**Section 1: AI Concept & Basics (Q1–Q20)**

1. **What is Artificial Intelligence (AI)?**  
   Computer systems or machines that can think, decide, and learn like humans.
2. **Difference between AI and traditional programming?**  
   Traditional programming uses manually coded rules; AI learns rules from data.
3. **Main goal of AI?**  
   Problem-solving, decision-making, and automation.
4. **Main types of AI?**  
   Narrow AI, General AI, and Super AI.
5. **What is Narrow AI?**  
   AI designed for a specific task (e.g., chatbot, spam filter).
6. **What is General AI?**  
   AI that can solve any problem and think like a human (does not exist yet).
7. **What is Super AI?**  
   AI that surpasses human intelligence (future possibility).
8. **Main fields of AI?**  
   Machine Learning, Deep Learning, NLP, Computer Vision, Robotics.
9. **What is Computer Vision?**  
   AI that understands images/videos.
10. **What is Natural Language Processing (NLP)?**  
    AI that understands and processes human language.
11. **Difference between AI and automation?**  
    Automation is rule-based; AI is intelligence-based.
12. **What is training data in AI?**  
    Dataset used to train an AI model.
13. **What is a model in AI?**  
    Mathematical representation of learned patterns from data.
14. **What is AI model deployment?**  
    Putting a trained model into production for use.
15. **What is bias in AI?**  
    Unfair tendency in data or algorithms.
16. **How to reduce bias?**  
    Use balanced data and fair algorithms.
17. **What is AI ethics?**  
    Principles for responsible AI use.
18. **What is Explainable AI?**  
    AI that can explain how it made its decisions.
19. **Difference between accuracy and precision?**  
    Accuracy = percentage of correct predictions; Precision = correct positive predictions ratio.
20. **Future challenges of AI?**  
    Data privacy, bias, explainability, and job automation risks.

**Section 2: Machine Learning Basics (Q21–Q40)**

1. **What is Machine Learning (ML)?**  
   AI subfield that learns from data to make predictions.
2. **Main types of ML?**  
   Supervised, Unsupervised, Reinforcement Learning.
3. **What is Supervised Learning?**  
   Learning from labeled data.
4. **What is Unsupervised Learning?**  
   Learning patterns from unlabeled data.
5. **What is Reinforcement Learning?**  
   Learning from rewards/feedback.
6. **What is a classification task?**  
   Categorizing data into classes.
7. **What is a regression task?**  
   Predicting continuous values (e.g., price prediction).
8. **What is clustering?**  
   Grouping similar data points.
9. **What is overfitting?**  
   Model fits training data too well, fails on new data.
10. **What is underfitting?**  
    Model fails to capture data patterns.
11. **How to prevent overfitting?**  
    Regularization, cross-validation, dropout, etc.
12. **What is feature engineering?**  
    Improving model performance by refining data features.
13. **What is feature scaling?**  
    Making data ranges uniform (normalization, standardization).
14. **What is training and testing data?**  
    Training = learn patterns; Testing = evaluate model.
15. **What is cross-validation?**  
    Splitting data into multiple sets for testing.
16. **What is a confusion matrix?**  
    Table showing classification performance.
17. **What are precision, recall, and F1-score?**  
    Metrics for classification accuracy.
18. **What is ROC curve?**  
    Graphical representation of model performance.
19. **What is a hyperparameter?**  
    Parameter set before training (e.g., learning rate).
20. **What is hyperparameter tuning?**  
    Finding optimal hyperparameter values.

