1. Does the consumer update the offset commit once consume the message

✅ **Yes.**  
In a Kafka cluster, when a **consumer** successfully processes a message,  
it **commits (updates)** its **offset** to Kafka — either **automatically** or **manually**, depending on your configuration.

1. .how to avoid duplicates from producer and from the consumer due to network failures

Retries + idempotence = safe, durable, and duplicate-free messaging

**Solution for permanent failures:**

* Use a **Dead Letter Queue (DLQ)** or persistent storage to retry later

1. Does the number of kafka brokers required for the number of partitions and the number of replication partitions

**3️⃣ Minimum Brokers Required**

1. **Replication Factor = 1**
   * Minimum brokers = 1
   * All partitions on that broker
2. **Replication Factor > 1**
   * Minimum brokers = replication factor
   * Example: replication factor = 3 → need **at least 3 brokers**
3. Can multiple consumers can read from the partition.

Nope.