network.* | 10 | 4 |
| e. | *Describe the working of face recognition.* | 10 | 5 |

## SECTION C

**3. Attempt any *one* part of the following:**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | There are few ethical concerns related to AI. Discuss them is detail. | 10 | 1 |
| b. | Explain various skills required to become an AI Engineer. | 10 | 1 |

**4. Attempt any *one* part of the following:**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | Explain step by step working of speech recognition system. | 10 | 2 |
| b. | What are the different stages of Data Processing? | 10 | 2 |

**5. Attempt any *one* part of the following:**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | Draw a neat and clean diagram to represent the working of Chatbot. Differentiate between Chatbot and Virtual Assistant. | 10 | 3 |
| b. | Explain Natural Language Understanding and Natural Language Generation. | 10 | 3 |

**6. Attempt any *one* part of the following:**

| Q no | Question | Marks | CO |
|---|---|---|---|
| a. | Compare biological and artificial neural network. What is Universal Approximation Theorem? | 10 | 4 |
| b. | Explain the working of Generative Adversarial Network. | 10 | 4 |

**7. Attempt any *one* part of the following:**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | Explain the difference between Robotics and Artificial Intelligence. | 10 | 5 |
| b. | How Image Recognition and Object Identification are used in Tesla, an autonomous Car? | 10 | 5 |