

Total No. of Questions :6]

SEAT No. :

P967

[Total No. of Pages : 2

APR-17/BE/Insem - 48
B.E. (E &TC) (Semester - II)
SPEECH AND AUDIO SIGNAL PROCESSING
(2012 Pattern)

Time : 1 Hour]

[Max. Marks :30

Instructions to the candidates:

- 1) *Solve Q.1 or Q.2, Q.3 or Q.4., Q.5 or Q.6*
- 2) *Right side figures indicate marks.*
- 3) *Assume data necessary.*
- 4) *Draw neat diagrams.*

Q1) a) Explain LTI model of speech production? [5]

b) Write a short note on Voiced and Unvoiced Speech? [5]

OR

Q2) a) How the speech sounds are classified? Explain. [5]

b) Explain Linear Time Varying Model of speech production? [5]

Q3) a) Explain the concept of critical band? Explain the auditory system as a filter bank. [5]

b) With mathematical expression explain Mel-scale and Bark-scale in auditory systems. [5]

OR

Q4) a) Explain sound pressure level and loudness in auditory systems? [5]

b) Explain role of cochlea in human auditory systems? Explain its role in speech perception. [5]

P.T.O.

- Q5)** a) Explain the terms. [5]
- i) Short time Energy?
 - ii) Short time Zero crossing.
- b) Explain spectrogram? Define Narrow Band and Broad Band Spectrogram. [5]

OR

- Q6)** a) Explain Average Magnitude Difference Function (AMDF)? [5]
- b) Define: [5]
- i) Spectral Roll off
 - ii) Spectral Spread
 - iii) Spectral flux

