# CBCS SCHEME

**18ECS21**

## Second Semester M.Tech. Degree Examination, Aug./Sept.2020
## Advanced Communication Systems – II

Time: 3 hrs.  Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

1  Write note on:
  a.  Delay and Doppler Spread  (10 Marks)
  b.  Scattering function  (10 Marks)

**OR**

2  Explain binary signaling over Frequency Non-Selective (FNS) Rayleigh fading channel.  (20 Marks)

### Module-2

3  Explain diversity techniques for performance improvement with binary signaling over FNS.  (20 Marks)

**OR**

4  Explain Rake Receiver. Performance, Tap weight synchronization and application to CDMA.  (20 Marks)

### Module-3

5  a.  Derive the expression for channel capacity of continuous time AWGN channel.  (10 Marks)
  b.  What are the resources of AWGN channel?  (10 Marks)

**OR**

6  a.  Compute mathematically the capacity of AWGN channel with the help of SIMO and MISO channel.  (10 Marks)
  b.  Explain in detail about capacity of fading channels.  (10 Marks)

### Module-4

7  What are the key properties of H (deterministic matrix) that determine how much spatial multiplexing it can support?  (20 Marks)

**OR**

8  a.  Explain how the spatial multiplexing capability of MIMO channel depends on physical environment.  (10 Marks)
  b.  Explain about modeling of MIMO fading channels.  (10 Marks)

### Module-5

9  a.  Explain about V-blast architecture.  (10 Marks)
  b.  What is the performance gain of CSI receiver?  (10 Marks)

**OR**

10  Explain about:
  a.  Linear decorrelator  b. Successive cancellation  c. Linear MMSE receiver
  d.  ISI equalization  e. Slow fading MIMO  (20 Marks)

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