

KATHMANDU UNIVERSITY
End Semester Examination [C]
June/July 2024

Level : B.E.
Year : III
Time : 2 hrs. 30mins.

Course : ETEG 301
Semester : I
F. M. : 40

SECTION "B"
[8 Q × 5 = 40 marks]

3 0 JUN 2024

Attempt *ALL* questions. Marks are indicated inside brackets.

1.
 - a. NTC has started to migrate old TDM landlines to IP based phones from 2074. What do you mean by old TDM landlines and IP based phones and what are its advantages? [3]
 - b. Considering the structural differences between twisted pair and coaxial cable, discuss how do these differences affect their performance? [2]
2.
 - a. Explain the basic principle of Frequency Modulation (FM) technique and discuss how does FM differ from Amplitude Modulation (AM)? [3]
 - b. If the modulating signal is 01101100, draw modulated signal waveforms for ASK and FSK, respectively. [2]
3.
 - a. Compare and contrast the TCP/IP model with the OSI model. [3]
 - b. Draw simple network topology diagrams of Ring topology and Mesh topology assuming the number of connected nodes on your own. [2]
4.
 - a. Explain the concept of frequency reuse in cellular mobile communication. [3]
 - b. What do you mean by Roaming in cellular mobile communication? [2]
5.
 - a. Write any three pros of OTT system in comparison to SMS system. [3]
 - b. What do you understand by the terms 720p and 1080i in television system? [2]
6.
 - a. Explain how does GPS uses satellite technology to determine precise location coordinates on Earth? [3]
 - b. Define LiDAR and explain its operating principles. [2]
7.
 - a. Compare and contrast geostationary satellites with low Earth orbit satellites in satellite communication networks. [2]
 - b. Discuss the advantages of integrating optical fibers into power transmission lines using OPGW. How can OPGW enhance communication capabilities, monitoring, and maintenance of electrical grids? [3]
8.
 - a. Discuss the applications of Power Line Communication (PLC) in smart grid deployments, home automation, and Internet of Things (IoT). [3]
 - b. What is the Wi-Fi direct method? [2]

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Marks Scored:

Level : B.E.

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Exam Roll No. :

Time: 30 mins.

Course : ETEG 301

Semester : I

F. M. : 10

Registration No.:

Date 30 JUN 2024

SECTION "A"

[20Q. × 0.5 = 10 marks]

Choose and encircle in the most appropriate option from each set of choices

- _____ is recognized as invention that revolutionized long-distance communication in the 19th century.
a. Radio b. Television c. Telegraph d. Telephone
- TV station broadcast signal is _____ mode of communication.
a. Simplex b. Half-Duplex c. Full-Duplex d. Multiplex
- Nepal adopted _____ cellular communication technology for its first mobile telecommunications network.
a. 1G b. 2G c. 3G d. 4G
- _____ is the regulatory body that oversees the telecommunications sector in Nepal.
a. Ministry of Communications and Information Technology
b. Nepal Telecommunications Authority
c. Nepal Telecommunications Corporation
d. Nepal Satellite Communications Company
- The primary advantage of wireless communication system is _____.
a. Higher data rate b. Low coverage area
c. Low infrastructure costs d. High security risk
- _____ is not the electromagnetic waves.
a. Acoustic wave b. Infrared c. Visible light d. X-ray
- The main disadvantage of using coaxial cable compared to twisted pair is _____.
a. Higher cost b. Higher interference
c. Less flexible d. Low data rate
- Vestigial side band AM is mostly used in _____.
a. Radio transmission b. TV transmission
c. Cellular mobile communication d. Wireless Fidelity

9. If the signal loses its strength due to the resistance of the transmission medium, it's called
a. Attenuation b. Distortion c. Noise d. Fading
10. _____ modulation technique is more resistant to noise and interference.
a. ASK b. FSK c. PSK d. AM
11. The main objective of CELL in a cellular mobile communication system is
a. Handoff b. Frequency reuse c. Power save d. Noise cancellation
12. In cellular mobile communication, _____ is responsible for tracking the location of mobile user.
a. Base Station Controller b. Mobile Switching Center
c. Home Location Register d. Visitor Location Register
13. In OSI layer based communication network, to provide reliable process-to-process message delivery is a task of _____ layer.
a. Physical b. Data link c. Network d. Transport
14. _____ Wi-Fi standard is also known as Wi-Fi 6.
a. IEEE 802.11n b. IEEE 802.11ac c. IEEE 802.11ax d. IEEE 802.11ad
15. _____ technology is commonly used for delivering SMS.
a. VoIP b. Circuit switching c. Packet switching d. OTT
16. _____ resolution is considered as minimum requirement for standard HDTV.
a. 480 p b. 720 p c. 1080 p d. 1920 p
17. A type of fiber optic cable that is installed by being attached to a host conductor along overhead power lines is called _____.
a. Optical ground wire b. All dielectric self-supporting
c. Optical attached cable d. Optical phase conductor
18. Radar Cross Section (RCS) of an object means _____.
a. The actual size of the object
b. The measure of how detectable an object is by radar
c. The distance of the object from the radar
d. Power radiating ability of the radar
19. The European navigation system equivalent of GPS is called _____.
a. GLONASS b. BeiDou c. Galileo d. IRNSS
20. The role of a coupler in PLC system is to _____.
a. Regulate power distribution
b. Modulate data signals onto the power line
c. Convert electrical signals to electromagnetic signals
d. Amplify data signals