b.i.	Draw patch antenna diagram and explain its working.	5	3	2	3
ii.	Describe frequency hopping spread spectrum in detail.	5	3	2	3
28. a.i.	Enumerate the need of repeaters in a communication system.	5	4	3	4
ii.	Explain in detail about tuned radio frequency receiver.	5	3	3	3
	(OR)				
b.i.	Describe frequency synthesizer with neat block diagram.	5	3	3	3
ii.	Write short note on software radio receivers.	5	4	3	4
29. a.i.	Draw the architecture of MSK based system to operate in a LOS channel.	5	1	4	1
ii.	Mention the characteristics and advantages of millimeter wave technology.	5	1	4	1
	(OR)				
b.i.	Describe diversity combining techniques.	5	1	4	1
ii.	List the applications of 60 GHz WLAN.	5	1	4	1
30. a.i.	Define optically controlled microwave devices and list its benefits.	5	3	5	3
ii.	Draw the VLC PHY architecture and explain the key components of the same.	5	4	5	4
	(OR)				
b.i.	Illustrate the architecture of UWB-IR generator.	5	4	5	4
ii.	With neat diagram explain the need for OFDM in multi-mode fiber communication.	5	3	5	3

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Reg. No.														

B.Tech. DEGREE EXAMINATION, NOVEMBER 2022

Sixth and Seventh Semester

18ECO101T – SHORT RANGE WIRELESS COMMUNICATION

(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

		Marks	BL	CO	PO
	PART – A (25 × 1 = 25 Marks) Answer **ALL** Questions				
1.	For detecting an error message, _____ are appended to a message frame. (A) Data field (B) Address field (C) Parity bits (D) Address bits	1	1	1	1
2.	Signals in modulation are superimposed on _____ carrier signals. (A) High-frequency (B) Low-frequency (C) Medium-frequency very low frequency (D) Very low frequency	1	1	1	1
3.	A community of arbitrary length and complexity may be maintained through the structure of the _____ (A) Basic service set (B) Extended service set (C) Station (D) Portal	1	1	1	1
4.	The hardware link between the network's end points and the transmission medium is represented by the _____ layer. (A) Physical layer (B) Data link layer (C) Network layer (D) Application layer	1	1	1	1
5.	_____ also known as impulse or zero-carrier radio technology. (A) Ultra wideband technology (B) Femtocell technology (C) Multicasting (D) Multiplexing	1	1	1	1
6.	_____ is the process of converting digital data to a digital signal. (A) Line coding (B) Block coding (C) Scrambling (D) Manchester code	1	3	2	3
7.	The amplitude shift keying is also called as _____ (A) Phase reversal keying (B) On-off keying (C) Flat line keying (D) Swift keying	1	3	2	3

8. The license-free applications use _____where signals are not confined to narrow bandwidth channels. 1 4 2 4
   (A) ISM bands (B) GSM bands
   (C) MSI bands (D) FSI bands

9. The performance of all types of speed-spectrum signals is strongly related to _____ property. 1 3 2 3
   (A) Temporal gain (B) Fidelity
   (C) Process gain (D) Sensitivity

10. Identify the transmission technique that changes frequency one or more times per data bit 1 4 2 4
   (A) Slow hopping (B) Fast hopping
   (C) Moderate hopping (D) Null hopping

11. Medium which sends information from source to receiver is called _____ 1 4 3 4
   (A) Transmitter (B) Transducer
   (C) Loud speaker (D) Channel

12. In a receiver, noise is usually developed at _____ 1 4 3 4
   (A) Audio stage (B) Receiving antenna
   (C) RF stage (D) IF stage

13. _____ is the capability of providing reception of sufficient duration without the need for additional manual operations such as tuning or switching. 1 4 3 4
   (A) Sensitivity (B) Selectivity
   (C) Demodulation (D) Stability

14. In a receiver, which of the following device has RF input but if output 1 4 3 4
   (A) Loud speaker (B) Frequency changer
   (C) Demodulator (D) Audio amplifier

15. The repeater is a _____ 1 4 3 4
   (A) Amplifier (B) Regenerator
   (C) Modifier (D) Buffer

16. Frequencies around 60 GHz experience the significant of _____ 1 6 4 1
   (A) Absorption by oxygen (B) Absorption by nitrogen
   (C) Absorption by carbon dioxide (D) Absorption by both oxygen and nitrogen

17. Minimum-shift keying (MSK) was developed by 1 1 4 1
   (A) Guglielmo Marconi (B) Jagadish chandra bose
   (C) Roberto nevilis (D) Collins radio employees Melvin L

18. Which of the following technology does not use MIMO? 1 1 4 1
   (A) 4G (B) WIFI
   (C) WIMAX (D) AMPS

19. Orthogonal frequency dibision multiplexing (OFDM) in a wireless multiplexing (OFDM) in a wireless system aims to over come 1 1 4 1
   (A) Time-varying channel (B) Inter-symbol interference
   (C) Multi-path propagation (D) Multi-user interference

20. The common data rates of IEEE 802.11 OFDM are 1 1 4 1
   (A) 18 MBPS (B) 20 MBPS
   (C) 50 MBPS (D) 54 MBPS

21. Optical communication systems use carrier frequencies of about 1014 Hz in the 1 3 5 3
   (A) Infrared region (B) Visible or near-infrared region
   (C) Visible region (D) RF region

22. Most commonly used external modulator is 1 4 5 4
   (A) Mach-Zehnder interferometer and modulator (MZ) (B) Optical modulator
   (C) Electro-optic modulator (D) Electro-absorption modulator

23. The surface-illuminated PDs, parameter does not exceed 1 3 5 3
   (A) 10-15 GHz (B) 10-20 GHz
   (C) 15-30GHz (D) 20-30 GHz

24. If output of amplifier exceeds maximum allowable value _____occurs in output wave form. 1 4 5 4
   (A) Clipping (B) Clamping
   (C) Rectifying (D) Rounding

25. When using LED lamps in a VLC system, the communication signal power is directly related to the _____ 1 3 5 3
   (A) Modulation techniques (B) Light intensity
   (C) Higher FOV (D) Refraction and

PART – B (5 × 10 = 50 Marks) Marks BL CO PO
Answer **ALL** Questions

26. a.i. Comment on the factors that led to the widespread use of wireless applications. 5 6 1 1

   ii. Mention the characteristics of short range radio communication system. 5 1 1 1

(OR)

   b.i. With neat diagram, explain the elements of Bluetooth transceiver. 5 1 1 1

   ii. Compare the standards of Bluetooth and zigbee. 5 1 1 1

27. a.i. Write short notes on antenna characteristics. 5 4 2 4

   ii. Compare fast frequency hopping with slow frequency hopping. 5 4 2 4

(OR)