

**Ex.No.3-Scenario-Based Report Development Utilizing Diverse Prompting Techniques for the the following Prompt Engineering types with examples - Straightforward Prompts - Tabular Format Prompting - Missing Word Prompting - Preceding Question Prompting.**

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**Aim:**

To demonstrate four prompt engineering types (Straightforward, Tabular, Preceding Question, Missing Word) for the chosen use case from **Modulation Techniques for Multimedia Signals**, and evaluate them using **Tabular Format Prompting**.

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**Use Cases (for all Prompt Types):**

1. **Straightforward Prompts** → Useful for quick revision of basic modulation concepts before an exam.
2. **Tabular Format Prompting** → Best for structured comparison of AM, FM, and QPSK techniques in study or engineering tasks.
3. **Preceding Question Prompting** → Helps students understand "why" modulation is necessary and "how" specific techniques (like QPSK/FM) solve real communication problems.
4. **Missing Word Prompting** → Suitable for recall-based practice or fill-in-the-blank style exam questions.

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**1. Straightforward Prompts**

**Prompt 1:** "Define modulation in one sentence." **Response:** Modulation is the process of varying a carrier signal to transmit information efficiently.

**Prompt 2:** "List three modulation techniques used in satellite communication for multimedia signals." **Response:** The three commonly used modulation techniques are Amplitude Modulation (AM), Frequency Modulation (FM), and Quadrature Phase Shift Keying (QPSK).

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**2. Tabular Format Prompting**

**Prompt 1:** "Provide a table comparing AM, FM, and QPSK modulation techniques in terms of signal quality, bandwidth, and application."

**Response:**

Modulation	Signal Quality	Bandwidth Requirement	Application

AM	Poor (noise sensitive)	Low	Voice transmission
FM	Good, less noise	Medium	Radio & TV broadcast
QPSK	High, robust	High	Digital TV, satellite multimedia

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**Prompt 2:** "Create a table showing three advantages and three disadvantages of QPSK modulation in satellite communication." **Response:**

Advantages of QPSK	Disadvantages of QPSK
High spectral efficiency	Requires complex receiver design
Better noise immunity	More prone to phase errors
Suitable for multimedia signals	Needs higher bandwidth than simpler modulations

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### 3. Preceding Question Prompting

**Prompt 1:** "Why is modulation necessary in satellite communication? Explain how QPSK helps in multimedia transmission." **Response:**

- Modulation is necessary to efficiently transmit signals over long distances, minimize interference, and make efficient use of bandwidth.
- QPSK allows transmission of 2 bits per symbol, which increases data rate and ensures reliable multimedia communication.

**Prompt 2:** "How does FM provide better quality compared to AM in satellite communication? Explain with reason." **Response:**

- FM provides better quality because it is less sensitive to amplitude noise and interference compared to AM.
- This makes FM more suitable for audio and video broadcasting over satellites.

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### 4. Missing Word Prompting

**Prompt 1:** "In satellite communication, modulation is used to improve \_\_\_\_."

**Response:** Transmission efficiency.

**Prompt 2:** "QPSK modulation encodes \_\_\_\_ bits per symbol." **Response:** 2 bits per symbol.

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#### Evaluation & Conclusion

Prompt Type	Use Case Scenario	Strengths	Limitations	Result
Straightforward Prompt	Quick revision of definitions before an exam	Simple, quick recall	Too short, lacks details	Best for short answers and memory refresh
Tabular Format Prompt	Comparing modulation techniques in study or engineering work	Structured, easy comparison, exam-friendly	Needs prior knowledge to interpret	Best for detailed comparison of AM, FM, QPSK
Preceding Question Prompt	Understanding "why" and "how" in real communication systems	Encourages reasoning and detailed explanation	Can be lengthy, less concise	Best for conceptual understanding
Missing Word Prompt	Testing student memory during practice/exam	Good for recall and assessment	Very narrow, no deep understanding	Best for quick recall and tests

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**Result:** Thus the Prompts were executed successfully.