Register Number:……..

KUMARAGURU
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B.E DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2018)

Seventh Semester

ELECTRONICS AND COMMUNICATION ENGINEERING

U18ECE0001 **:** Cognitive Radio

COURSE OUTCOMES

CO1: Explain the principles of the software defined radio.
CO2: Describe the architecture of software defined radio.
CO3: Explain the design considerations of cognitive radio.
CO4: Illustrate cognitive radio architecture.
CO5: Demonstrate knowledge of spectrum sensing.
CO6: Apply cross-layer design for cognitive radio.

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

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Recall the challenges and issues related to SDR.	CO1	[K_1]
2.	Outline the Architecture implications of SDR.	CO1	[K_2]
3.	How the resource allocation is performed using Radio State machine?	CO2	[K_1]
4.	Define plug-and-play module.	CO2	[K_1]
5.	Classify the Relationship between different radios.	CO3	[K_2]
6.	Infer the various Epochs in Cognition cycle.	CO3	[K_2]
7.	What is Radio Procedure Knowledge Encapsulation?	CO4	[K_1]
8.	Summarize the design rules of Cognitive radio.	CO4	[K_2]
9.	What is Spectrum mobility?	CO5	[K_1]
10.	Interpret the main functions for Cognitive Radios in xG networks.	CO6	[K_2]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Explain the evolution of SDR from 1G to 4G.	6	CO1	[K_2]
	b)	Classify and Compare the technology tradeoffs in SDR with neat diagram.	10	CO1	[K_2]
12.	a)	Interpret the Essential functions Software defined Radio.	8	CO2	[K_2]
	b)	Demonstrate the top-level interface topology.	8	CO2	[K_2]
13.	a)	What is cognition cycle? Develop the various phases involved in cognition cycle with neat diagram.	8	CO3	[K_2]
	b)	Illustrate the Conceptual model for cognitive radios with location and environment awareness cycles.	8	CO3	[K_2]
14.		Build the primary functions, behaviour and components of cognitive radio.	16	CO4	[K_2]
15.	a)	Construct and explain the xG network architecture.	8	CO5	[K_2]
	b)	Classify and Organize the Spectrum Sensing techniques in detail.	8	CO5	[K_2]
16.	a)	Explain the Components of Orient, plan, decide and act phase .	8	CO4	[K_2]
	b)	Outline the cross-layer challenges in spectrum sharing.	8	CO6	[K_2]

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