

Repeated Questions in Part B of Uploaded Documents

After thoroughly reviewing the **Part B** (descriptive/long answer) questions in the following uploaded documents:

1. **Batch-2-CT2_Answer-Key_Set-D_updated.pdf**
2. **ANS-KEY-Assignment-ADC-UNIT-5.pdf**
3. **Assign_Questions-ADC-UNIT-5.pdf**
4. **Assignment-02-ADC.pdf**

Below is a list of questions that are repeated (i.e., appear in more than one document) in **Part B** sections. For clarity, I mention the question, its variants (if any), and the documents where it appears.

1. Pulse Code Modulation (PCM) Explanation

Variants:

- "Explain the operations of Pulse Code Modulation (PCM) with the help of a block diagram."
- "Explain Pulse Code Modulation System in detail."
- "Elaborate the working of Pulse Code Modulation (PCM) transmitter and Receiver with neat block diagram. Also derive an expression of Signal to Quantization Noise Ratio of a PCM System."
- "A continuous signal is bandlimited to 5 kHz. The signal is quantized into 8 levels of a PCM system with the probabilities... Calculate the entropy and the rate of information."
(Calculation-based, but PCM context)

Documents:

- Batch-2-CT2_Answer-Key_Set-D_updated.pdf (Q13.a.i)
- Assignment-02-ADC.pdf (Q2, Q8, Q10)
- ANS-KEY-Assignment-ADC-UNIT-5.pdf (Q1)
- Assign_Questions-ADC-UNIT-5.pdf (Q1, Q3)

2. Delta Modulation

Variants:

- "With neat diagram, explain the working of Delta modulation."

- "Explain in detail about the Delta Modulation and detection process with its relevant sketch."

Documents:

- Batch-2-CT2_Answer-Key_Set-D_updated.pdf (Q12.b)
- Assignment-02-ADC.pdf (Q11)

3. Matched Filter and Probability of Error

Variants:

- "Derive the expression for the error probability of matched filter."
- "What is a Matched Filter? Explain how a matched filter can maximize SNR for a given transmitted symbol. Derive the Probability of error for Matched Filter."

Documents:

- Batch-2-CT2_Answer-Key_Set-D_updated.pdf (Q15.a)
- Assignment-02-ADC.pdf (Module 03, Q1)

4. Generation and Detection of Binary FSK

Variants:

- "Describe the generation and detection of binary FSK signal with necessary diagram and equation."
- "Derive the Probability error of FSK and also explain the generation and detection of binary FSK."

Documents:

- Batch-2-CT2_Answer-Key_Set-D_updated.pdf (Q14.b)
- Assignment-02-ADC.pdf (Module 04, Q2)

5. QPSK and Signal Space Diagram

Variants:

- "Draw the waveforms for a binary sequence 0110100 modulated under QPSK."
- "Discuss about generation, signal space diagram of QPSK."
- "Write a neat diagram, explain the generation and detection of 4π QPSK scheme and also obtain an expression for the error probability of QPSK."

Documents:

- Batch-2-CT2_Answer-Key_Set-D_updated.pdf (Q13.b)

- Assignment-02-ADC.pdf (Module 04, Q1, Q4)

6. Information Rate/Entropy Calculation for a Quantized PCM Signal

Variants:

- "A continuous signal is bandlimited to 5 kHz. The signal is quantized into 8 levels of a PCM system with the probabilities... Calculate the entropy and the rate of information."
- "A continuous signal is band limited to 5kHz. The signal is quantized in 8 levels of a PCM system with the probabilities... Calculate the rate of information."

Documents:

- ANS-KEY-Assignment-ADC-UNIT-5.pdf (Q1)
- Assign_Questions-ADC-UNIT-5.pdf (Q1)
- Assignment-02-ADC.pdf (Q7)

Summary Table

Repeated Question Topic	Documents Found In
Pulse Code Modulation (PCM)	1, 2, 3, 4
Delta Modulation	1, 4
Matched Filter & Error Probability	1, 4
Binary FSK Generation & Detection	1, 4
QPSK & Signal Space Diagram	1, 4
PCM Entropy/Information Rate	2, 3, 4

Conclusion

Many Part B questions are repeated across the documents, especially those on PCM, Delta Modulation, Matched Filters, FSK, QPSK, and entropy/information rate calculations for PCM signals.

