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**GIET UNIVERSITY, GUNUPUR - 765022**  
**M. Tech (First Semester) Examinations, January - 2024**  
**MPEEC1043 - Cognitive Radio**  
**(ECE)**

Time: 3 Hrs

Maximum: 70 Marks

(The figures in the right-hand margin indicate marks.)

**PART – A****(2 x 10 = 20 Marks)**

Q.1. Answer all questions

- a. List some characteristics of Radio Cognition Task.
- b. Draw the cognition cycle.
- c. What is meant by spectrum pooling?
- d. Define database.
- e. List out the different Dissertation Focus.
- f. What are the key features of spectrum allocation?
- g. What do you mean by protocols.
- h. What are the disadvantages of dynamic spectrum sharing?
- i. Define spectrum trading.
- j. What are the parameters of spectrum management?

	Blooms
CO#	Level
CO2	K1
CO1	K3
CO4	K1
CO3	K3
CO1	K1
CO2	K1
CO3	K2
CO2	K1
CO1	K3
CO4	K1

**PART – B****(10 x 5=50 Marks)**Answer **ANY FIVE** of the following questions

2. a. Discuss about the Sensing interface and primary concepts of Position awareness cognitive radio with neat architecture.
- b. What is Cognition Cycle? Discuss the various phases involved in cognition cycle with neat diagram.
- 3.a. Briefly explain the various types of spectrum sensing methods.
- b. Discuss spectrum sharing business models in details.
4. a. Define Spectrum Allocation. Explain Classification of spectrum allocation in CR networks.
- b. Write the difference between dynamic programming and stochastic programming.
- 5.a. What is spectrum sharing models of dynamic spectrum access?
- b. Determine the Adaptation features used in the conceptual model.

Marks	CO#	Blooms Level
5	CO2	K2
5	CO2	K3
5	CO3	K2
5	CO3	K4
5	CO1	K2
5	CO1	K3
5	CO2	K2
5	CO2	K4

6. a.	Define auction theory. Explain Classification of auction theory in CR networks.	5	CO3	K2
b.	Write the short notes on			
	(i) concurrent	5	CO3	K2
	(ii) sequential			
7. a.	Provide examples of potential applications of cognitive radio in various domains.	5	CO4	K1
b.	Discuss the challenges and benefits associated with implementing cognitive radio technologies.	5	CO4	K1
8. a.	Explain the concept of spectrum holes and their detection in TV white spaces.	5	CO1	K2
b.	Discuss the advantages and challenges of collaborative sensing in detecting spectrum holes.	5	CO1	K3

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