Q. Code: 955103

Reg. No. | | | | | | | | | |

M.E. / M.TECH. DEGREE EXAMINATIONS, DEC 2019

Third Semester

CU18013 – COGNITIVE RADIO NETWORKS

(Communication Systems)

(Regulation 2018)

Time: Three Hours **Maximum : 100 Marks**

Answer **ALL** questions

PART A - (10 X 2 = 20 Marks)

		CO	RBT
1.	List out the potential benefits of software defined radio.	1	U
2.	How does decision tree compute the rules efficiently?	1	U
3.	How does orient cycle work in Cognitive cycle?	1	C
4.	How will you convert the radio to cognitive radio?	1	R
5.	How are binary Neyman-Pearson test are modified and used in receiver operating characteristics?	2	AN
6.	What is the role of fusion centre and LLR in spectrum sensing?	2	R
7.	Compare spatial diversity and cooperative diversity.	2	AN
8.	How can spectrum of licensed channels can be categorized in cognitive radio?	3	U
9.	What is Interference-mitigating behavior in cognitive radio?	3	R
10.	List out the elements of the asymmetric transmitter cooperation present in the cognitive channel.	3	R

PART B - (5 X16 = 80 Marks)

11.	(a)	Evaluate the impact of an environmental awareness and the location awareness considerations role in SDR Systems.	(16)	1	E
		(OR)			
	(b)	Evaluate and analyze the generic architecture of SDR.	(16)	1	E
12.	(a)	Analyze how machine learning, Natural language processing concept used in Cognitive radio.	(16)	1	AN
		(OR)			

	(b)	Analyze how machine learning and natural language processing concepts are used in cognitive radio?	**(16)**	**1**	**AN**
13.	(a)	Derive the expression for probability density function of Neyman-Pearson detector and received signal of periodicity cyclic detector.	**(16)**	**2**	**E**
		(OR)			
	(b)	Derive the expression for P_C & P_S of Collision with primary user and PHY-MAC Translation in Poisson Primary Networks.	**(16)**	**2**	**E**
14.	(a)	Describe the Van der Meulen relay model and coding in MISO channel.	**(16)**	**2**	**U**
		(OR)			
	(b)	Describe the time, power allocation and outage probability of redundant relay channel.	**(16)**	**3**	**U**
15.	(a)	Derive the expression for SINR of AWGN channel and discuss the Sum-Throughput Scaling Laws.	**(16)**	**3**	**E**
		(OR)			
	(b)	Derive the expression for capacity region of the Gaussian MIMO broadcast channel and interference avoiding under time sharing.	**(16)**	**3**	**E**