

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)

CLASS: BTECH  
BRANCH: ECE

SEMESTER : VII  
SESSION : MO/2024

SUBJECT: EC411R1 SPEECH AN AUDIO PROCESSING

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Explain the general structure of speech coders.	[5]	1 1
Q.1(b)	Discuss the difficulties in speech recognition by machine.	[5]	1 2
Q.2(a)	Explain pitch period estimation by all pole and all zero filters	[5]	2 5
Q.2(b)	What do you understand with periodogram and autoregressive model in speech signal processing?	[5]	2 2
Q.3(a)	What is speech quantization? What are different types used in quantizing speech explain briefly?	[5]	3 3
Q.3(b)	How to do the distortion measure in vector quantization? Also explain code book design.	[5]	3 6
Q.4(a)	Explain the basic concept of linear prediction and Lavinson-Durbin algorithm with its application.	[5]	4 3
Q.4(b)	Explain Line spectral frequency conversion and steps involved in its conversion from LPC.	[5]	4 6
Q.5(a)	Describe CELP and CELP based speech production model.	[5]	5 1
Q.5(b)	What is low delay CELP and algebraic CELP? Explain in details.	[5]	5 1

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