

29. a. Explain cognitive transceiver architecture with diagram.

10 2 4,6 1,3

(OR)

b. Write short notes on:

10 2 4,6 1,4

(i) Interweaving

(ii) Advantages and disadvantages of spectrum sensing

30. a. Explain various modulation scheme used for millimeter wave communication.

10 2 5,6 1,3

(OR)

b. Draw and explain various antenna system used for millimeter wave communication.

10 2 5,6 1,3

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Reg. No.

B.Tech. DEGREE EXAMINATION, MAY 2022

Seventh Semester

18ECE220T – ADVANCED MOBILE COMMUNICATION SYSTEMS

(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours

Max. Marks: 75

PART – A (25 × 1 = 25 Marks)

Answer ALL Questions

- | | Marks | BL | CO | PO |
|--|-------|----|-----|----|
| 1. 3 GPP is a consortium with _____ national or regional telecommunication standards organizations as primary members.
(A) 01 (B) 07
(C) 02 (D) 05 | 1 | 1 | 1,6 | 1 |
| 2. WiMax originally intended as a standard for _____.
(A) Fixed wireless access (B) Lan access
(C) Vsat access (D) DBS access | 1 | 1 | 1,6 | 1 |
| 3. WiMax uses the _____.
(A) OFDM (B) TDM
(C) SDM (D) CDM | 1 | 1 | 1,6 | 1 |
| 4. In WiMax frame preamble is used for _____.
(A) Modulation (B) Demodulation
(C) Amplification (D) Time and frequency synchronization | 1 | 1 | 1,6 | 3 |
| 5. Which organization is responsible for developing LTE standards?
(A) ISO (B) ISRO
(C) 3GPP (D) UMTS | 1 | 1 | 1,6 | 1 |
| 6. In OFDM _____ used to eliminate residual delay dispersion.
(A) FDD (B) ISI
(C) BER (D) Cyclic prefix | 1 | 1 | 2,6 | 4 |
| 7. The cyclic prefix converts linear convolution into _____.
(A) Cyclical (B) Flattened
(C) Complex (D) Depthwise | 1 | 1 | 2,6 | 4 |
| 8. Spreading the signal over all tones can _____ SNR value.
(A) Enhance (B) Average
(C) Add (D) Multiply | 1 | 1 | 2,6 | 4 |

9. In OFDM superposition of N sinusoidal signals on different subcarriers results _____.
 (A) Cosmic (B) Thermals
 (C) PAPR (D) Transit
10. Which property of OFDMA system allows adjacent subcarriers to be used without interference?
 (A) Orthogonality (B) Originality
 (C) Octagonality (D) Dual
11. In MIMO, which factor has the greatest influence on data rates?
 (A) The size of antenna (B) The height of the antenna
 (C) The number of transmit antenna (D) The area of receive antenna
12. MIMO technology makes advantage of a natural radio wave phenomenon called _____.
 (A) Reflection (B) Diffraction
 (C) Multipath (D) Refraction
13. The spatial multiplexing gain increases the _____ of a wireless network.
 (A) Capacity (B) Noise
 (C) Amplitude (D) Phase
14. V-Blast used in _____.
 (A) Transmitter (B) Receiver
 (C) Amplifier (D) Optical domain converter
15. Alamouti scheme is a simple transmit diversity technique that may be applied in systems with M_T equal to _____.
 (A) 02 (B) 03
 (C) 05 (D) 07
16. In _____ radio access technology IES use the same frequency band.
 (A) Network centric (B) Spectrum sensing
 (C) RF based band centric (D) Spectrum sharing
17. When does a cognitive radio give up control of application?
 (A) High traffic load (B) Long period without input from user
 (C) Bad weather conditions (D) On receiving pre-emptive command from user
18. Which of the following method is employed in underlay spectrum sharing?
 (A) Time division multiple access (B) Spread spectrum techniques
 (C) Time division duplexing (D) Frequency division multiple access
19. Which one of the following techniques requires prior knowledge due of the primary signal?
 (A) Cyclostationary detection (B) Cooperation detection
 (C) Energy detection (D) Matched filter detection

20. _____ approach has been proposed for enabling devices to occupy the spectrum room that has been left vacant by non-cognitive users.
 (A) Interweave (B) Spectrum
 (C) Handoff (soft and hard) roll out (D) Equalization
21. Millimeter waves are usually considered to be the range of wavelengths from _____.
 (A) 500 to 600 mm (B) 10 to 1 mm
 (C) 30 to 40 mm (D) 100 to 110 mm
22. Another name of amplitude shift keying is _____.
 (A) On/Off Keying (OOK) (B) PSK
 (C) FSK (D) QPSK
23. Equivalent circuit representation of an antenna is _____.
 (A) Series R, L parallel to C (B) Parallel R, C series to L
 (C) Series R, L, C (D) Parallel R, L, C
24. 'W' band frequency range is _____.
 (A) 1 – 2 GHz (B) 4 – 8 GHz
 (C) 40 – 75 GHz (D) 75 – 110 GHz
25. The frequency to which the incoming signal is changed in super heterodyne reception is called _____.
 (A) Intermediate frequency (B) Amplitude frequency
 (C) Modulated frequency (D) Radio frequency

PART – B (5 × 10 = 50 Marks)

Answer ALL Questions

- | | Marks | BL | CO | PO |
|--|-------|----|-----|-----|
| 26. a. Draw and explain WiMax system architecture. | 10 | 2 | 1,6 | 1,3 |
| (OR) | | | | |
| b. Draw and explain LTE frame structure. | 10 | 2 | 1,6 | 1,3 |
| 27. a. Write short notes on:
(i) OFDM issues
(ii) Cyclic prefix | 10 | 2 | 2,6 | 1,3 |
| (OR) | | | | |
| b. Write short notes on:
(i) PAPR in OFDM
(ii) Multicarrier modulation | 10 | 2 | 2,6 | 1,4 |
| 28. a. Explain MIMO spatial multiplexing with diagram. | 10 | 2 | 3,6 | 1 |
| (OR) | | | | |
| b. Write short notes on:
(i) V-BLAST
(ii) Alamouti | 10 | 2 | 3,6 | 1,3 |