Started on	Tuesday, 11 November 2025, 11:57 AM
State	Finished
Completed on	Tuesday, 11 November 2025, 12:04 PM
Time taken	7 mins 47 secs
Marks	17.00/20.00
Grade	**85.00** out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

"Sparse Mixture-of-Experts" (MoE) architectures improve efficiency because:

a. Every token activates all experts
b. They quantize weights to 4-bit precision
c. They rely on RNN recurrence
d. Only a subset of experts handle each token, reducing compute per forward pass

Question 2

Complete

Mark 1.00 out of 1.00

A key difference between a static LLM and an Agentic AI pipeline is that the latter:

a. Uses smaller models for inference.
b. Requires manual supervision for every output.
c. Cannot access external APIs.
d. Incorporates planning, reflection, and tool-use modules enabling autonomous goal pursuit.

Question 3

Complete

Mark 1.00 out of 1.00

A segmentation fault (SIGSEGV) is raised when:

a. A kernel panic occurs
b. The process exceeds CPU quota
c. A process accesses an unmapped or protected memory address
d. Stack grows beyond kernel limit

Question 4

Complete

Mark 1.00 out of 1.00

Claude 3 models differ architecturally from GPT models primarily in:

- a. Using recurrent attention.
- b. Relying solely on supervised learning.
- c. Removing the transformer backbone.
- d. Employing Constitutional AI training and retrieval-augmented fine-tuning.

Question 5

Complete

Mark 1.00 out of 1.00

How does reflection improve reliability in self-correcting agentic systems?

- a. By prompting the model to evaluate its own output and re-plan when errors are detected.
- b. By retraining the base model after each task.
- c. By running parallel copies of the same model.
- d. By executing redundancy checks at hardware level.

Question 6

Complete

Mark 1.00 out of 1.00

In a Multi-Component Pipeline, the Executor module differs from the Planner because it:

- a. Stores outcomes persistently.
- b. Decomposes goals.
- c. Performs meta-reflection.
- d. Actually performs API/tool actions specified by the Planner.

Question 7

Complete

Mark 1.00 out of 1.00

In GitHub Copilot's context engine, "ghost text" refers to:

- a. AI-generated commit messages.
- b. Pre-commit patch suggestions stored in Git hooks.
- c. Inline code completions displayed semi-transparent before acceptance.
- d. Autogenerated comments for PRs.

Question 8

Complete

Mark 0.00 out of 1.00

In Linux, which kernel structure maintains a process's open-file descriptors?

a. mm_struct
b. task_struct
c. files_struct
d. fs_struct

Question 9

Complete

Mark 1.00 out of 1.00

Rotary positional embeddings (RoPE) improve transformer efficiency by:

a. Reducing softmax complexity from $O(n^2)$ to $O(n)$
b. Encoding relative position through rotation in complex space, enabling extrapolation beyond training context
c. Concatenating sinusoidal encodings
d. Adding learned position vectors to token embeddings

Question 10

Complete

Mark 1.00 out of 1.00

The 'scaling laws' for LLMs indicate:

a. Loss decreases predictably with model, data, and compute following power-law relations
b. Larger context windows reduce perplexity exponentially
c. Model size has negligible impact beyond 1B parameters
d. Accuracy grows logarithmically with dataset size

Question 11

Complete

Mark 1.00 out of 1.00

What API design principle allows OpenAI's function_calling feature to work seamlessly with external tools?

a. JSON schema-based argument validation and structured outputs.
b. Inline bash execution.
c. Text concatenation of tool responses.
d. Socket-based manual parsing.

Question 12

Complete

Mark 1.00 out of 1.00

What happens when a process executes exec() after a successful fork()?

a. The kernel spawns a new thread
b. The parent process becomes orphaned
c. Both parent and child continue concurrently
d. The child process is replaced by a new program, retaining PID

Question 13

Complete

Mark 1.00 out of 1.00

What role does “Memory Abstraction” play in Agentic AI systems?

a. Handles tokenization.
b. Acts as a cache for recent LLM responses only.
c. Stores system prompts only.
d. Integrates short-term and long-term context to maintain continuity across sessions.

Question 14

Complete

Mark 1.00 out of 1.00

When a Linux process is in a D (uninterruptible sleep) state, which of the following is true?

a. It is waiting for I/O and cannot be interrupted until it completes
b. It is swapped out of memory
c. It is a zombie process
d. It can be killed with kill -9

Question 15

Complete

Mark 0.00 out of 1.00

Which Linux command combination best isolates CPU usage per thread for profiling a multithreaded program?

a. ps -L p
b. pidstat -t 1
c. All of the above
d. top -H

Question 16

Complete

Mark 1.00 out of 1.00

Which optimizer is most likely to produce stable training when using large batch sizes?

- a. SGD with momentum
- b. AdamW
- c. RMSProp
- d. Adagrad

Question 17

Complete

Mark 1.00 out of 1.00

Which property differentiates OpenAI's GPT-4o from previous GPT-4 variants?

- a. It uses separate encoders for vision and text.
- b. It cannot perform streaming inference.
- c. It has no context memory.
- d. It is multimodal (text + image + audio) in a single unified model.

Question 18

Complete

Mark 0.00 out of 1.00

Which scheduling pattern allows multiple specialized agents to cooperate efficiently under an orchestrator?

- a. Round-robin message passing.
- b. Randomized routing.
- c. Synchronous blocking RPC.
- d. Hierarchical task delegation with shared blackboard memory.

Question 19

Complete

Mark 1.00 out of 1.00

Why do instruction-tuned LLMs like GPT-4 and Claude 3 outperform base models on dialogue?

- a. They add reinforcement without labeled data
- b. They use more layers
- c. They're trained on purely code data
- d. They undergo supervised fine-tuning (SFT) and RLHF on task-formatted prompts

Question 20

Complete

Mark 1.00 out of 1.00

Why does Copilot sometimes suggest insecure code patterns (e.g., eval(input()))?

a. Training data contained insecure examples from public repos.
b. Code is executed in sandbox mode.
c. Model has rule-based filtering only.
d. Temperature = 0 causes hallucinations.