**Reg. No. \_\_\_\_\_\_\_\_**

**Karunya University**

**(Karunya Institute of Technology and Sciences)**

(Declared as Deemed to be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination - June 2011**

**Subject Title: SPEECH PROCESSING Time: 3 hours**

**Subject Code: EC287 Maximum Marks: 100**

#### **Answer ALL questions**

**PART – A (10 x 1 = 10 MARKS)**

1. What are formants?

2. What are phonemes?

3. What are zero crossings?

4. Define autocorrelation of a discrete time deterministic signal.

5. Name the two types of spectrogram.

6. What are the advantages of filter bank analysis?

7. State the various formulations of predictive coding.

8. Give some applications of LPC parameter.

9. What is speaker identification?

10. What is speaker verification?

**PART – B (5 x 3 = 15 MARKS)**

11. State the representations of speech signals.

12. Differentiate speech versus silence.

13. What are the significances of STFT?

14. What is the solution of predictor coefficients?

15. Explain homomorphic vocoder analysis.

**PART – C (5 x 15 = 75 MARKS)**

16. Give any model of speech production and explain in detail.

(OR)

17. Give any discrete time model of speech production.

18. Write the significances of zero crossings in speech processing.

(OR)

19. Estimate the pitch by auto correlation method.

20. Discuss the various features of spectrographic analysis.

(OR)

21. Explain analysis and synthesis system with neat diagrams.

22. Find the solution for normal equations.

(OR)

23. Explain the linear predictions in the spectral domain.

24. Explain the concepts of

a. Homomorphic pitch estimation b. Homomorphic formants estimation (8+7)

(OR)

25. Explain all the features of speaker verification system with relevant diagrams.