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Question Paper Code : 52896

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

Seventh Semester

Electronics and Communication Engineering

EC 6014 – COGNITIVE RADIO

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is Software Defined Radio (SDR)? Mention its features.

2. Define the term data explosion.

3. Mention any two radio knowledge languages and their applications.

4. List out the functions of Software Defined Radio.

5. Define Spectral efficiency.

6. State the principle of radio vision sensors.

7. Compare SDR with CR.

8. Enumerate the challenges of spectrum sensing.

9. What is a spectrum hand off ?

10. Name the components of an XG network.

PART B — (5 × 13 = 65 marks)

11. (a) With neat block diagram, explain the functional model of software defined radio architecture. Enumerate and discuss the evolution of SDR. (13)

Or

(b) Describe in detail by giving an example of a lowest-level object and of a highest -level object.

12. (a) Describe RF front end SDR architecture.

Or

(b) What are the user applications of SDR? Explain in detail.

13. (a) Describe the conceptual model for cognitive radios with location and environment awareness cycles.

Or

(b) Explain the transmitter impairment effects and environmental effects.

14. (a) Describe the cognition cycle in detail with neat diagram.

Or

(b) Describe the design rules which includes the functional component interfaces.

15. (a) Describe the physical architecture of the cognitive radio.

Or

(b) Discuss in detail the parameters involved in Spectrum analysis of XG network.

PART C — (1 × 15 = 15 marks)

16. (a) (i) With software radio phase space diagram, explain the quantifying degrees of programmability. (8)

(ii) Illustrate and explain the mathematical model of plug-and-play architecture. (7)

Or

(b) Explain the various non-cooperative spectrum sensing techniques and compare their features. (15)