**Section 3: Deep Learning (Q41–Q60)**

1. **What is Deep Learning?**  
   ML subset using multi-layer neural networks.
2. **What is a neural network?**  
   Model inspired by the brain’s neurons.
3. **What is a neuron (perceptron)?**  
   Small unit processing input to output.
4. **What is an activation function?**  
   Decides output of a neuron mathematically.
5. **Popular activation functions?**  
   ReLU, Sigmoid, Tanh, Softmax.
6. **What is a feedforward neural network?**  
   Data flows in one direction.
7. **What is backpropagation?**  
   Algorithm to update weights using errors.
8. **What is a CNN (Convolutional Neural Network)?**  
   Neural network for image processing.
9. **What is an RNN (Recurrent Neural Network)?**  
   Neural network for sequence data.
10. **What is an LSTM (Long Short-Term Memory)?**  
    Advanced RNN for long-term dependencies.
11. **What is batch size?**  
    Number of samples per training iteration.
12. **What is an epoch?**  
    One complete pass of training data.
13. **What is gradient descent?**  
    Optimization algorithm to minimize errors.
14. **What is learning rate?**  
    Step size in gradient descent.
15. **What is dropout?**  
    Disabling random neurons to prevent overfitting.
16. **What is transfer learning?**  
    Using pre-trained models for new tasks.
17. **What is a GAN (Generative Adversarial Network)?**  
    AI model that generates new data.
18. **What is an autoencoder?**  
    Neural network for data compression and reconstruction.
19. **Hardware requirements for deep learning?**  
    GPU/TPU, high RAM, fast storage.
20. **What is dataset augmentation?**  
    Transforming data to create new samples.

**Section 4: NLP (Natural Language Processing) (Q61–Q80)**

1. **What is NLP?**  
   AI that understands and processes human language.
2. **Main NLP tasks?**  
   Tokenization, POS tagging, NER, sentiment analysis.
3. **What is tokenization?**  
   Splitting text into words or sentences.
4. **What is stemming?**  
   Reducing words to root form.
5. **What is lemmatization?**  
   Reducing words to dictionary form.
6. **What are stop words?**  
   Common words removed in text processing.
7. **What is Bag of Words (BoW)?**  
   Representing text as word frequency.
8. **What is TF-IDF?**  
   Measuring word importance in a document.
9. **What is word embedding?**  
   Representing words as numeric vectors.
10. **Popular word embeddings?**  
    Word2Vec, GloVe, FastText.
11. **What is a language model?**  
    Predicts word sequences.
12. **What is an n-gram model?**  
    Sequence of n continuous words.
13. **What is sentiment analysis?**  
    Detects sentiment (positive/negative) in text.
14. **What is NER (Named Entity Recognition)?**  
    Identifies entities like names, places, dates.
15. **What is POS tagging?**  
    Assigns part of speech to words.
16. **What is machine translation?**  
    Translates from one language to another.
17. **What is speech-to-text?**  
    Converts speech into text.
18. **What is text-to-speech?**  
    Converts text into speech.
19. **How is NLP used in chatbots?**  
    Understands queries and generates responses.
20. **What is a large language model (LLM)?**  
    NLP model trained on massive datasets (e.g., GPT, BERT).

**Section 5: AI Tools, Frameworks & Applications (Q81–Q100)**

1. **Popular AI frameworks?**  
   TensorFlow, PyTorch, Keras, Scikit-learn.
2. **What is TensorFlow?**  
   Open-source machine learning library.
3. **What is PyTorch?**  
   Flexible deep learning framework.
4. **What is Keras?**  
   High-level API for deep learning.
5. **What is Scikit-learn?**  
   Python library for machine learning.
6. **What is OpenCV?**  
   Computer vision library.
7. **What is Hugging Face Transformers?**  
   NLP pre-trained model library.
8. **What is Google AI Platform?**  
   Cloud platform for AI model development and deployment.
9. **What is AWS SageMaker?**  
   Amazon’s ML training and deployment service.
10. **What is Azure Machine Learning?**  
    Microsoft’s AI model development service.
11. **Example of AI in healthcare?**  
    Disease detection, medical imaging.
12. **Example of AI in finance?**  
    Fraud detection, credit scoring.
13. **Example of AI in retail?**  
    Recommendation systems, inventory management.
14. **Example of AI in manufacturing?**  
    Predictive maintenance, quality control.
15. **Example of AI in transportation?**  
    Self-driving cars, traffic prediction.
16. **Example of AI in education?**  
    Personalized learning, automated grading.
17. **Why is AI model monitoring important?**  
    Detects performance degradation.
18. **What is MLOps?**  
    Combining ML development and operations.
19. **What is Edge AI?**  
    Running AI computations on devices instead of cloud.
20. **Future AI trends?**  
    Explainable AI, federated learning, AI regulation, human-AI collaboration.