

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)**

**CLASS: BE
BRANCH: ECE**

**SEMESTER: VII
SESSION: MO/2022**

SUBJECT: EC407 MULTI-CHANNEL SIGNAL PROCESSING

TIME: 2 HOURS

FULL MARKS: 25

INSTRUCTIONS:

1. The total marks of the questions are 25.
 2. Candidates attempt for all 25 marks.
 3. Before attempting the question paper, be sure that you have got the correct question paper.
 4. The missing data, if any, may be assumed suitably.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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			CO	BL
Q1	(a) Define Cocktail party problem.	[2]	1	1
Q1	(b) How can we correlate cocktail party problem with blind source separation.	[3]	1	2
Q2	(a) Name any four methods of Blind Source Separation.	[2]	1	1
Q2	(b) Explain the benefits of SOBI algorithm for Blind Source separation.	[3]	2	3
Q3	(a) Differentiate between Principal component analysis and Independent component analysis.	[2]	3	4
Q3	(b) Define the terms: uncorrelatedness and whitening	[3]	2	2
Q4	(a) State The Amuse algorithm.	[2]	2	1
Q4	(b) Let us consider a system with various sensors. Can we restore the various signals only form the mixture observed at sensor output? If yes, under what conditions? And how?	[3]	3	5
Q5	(a) Explain Kolmogoroff complexity for ICA.	[2]	3	2
Q5	(b) Why do we include non-Gaussianity in ICA?	[3]	2	4

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