Roll No. | | | | | | | | | | |

B.E / B.Tech (FT) END SEMESTER EXAMINATIONS – APRIL / MAY 2019

Electronics and Communication Engineering
VIII
EC 7006 Cognitive Radio Communication

(Regulation 2015)

Time: 3 Hours | Answer ALL Questions | Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. What is SDR? List the benefits of SDR.
2. Draw the block diagram of Software Radio.
3. For x(n)={1,2,3,4}, Compute interpolation and decimation at intervals 2n and n/2.
4. What are the uses of Plug and Play module?
5. Define Aware Radios.
6. Define Cognitive Radio. Mention its features.
7. List out the phases in Cognitive Cycle.
8. Define Waking Behavior.
9. What are the spectrum management functions?
10. Comment on the term "spectrum holes" and justify it with diagram.

Part – B (5 x 13 = 65 marks)

11. a) i) Briefly explain the five tiers of the SDR. Also explain the history of SDR. (9)
ii) List out the merits and demerits of SDR. (4)

(OR)

b) Explain in detail about the technology tradeoffs in SDR wit neat diagram.

12. a) Explain the hardware and software architecture of SDR with suitable examples.

(OR)

b) Explain the essential functions of the Software Radio.

13. a) What are the primary concepts of Position awareness cognitive radio? Explain with neat architecture.

(OR)

b) Explain about optimization of radio resources. Explain the role of artificial intelligence in the design of cognitive radios.

14. a) Explain how Cognitive functions are implemented using cognitive components.

(OR)

b) What is Cognition Cycle? Discuss the various phases involved in cognition cycle with neat diagram.

15. a) Draw and explain the next generation network architecture and its components.

(OR)

b) Explain in detail about the cognitive capability and reconfigurability.

Part – C (1 x 15 = 15marks)

16. i). In a geographical area, if a Wireless sensor network operate in an 2.4GHz ISM band, where it is sporadically used. Then, with necessary architecture suggest a functionality to operate in the following

a). Existing ISM band without heterogeneous network interference and

b). Temporally available white space in the 54-862MHz band. (10)

ii). Suggest a suitable detection method to overcome the hidden terminal problem in CR network and briefly explain. (5)