PAPER ID-420345

Subject Code: RCS087

Roll No: | | | | | | | | | | | | |

**BTECH**
**(SEM VIII) THEORY EXAMINATION 2021-22**
**DATA COMPRESSION**

***Time: 3 Hours*** ***Total Marks: 70***

**Note:** Attempt all Sections. If you require any missing data, then choose suitably.

**SECTION A**

**1. Attempt *all* questions in brief. 2*7 = 14**

| Q.no | Questions | Marks |
|---|---|---|
| (a) | Discuss Huffman code. IsHuffmancodingisalosslessorlossycompression? | 2 |
| (b) | Differentiate between Fidelity and quality. | 2 |
| (c) | Write down the application of Huffman Coding in Text compression and audio compression. | 2 |
| (d) | Define data compression and compression ratio. | 2 |
| (e) | What do you mean by Binary Code? Compare Binary Code with Huffman Code. | 2 |
| (f) | Define Graphic Interchange Format. | 2 |
| (g) | Differentiate between Uniform and non-uniform quantization. | 2 |

**SECTION B**

**2. Attempt any *three* of the following: 7*3 = 21**

| Q.no | Questions | CO |
|---|---|---|
| (a) | Explain the Tree structured Vector Quantizers with suitable examples. | 7 |
| (b) | Whatdoyoumeanbylosslesscompressionandlossycompression?Compare losslesscompression withlossy compression with suitable example. | 7 |
| (c) | What is Facsimile Encoding? Explain Run-Length Coding technique used earlier for Facsimile.Give a brief comparison of MH, M& MMR and JBIG. | 7 |
| (d) | What do you understand by Adaptive Quantization? Explain the various approaches to adapting the quantizer parameters. | 7 |
| (e) | Explain physical, probability, Markov and composite source model in detail. | 7 |

**SECTION C**

**3. Attempt any *one* part of the following: 7*1 = 7**

| Q.no | Questions | Marks |
|---|---|---|
| (a) | Explain the steps of the Linde-Buzo-Gray algorithm. | 7 |
| (b) | Determine whether the following codes are uniquely decodable or not:<br>(i) {0,01,11,111}<br>(ii) {0,01,110,111}<br>(iii) {1,10,110,111}<br>(iv) {0,01,10} | 7 |

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**4. Attempt any *one* part of the following: 7 *1 = 7**

| Q.no | Questions | Marks | CO |
|---|---|---|---|
| (a) | Explain modeling and coding with the help of example. What do you understand by prefix code? | 7 | 1 |
| (b) | Explain the JBIG standard of Bi-level image compression. | 7 | 3 |

**5. Attempt any *one* part of the following: 7*1 = 7**

| Q.no | Questions | Marks | CO |
|---|---|---|---|
| (a) | What is lossy data encoding? Write down the distortion measure criteria's to check the fidelity of a reconstructed source sequence to the original one in such type of encoding techniques. | 7 | 4 |
| (b) | Explain scalar & vector quantization. Write the differences with suitable examples of the approaches. | 7 | 5 |

**6. Attempt any *one* part of the following: 7*1 = 7**

| Q.no | Questions | Marks | CO |
|---|---|---|---|
| (a) | Design Golomb code for m=5 and n= 0,1,2,3,4,5,6,7,8,9,10. | 7 | 2 |
| (b) | Why data Compression is needed? Explain Compression and Reconstruction with the help of block diagram. | 7 | 1 |

**7. Attempt any *one* part of the following: 7*1 = 7**

| Q.no | Questions | Marks | CO |
|---|---|---|---|
| (a) | What are two observations on which Huffman procedure is based regarding optimum prefix code? What are the various applications of Huffman coding? | 7 | 3 |
| (b) | What are the advantages of vector quantization over scalar quantization?Explainwith the help ofan example. | 7 | 4 |

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