Chapter 3 MCQ Questions

1. TensorFlow was created by which company?
    a. Microsoft
    b. Apple
    c. Google
    d. Amazon
2. TensorFlow is primarily used for what type of applications?
    a. Web development
    b. Database management
    c. Deep learning
    d. Operating systems
3. What type of input does TensorFlow take?
    a. Scalars
    b. Vectors
    c. Tensors
    d. Matrices
4. What are tensors?
    a. 1-dimensional arrays
    b. 2-dimensional arrays
    c. Multi-dimensional arrays
    d. Single values
5. TensorFlow is based on what?
    a. Object-oriented programming
    b. Relational databases
    c. Data flow graphs
    d. Web technologies
6. What is a benefit of TensorFlow's graphical execution mechanism?
    a. It is simpler to write code.
    b. It is easier to debug.
    c. It is simpler to run code in a distributed fashion.
    d. It is faster on single CPUs.
7. What are the three separate components that characterize the TensorFlow process?
    a. Input, processing, output
    b. Data preprocessing, model construction, model training
    c. Compilation, execution, debugging
    d. Frontend, backend, middleware
8. In what form does TensorFlow feed data?
    a. Lists
    b. Arrays
    c. Tensors
    d. DataFrames
9. What are the two different manners in which TensorFlow runs?
    a. Batch processing and real-time processing
    b. Online and offline processing
    c. Eager execution and through the creation of a computational graph
    d. CPU and GPU processing

10. Where does training typically occur in the TensorFlow architecture?
    a. Mobile phones
    b. Embedded systems
    c. Desktop or data center
    d. Web browsers
11. What hardware accelerates the TensorFlow process?
    a. CPU
    b. GPU
    c. Keyboard
    d. Mouse
12. On what platforms can trained TensorFlow models execute?
    a. Desktop
    b. Mobile
    c. Cloud
    d. All of the above
13. What is TensorBoard?
    a. A programming language
    b. A visualization tool
    c. A type of tensor
    d. A hardware component
14. What does TensorBoard enable users to do?
    a. Write code
    b. Observe the training process graphically
    c. Edit data
    d. Control hardware
15. Keras is a what?
    a. Low-level API
    b. High-level API
    c. Hardware component
    d. Operating system
16. What is the purpose of Keras?
    a. To replace TensorFlow
    b. To provide a reduced API aimed at model building
    c. To manage hardware
    d. To visualize data
17. What is a key inspiration behind the Keras API?
    a. To maximize computational speed
    b. To convert from idea to end result quickly
    c. To create complex algorithms
    d. To handle large datasets
18. TensorFlow can be used to build models for which tasks?
    a. Natural language processing
    b. Image recognition
    c. Handwriting recognition
    d. All of the above

19. What is a major advantage of TensorFlow?
    a. It only runs on CPUs.
    b. It has limited scalability.
    c. It can run low-level operations on numerous acceleration platforms.
    d. It requires manual computation of gradients.
20. What does TensorFlow offer as an alternative to the dataflow paradigm?
    a. Low-level API
    b. Eager execution
    c. Batch processing
    d. Cloud deployment
21. TensorFlow simplifies model development with which API?
    a. Low-level API
    b. Keras API
    c. C++ API
    d. Java API
22. What is TensorFlow Extended (TFX) used for?
    a. Mobile development
    b. Web development
    c. Production-ready ML pipelines
    d. Game development
23. What does TensorFlow Lite optimize models for?
    a. Cloud platforms
    b. Mobile devices
    c. Web browsers
    d. Desktop computers
24. TensorFlow.js enables model deployment using what language?
    a. Python
    b. Java
    c. JavaScript
    d. C++
25. Keras is a high-level API of which framework?
    a. PyTorch
    b. Scikit-learn
    c. TensorFlow
    d. NumPy
26. What does Keras offer?
    a. A low-level interface
    b. An intuitive interface for machine learning workflows
    c. Hardware acceleration
    d. Database management
27. What is a key feature of Keras?
    a. Limited scalability
    b. Simple and modular design
    c. Only runs on CPUs
    d. Requires complex coding

28. Keras runs on which hardware?
    a. CPUs
    b. GPUs
    c. TPUs
    d. All of the above
29. What does Keras offer a large set of?
    a. Hardware drivers
    b. Built-in layers, loss functions, optimizers, and activation functions
    c. Database connections
    d. Operating systems
30. Which API does Keras support for simple layer stacking?
    a. Functional API
    b. Model Subclassing
    c. Sequential API
    d. Callback API
31. What are the basic building blocks of Keras models?
    a. Data and algorithms
    b. Layers and models
    c. Hardware and software
    d. Inputs and outputs
32. What are layers in Keras?
    a. Data structures
    b. Hardware components
    c. Building blocks that do input-to-output transformations
    d. Optimization algorithms
33. Which of the following is an example of a Core Layer in Keras?
    a. Convolution Layer
    b. Recurrent Layer
    c. Dense Layer
    d. Pooling Layer
34. What type of data are Convolution Layers used for?
    a. Text data
    b. Sequential data
    c. Image processing
    d. Time series data
35. What is a model in Keras?
    a. A single layer
    b. A set of layers used to specify a deep learning architecture
    c. A data preprocessing technique
    d. An optimization algorithm
36. Which Keras model type is a basic stack of layers?
    a. Functional API
    b. Sequential Model
    c. Model Subclassing
    d. Callback Model

37. What does the fit() method do in Keras?
    a. Creates output predictions
    b. Calculates loss and metrics
    c. Trains the model
    d. Preprocesses data
38. What do Keras's core modules support?
    a. Hardware configuration
    b. Model performance improvement
    c. Data storage
    d. Network communication
39. What is an example of a loss function in Keras?
    a. ReLU
    b. Adam
    c. mean_squared_error
    d. L1
40. What is an example of an optimizer algorithm in Keras?
    a. Softmax
    b. SGD
    c. Sigmoid
    d. L2
41. What is the purpose of activation functions in neural networks?
    a. To define the model architecture
    b. To decide how neurons fire
    c. To calculate loss
    d. To prevent overfitting
42. What do regularizers like L1 and L2 do?
    a. Speed up training
    b. Avoid overfitting
    c. Increase model complexity
    d. Simplify the model
43. What do callbacks automate?
    a. Hardware setup
    b. Data preprocessing
    c. Fundamental operations like early stopping
    d. Model deployment
44. What does distributed training allow models to do?
    a. Run on a single CPU
    b. Run across multiple GPUs or TPUs
    c. Run in a web browser
    d. Run on mobile devices
45. What does step fusing improve?
    a. Data loading speed
    b. Device usage
    c. Model accuracy
    d. Code readability

46. TensorFlow is a popular what?
    a. Operating system
    b. Web browser
    c. Open-source framework
    d. Database system
47. What does installing TensorFlow enable you to do?
    a. Design computer hardware
    b. Tap into its powers for AI projects
    c. Create spreadsheets
    d. Manage networks
48. What is pip?
    a. A programming language
    b. A package installer for Python
    c. A text editor
    d. A version control system
49. What is the purpose of a virtual environment?
    a. To speed up the computer
    b. To manage dependencies cleanly
    c. To create user interfaces
    d. To write code
50. What command is used to verify the TensorFlow installation?
    a. `pip --version`
    b. `python --version`
    c. `import tensorflow as tf`
    d. `install tensorflow`