

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

SECOND SEMESTER M.TECH. DEGREE EXAMINATION APRIL 2017

Electronics and Communication Engineering

Communication Engineering & Signal Processing

07EC6204

WIRELESS COMMUNICATION

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	Classify fading. Give the mechanism behind multipath fading.	4
	Answer b or c	
b	Derive the Two-ray model of Path loss in wireless channel. Compare the received power with that of free-space Path-loss scenario.	5
c	Show, how Scattering function can be utilized to characterize a flat-fading channel, and obtain delay parameters from it.	5
Q.no.	Module 2	Marks
2a	What is diversity gain? Why does there exist a trade-off between Diversity Gain and Multiplexing Gain?	4
	Answer b or c	
B	Derive Array gain for MRC and EG Combining	5
C	Deduce expression for received SNR in a 2X1 Alamouti Transmit diversity scheme.	5
Q.no.	Module 3	Marks
3a	Give the optimum power allocation strategy for a flat fading channel when CSIR and CSIT are available	4
	Answer b or c	
B	Deduce expression for the capacity of a time-varying fading channel with power adaptation	5
C	Show, how the parallel decomposition of MIMO channel is done.	5

Q.no.	Module 4	Marks
4a	What is Grade of Service in Telephony? Give Erlang's formula	4

Answer b or c

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| B | Give the multiple access format used in GSM Cellular communication | 5 |
| C | Explain the concept of Cell Splitting and Sectoring in Cellular communication system | 5 |

Q.no.	Module 5	Marks
5a	With block schematic, explain FHSS system	5

Answer b or c

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| b | Show how a DSSS receiver respond to a received signal in AWGN channel that has i)Co-channel Interference only ii) multipath components only | 7 |
| c | What are the challenges in selecting codes for multi-user spread spectrum communication? How is Kasami code generated? | 7 |

Q.no.	Module 6	Marks
6a	Write note on power control in CDMA system	5

Answer b or c

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|----------|---------------------------------------------------------------------------------------------------|----------|
| b | With block schematic, briefly explain OFDM system. Why is OFDM system robust against ISI and ICI? | 7 |
| c | Write note on MC-CDMA and its advantage over other multicarrier modulation schemes. | 7 |