

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]

Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 7005

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Eighth Semester

Electronics and Communication Engineering

U19ECE46 – COGNITIVE RADIO

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	List the potential benefits of software radio.	2	K1	CO1
2.	What are the components of SDR?	2	K2	CO1
3.	What are the essential functions & real time application of software radio?	2	K2	CO2
4.	How can the degrees of programmability be quantified in SDR systems?	2	K2	CO2
5.	Sketch the cognition cycle of a cognitive radio.	2	K1	CO3
6.	Mention the practical design considerations of a cognitive radio.	2	K2	CO3
7.	Mention the purpose of observe-phase data structures.	2	K2	CO4
8.	List the design rules of cognitive radio.	2	K1	CO4
9.	Highlight the research challenges in adaptive spectrum management.	2	K4	CO5
10.	What is the concept of spectrum sensing?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11.	a) Explain in detail the evolution of software radio architecture, with a diagram.	13	K2	CO1
	(OR)			
	b) Characterize the tradeoffs among the core software-radio technologies.	13	K4	CO1
12.	a) Highlight the computational properties of functional components in SDR architecture and Explain.	13	K2	CO2
	(OR)			
	b) Explain the different types of RF receiver Front-end topologies and show which topology is best suitable for software radio architecture.	13	K3	CO2
13.	a) Discuss the role of knowledge structure in skilled cognitive task performance.	13	K3	CO3
	(OR)			
	b) Develop an architecture to enable the location and interact with the learning environment in cognitive radios.	13	K6	CO3
14.	a) Elaborate the primary functions, components and design rules of cognitive Radio.	13	K2	CO4
	(OR)			
	b) Explain in detail the concept of radio procedure knowledge encapsulation.	13	K2	CO4
15.	a) With suitable diagrams explain the functions of the various components available in the cognitive radio XG network architecture.	13	K2	CO5
	(OR)			
	b) Develop a cross-layer design for spectrum sensing algorithms used between the physical layer and the MAC layer in cognitive radio.	13	K6	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Identify & explain the challenges involved in the hardware-software partitioning of SDR architectures.	15	K4	CO2
	(OR)			
b)	Compare and contrast the different types of spectrum sensing techniques adapted in cognitive radio.	15	K4	CO5