This suggests these are core topics in Analog and Digital Communication assessments.

If you need a more detailed mapping (e.g., exact question numbers and page references), please specify!

can you list the repeated questions in part b

Here is the list of repeated questions within **Part B** of the uploaded document (Batch-2-CT2_Answer-Key_Set-D_updated.pdf) based on the content provided:

Repeated or Closely Related Questions in Part B

1. Pulse Amplitude Modulation (PAM) and Delta Modulation

- Question 12.a: Explain Pulse Amplitude Modulation (PAM) and describe how a PAM signal is generated and demodulated, including waveforms.
- (OR option in 12.a) Explain the working of Delta modulation with a neat diagram. These two modulation techniques are presented as alternatives in the same question slot.

2. Pulse Code Modulation (PCM)

- Question 13.a.i: Explain the operations of Pulse Code Modulation (PCM) with the help of a block diagram (sampling, quantization, encoding, decoding, filtering).
- Question 13.a.ii: Calculate code word length, bit rate, and transmission bandwidth for a PCM system. These parts focus on PCM theory and calculations.

3. QPSK Waveforms

- Question 13.b: Draw the waveforms for a binary sequence modulated under QPSK. This question is about QPSK modulation signal representation.

4. M-ary PSK and M-QAM

- Question 14.a.i: Explain the concept of M-ary PSK transmitter and receiver with diagrams.
- Question 14.a.ii: Explain the difference between M-PSK and M-QAM in terms of constellation diagrams. These two parts cover advanced digital modulation schemes.

5. Binary FSK Generation and Detection

- Question 14.b (OR option): Describe the generation and detection of binary FSK signal with necessary diagrams and equations.

Summary Table of Repeated or Related Topics in Part B

Question No.	Topic	Notes
12.a	Pulse Amplitude Modulation (PAM) / Delta Modulation	Alternative questions on modulation techniques
13.a	Pulse Code Modulation (PCM)	Theory and calculations
13.b	QPSK Waveforms	Signal waveform drawing

Question No.	Topic	Notes
14.a	M-ary PSK and M-QAM	Transmitter/receiver and constellation diagrams
14.b	Binary FSK	Generation and detection

Additional Observations

- The questions in Part B focus heavily on modulation techniques (PAM, Delta, PCM, QPSK, M-ary PSK, FSK).
- Some questions offer alternatives (e.g., PAM or Delta modulation; M-ary PSK or FSK).
- The structure repeats the theme of explaining modulation principles, drawing diagrams, and performing related calculations.

If you want a detailed comparison with other parts or assignments, please specify. But within Part B itself, these are the main repeated or closely related questions/topics.



can you list the repeated questions in part b and mention the question fully

Here is the list of repeated questions fully stated from **Part B** of the uploaded document "Batch-2-CT2_Answer-Key_Set-D_updated.pdf" based on the content provided:

Repeated Questions in Part B (Full Text)

12.a.

Explain Pulse Amplitude Modulation (PAM) and describe how a PAM signal is generated and demodulated, including the necessary waveforms.

(OR)

With neat diagram, explain the working of Delta modulation.

13.a.i.

Explain the operations of Pulse Code Modulation (PCM) with the help of a block diagram.

13.a.ii.

A Television signal with a bandwidth of 4.2 MHz is transmitted using binary PCM. The number of quantization levels is 512. Calculate:

- Code word length
- Final bit rate
- Transmission bandwidth

13.b.

Draw the waveforms for a binary sequence 0110100 modulated under QPSK.

14.a.i.

With neat diagrams, explain the concept of M-ary PSK transmitter and receiver.

14.a.ii.

Explain the difference between M-PSK and M-QAM in terms of constellation diagrams.

14.b.

(OR)

Describe the generation and detection of binary FSK signal with necessary diagram and equation.

Summary of Repeated Core Topics in Part B

- Pulse Amplitude Modulation (PAM) and Delta Modulation are presented as alternatives in Question 12.a.
- Pulse Code Modulation (PCM) theory and calculations are covered in Question 13.a.
- QPSK waveform drawing is asked in Question 13.b.
- M-ary PSK transmitter/receiver and comparison with M-QAM constellation diagrams appear in Question 14.a.
- Binary FSK generation and detection is an alternative question in 14.b.

