Activation functions googlenet Assignment

1. **Explain the architecture of GoogleNet (Inception) and its significance in the field of deep learning**

GoogleNet (Inception) uses a unique architecture with inception modules that apply different convolutional filter sizes in parallel. It reduces computational cost while improving performance, making it efficient for large-scale tasks.

2. **Discuss the motivation behind the inception modules in GoogleNet. How do they address the limitations of previous architectures**

Inception modules allow for multi-scale feature extraction, overcoming limitations like fixed filter sizes in traditional networks. They enable more efficient use of computational resources and enhance model flexibility.

3. **Explain the concept of transfer learning in deep learning. How does it leverage pre-trained models to improve performance on new tasks or datasets**

Transfer learning involves using a pre-trained model on a similar task to improve performance on a new task, leveraging learned features from large datasets, which speeds up training and reduces the need for large data.

4. **Discuss the different approaches to transfer learning, including feature extraction and fine-tuning. When is each approach suitable, and what are their advantages and limitations**

Feature extraction uses a pre-trained model to extract fixed features, suitable for tasks with limited data. Fine-tuning adjusts the model weights for the new task, useful for more complex problems but requires more data and computation.

5. **Examine the practical applications of transfer learning in various domains, such as computer vision, natural language processing, and healthcare. Provide examples of how transfer learning has been successfully applied in real-world scenarios**

Transfer learning is widely used in computer vision (e.g., image classification), NLP (e.g., BERT for text understanding), and healthcare (e.g., detecting diseases from medical images). It enhances model performance with limited labeled data in these domains.