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NVIDIA NCA-AIIO Exam Syllabus Topics:

Topic	Details
Topic 1	<ul style="list-style-type: none">AI Operations: This section of the exam measures the skills of data center operators and encompasses the management of AI environments. It requires describing essentials for AI data center management, monitoring, and cluster orchestration. Key topics include articulating measures for monitoring GPUs, understanding job scheduling, and identifying considerations for virtualizing accelerated infrastructure. The operational knowledge also covers tools for orchestration and the principles of MLOps.

Topic 2	<ul style="list-style-type: none"> Essential AI knowledge: Exam Weight: This section of the exam measures the skills of IT professionals and covers foundational AI concepts. It includes understanding the NVIDIA software stack, differentiating between AI, machine learning, and deep learning, and comparing training versus inference. Key topics also involve explaining the factors behind AI's rapid adoption, identifying major AI use cases across industries, and describing the purpose of various NVIDIA solutions. The section requires knowledge of the software components in the AI development lifecycle and an ability to contrast GPU and CPU architectures.
Topic 3	<ul style="list-style-type: none"> AI Infrastructure: This section of the exam measures the skills of IT professionals and focuses on the physical and architectural components needed for AI. It involves understanding the process of extracting insights from large datasets through data mining and visualization. Candidates must be able to compare models using statistical metrics and identify data trends. The infrastructure knowledge extends to data center platforms, energy-efficient computing, networking for AI, and the role of technologies like NVIDIA DPUs in transforming data centers.

NVIDIA-Certified Associate AI Infrastructure and Operations Sample Questions (Q20-Q25):

NEW QUESTION # 20

Your AI cluster is managed using Kubernetes with NVIDIA GPUs. Due to a sudden influx of jobs, your cluster experiences resource overcommitment, where more jobs are scheduled than the available GPU resources can handle. Which strategy would most effectively manage this situation to maintain cluster stability?

- A. Schedule Jobs in a Round-Robin Fashion Across Nodes
- B. Increase the Maximum Number of Pods per Node
- C. Implement Resource Quotas and LimitRanges in Kubernetes
- D. Use Kubernetes Horizontal Pod Autoscaler Based on Memory Usage

Answer: C

Explanation:

Implementing Resource Quotas and LimitRanges in Kubernetes is the most effective strategy to manage resource overcommitment and maintain cluster stability in an NVIDIA GPU cluster. Resource Quotas restrict the total amount of resources (e.g., GPU, CPU, memory) that can be consumed by namespaces, preventing over-scheduling across the cluster. LimitRanges enforce minimum and maximum resource usage per pod, ensuring that individual jobs do not exceed available GPU resources. This approach provides fine-grained control and prevents instability caused by resource exhaustion.

Increasing the maximum number of pods per node (A) could worsen overcommitment by allowing more jobs to schedule without resource checks. Round-robin scheduling (B) lacks resource awareness and may lead to uneven GPU utilization. Using Horizontal Pod Autoscaler based on memory usage (C) focuses on scaling pods, not managing GPU-specific overcommitment. NVIDIA's "DeepOps" and "AI Infrastructure and Operations Fundamentals" documentation recommend Resource Quotas and LimitRanges for stable GPU cluster management in Kubernetes.

NEW QUESTION # 21

You are responsible for managing an AI-driven fraud detection system that processes transactions in real-time. The system is hosted on a hybrid cloud infrastructure, utilizing both on-premises and cloud-based GPU clusters. Recently, the system has been missing fraud detection alerts due to delays in processing data from on-premises servers to the cloud, causing significant financial risk to the organization. What is the most effective way to reduce latency and ensure timely fraud detection across the hybrid cloud environment?

- A. Migrating the entire fraud detection workload to on-premises servers
- B. Increasing the number of on-premises GPU clusters to handle the workload locally
- C. Implementing a low-latency, high-throughput direct connection between the on-premises data center and the cloud
- D. Switching to a single-cloud provider to centralize all processing in the cloud

Answer: C

Explanation:

Implementing a low-latency, high-throughput direct connection (e.g., InfiniBand, Direct Connect) between on-premises and cloud GPU clusters reduces data transfer delays, ensuring timely fraud detection in a hybrid setup. Option A (more GPUs) doesn't address

connectivity. Option C (all on-premises) limits scalability.

Option D (single cloud) sacrifices hybrid benefits. NVIDIA's hybrid cloud does support optimized networking.

NEW QUESTION # 22

A healthcare company is training a large convolutional neural network (CNN) for medical image analysis.

The dataset is enormous, and training is taking longer than expected. The team needs to speed up the training process by distributing the workload across multiple GPUs and nodes. Which of the following NVIDIA solutions will help them achieve optimal performance?

- A. NVIDIA DeepStream SDK
- B. NVIDIA TensorRT
- C. NVIDIA cuDNN
- **D. NVIDIA NCCL and NVIDIA DALI**

Answer: D

Explanation:

Training a large CNN on an enormous dataset across multiple GPUs and nodes requires efficient communication and data handling. NVIDIA NCCL (NVIDIA Collective Communications Library) optimizes inter-GPU and inter-node communication, enabling scalable data and model parallelism, while NVIDIA DALI (Data Loading Library) accelerates data loading and preprocessing on GPUs, reducing I/O bottlenecks.

Together, they speed up training by ensuring GPUs are fully utilized, a strategy central to NVIDIA's DGX systems and multi-node AI workloads.

cuDNN (Option A) accelerates CNN operations but focuses on single-GPU performance, not multi-node distribution. DeepStream SDK (Option C) is tailored for real-time video analytics, not training. TensorRT (Option D) optimizes inference, not training. NCCL and DALI are the optimal NVIDIA solutions for this distributed training scenario.

NEW QUESTION # 23

When training a neural network, what is the most common pattern of storage access?

- **A. Sequential read**
- B. Random write
- C. Sequential write

Answer: A

Explanation:

Training neural networks typically involves streaming large datasets from storage in a sequential read pattern.

This ordered access maximizes throughput and minimizes seek overhead, as training pipelines ingest data in batches for processing across epochs. Writes (e.g., model checkpoints) are less frequent and typically sequential, while random writes are rare, making sequential reads the dominant pattern. (Note: The document incorrectly lists C as the answer; B aligns with NVIDIA's documentation.) (Reference: NVIDIA AI Infrastructure and Operations Study Guide, Section on Storage Access Patterns)

NEW QUESTION # 24

You are managing an AI cluster where multiple jobs with varying resource demands are scheduled. Some jobs require exclusive GPU access, while others can share GPUs. Which of the following job scheduling strategies would best optimize GPU resource utilization across the cluster?

- A. Use FIFO (First In, First Out) Scheduling
- B. Increase the default pod resource requests in Kubernetes
- **C. Enable GPU sharing and use NVIDIA GPU Operator with Kubernetes**
- D. Schedule all jobs with dedicated GPU resources

Answer: C

Explanation:

Enabling GPU sharing and using NVIDIA GPU Operator with Kubernetes (C) optimizes resource utilization by allowing flexible allocation of GPUs based on job requirements. The GPU Operator supports Multi- Instance GPU (MIG) mode on NVIDIA GPUs