These questions are structured to test detailed understanding of modulation techniques, their generation, detection, and calculations, making them central repeated themes in Part B.

If you need further details or cross-reference with other parts or assignments, please let me know.

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list the repeated questions in part b and part b in the uploaded documents and mention it with full text

Certainly! Here is a detailed list of **repeated questions** (with full text) found in **Part B** of the main test paper and the assignments you uploaded. The repetition is identified across the following files:

- **Batch-2-CT2_Answer-Key_Set-D_updated.pdf** (Main Test Paper, Part B)
- **Assignment-02-ADC.pdf** (Assignment covering Modules 3, 4, 5)

1. Pulse Code Modulation (PCM)

Test Paper, Part B:

13.a.i.

Explain the operations of Pulse Code Modulation (PCM) with the help of a block diagram.

Assignment-02-ADC.pdf:

2. Explain Pulse Code Modulation System in detail.

8. Elaborate the working of Pulse Code Modulation (PCM) transmitter and Receiver with neat block diagram. Also derive an expression of Signal to Quantization Noise Ratio of a PCM System.

2. Delta Modulation

Test Paper, Part B:

12.a. (OR option)

With neat diagram, explain the working of Delta modulation.

Assignment-02-ADC.pdf:

11. Explain in detail about the Delta Modulation and detection process with its relevant sketch.

3. Probability of Error for Matched Filter

Test Paper, Part C:

15.a.

Derive the expression for the error probability of matched filter.

Assignment-02-ADC.pdf:

1. What is a Matched Filter? Explain how a matched filter can maximize SNR for a given transmitted symbol. Derive the Probability of error for Matched Filter.

4. QPSK Modulation

Test Paper, Part B:

13.b.

Draw the waveforms for a binary sequence 0110100 modulated under QPSK.

Assignment-02-ADC.pdf:

Module – 04, 1. Discuss about generation, signal space diagram of QPSK.

5. Binary FSK Generation and Detection

Test Paper, Part B:

14.b. (OR option)

Describe the generation and detection of binary FSK signal with necessary diagram and equation.

Assignment-02-ADC.pdf:

Module – 04, 2. Derive the Probability error of FSK and also explain the generation and detection of binary FSK.

6. M-ary PSK and M-QAM

Test Paper, Part B:

14.a.i.

With neat diagrams, explain the concept of M-ary PSK transmitter and receiver.

14.a.ii.

Explain the difference between M-PSK and M-QAM in terms of constellation diagrams.

Assignment-02-ADC.pdf:

Module – 04, 6. With a neat block diagram, explain the generation, signal space diagram and detection process in QAM.

7. Information Theory and Coding (Shannon-Fano, Huffman)

Assignments:

- Both **ANS-KEY-Assignment-ADC-UNIT-5.pdf** and **Assign_Questions-ADC-UNIT-5.pdf** have questions on Shannon-Fano and Huffman coding, average code length, and efficiency.

Summary Table

Topic/Question	Test Paper Part B/C Question No.	Assignment Question No. (Module)
Explain Pulse Code Modulation (PCM)	13.a.i	2, 8 (Module 3)
Delta Modulation (explanation, diagram)	12.a (OR)	11 (Module 3)
Probability of error for matched filter	15.a (Part C)	1 (Module 3)
QPSK waveform, generation, signal space diagram	13.b	1 (Module 4)
Generation and detection of binary FSK	14.b (OR)	2 (Module 4)
M-ary PSK transmitter/receiver, M-QAM constellation diagrams	14.a.i, 14.a.ii	6 (Module 4)

Topic/Question	Test Paper Part B/C Question No.	Assignment Question No. (Module)
Information theory, entropy, coding (Shannon-Fano, Huffman, efficiency)	-	Assignments in Unit 5 (see above)

Conclusion

The above questions are repeated (either identically or with minor variations) in both Part B of the main test paper and the assignment documents you provided.

If you need the repeated questions highlighted between other sections or a more granular breakdown, let me know!
