

Please check whether you have got the right question paper.

- N.B:
1. All questions are compulsory.
 2. Answers to the two sections must be written in same answer book and should be submitted together
 3. Write answers to same questions together
 4. Mixing of sub-questions is not allowed.

SECTION - I

- Q.1 (A) With the help of a neat block diagram, explain the components of a general purpose image processing system. 06
- (B) What is a digital image? Explain the need for image processing. Differentiate between image enhancement and restoration. 07

OR

- (A) Explain any three Properties of 2D discrete Fourier Transform. 06
- (B) With the help of a neat figure, explain the main elements of the human eye. 07

- Q.2 (A) What is noise in an image? Explain Gaussian filter in detail. 06
- (B) A particular digital image with eight quantization levels has the following histogram. Perform histogram equalization and derive transformation function. Give new equalized histogram. 07

Gray level r	0	1	2	3	4	5	6
No. of pixels with gray level nr	130	170	200	100	50	90	100

OR

- (A) What do you mean by wavelet and multiresolution coding? What is main advantage of wavelet transform over other transform? 06
- (B) Define segmentation. Explain point and edge detection. 07

- Q.3 (A) Why there is need for image and video compression? 06
- (B) Write a short note on Hit-Or-Miss transform. 06

OR

- (A) What is segmentation? Explain Line detection technique. Write the applications of segmentation. 06
- (B) Define and explain the polygon approximation approach for image representation. 06

SECTION II

- Q.4 (A) List the characteristics of Speech Recognition applications. 06
- (B) Write a short note on Coin toss model. 07

OR

- (A) Write a short note on IIR and FIR filters. 06
- (B) Describe with diagram the representation of speech in time and frequency domains. 07

- Q.5 (A) Explain acoustic-phonetic vowel classifier. 06
- (B) Write a short note on directory listing retrieval. 06

OR

- (A) What are the problems associated with acoustic-phonetic approach to Speech Recognition. 06
(B) Explain the working of human ear. 06

- Q.6 (A) Explain the importance of speech end point detection. What are the various approaches adopted for speech end point detection? 06
(B) Describe the types of Hidden-Markov Model (HMM). 06

OR

- (A) Explain bank-of-filters analysis model with block diagram. 06
(B) Write a note on vector quantization. 06
