

Name :
Reg No :

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**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
07 THRISSUR CLUSTER**

**THIRD SEMESTER M.TECH. DEGREE EXAMINATION DEC 2017
Electronics & Communication Engineering
Communication Engineering & Signal Processing
07EC7203 COGNITIVE & SOFTWARE DEFINED RADIO**

Time : 3 hours

Max.Marks: 60

Answer all six questions. Part 'a' of each question is compulsory.

Answer either part 'b' or part 'c' of each question

Q.no.	Module 1	Marks
1a	Give the evolution of SDR	4
	Answer b or c	
b	What makes an SDR to qualify as a cognitive radio? Explain	5
c	Write note on technology tradeoffs and architecture implications of SDR	5
Q.no.	Module 2	Marks
2a	Explain the terms i) Reconfiguration with downtime ii) Reconfiguration on a per call basis iii) Multi-standard systems, in connection with SDR	4
	Answer b or c	
b	Give a hardware architecture of an SDR	5
c	Suggest a method to convert an analogue radio into SDR	5
Q.no.	Module 3	Marks
3a	Differentiate the different Cognitive behaviours	4
	Answer b or c	
b	Explain the terms associated with Cognitive radio i) Spectrum Mobility ii White Space Database iii) Hidden-node problem	5
c	Give a functional architecture of Cognitive Radio	5

Q.no.	Module 4	Marks
4a	Write note on CRN, ULLA, CAPRI and NKRL	4
Answer b or c		
b	Derive capacity expressions for cognitive primary User and secondary user under all cognitive behaviours	5
	a.)SU receiver is within PU's range b). SU receiver is outside PU's range.	
c	Give the CRM based framework for cognitive radio network	5
Q.no.	Module 5	Marks
5a	Write note on Orient, Plan, decide and act phases of cognition cycle	5
Answer b or c		
b	Explain and Compare Energy detector and Cyclostationary Spectrum sensing	7
c	Write note on Inference Hierarchy	7
Q.no.	Module 6	Marks
6a	Write notes on smart antenna system in 5G networks	5
Answer b or c		
b	Explain Next Gen 5g networks with block schematic	7
c	Explain C-RAN with centralised architecture	7