C	Solve the following i. If a periodic signal is decomposed into five sine waves with frequencies of 100,300,500,700 and 900 Hz. What is the bandwidth? Draw the spectrum assuming all components have a maximum amplitude of 10 Volts. ii. A periodic signal has a bandwidth of 20 Hz. The highest is 60 Hz. What is the lowest frequency? Draw the spectrum if the signal contains all frequencies of the same amplitude	[6M]
D	Define noise. Explain different types of noise giving examples of its source.	[6M]
Q.3	**Attempt any three of the following**	**15 M**
A	What is the concept of Multilevel scheme? Explain 8B6T in detail giving one example of each.	[5M]
B	Encode the binary string 011000111010100010 using the following techniques i. NRZ-I ii. Differential Manchester Encoding	[5M]
C	Explain Pulse code modulation with the help of a neat diagram.	[5M]
D	Discuss Transmission modes used for data communication in detail.	[5M]
Q.4	**Attempt any two of the following**	**12 M**
A	Describe the operation of circuit switching in telecommunications networks.	[6M]
B	Elaborate working of fiber optics using different propagation modes.	[6M]
C	Explain categories of Twisted pair cable giving their applications.	[6M]

****** End of Question Paper******

	Pimpri Chinchwad Education Trust's **Pimpri Chinchwad College of Engineering** An Autonomous Institute (Permanently affiliated to Savitribai Phule Pune University)	SET – III SEMESTER - II

End Term Examination

First Year B. Tech. (AS&H)

Data Communication [PCC]

[BIT22C01]

Even Semester (2023-24)

Total No. of Questions-04 *Total No. of Printed Pages-02*

[Time: 1 Hr. 45 min.] *[Max. Marks: 50]*

PRN									

Instructions:

IMP: Verify that you have received a question paper with correct course, code, branch etc.
i. All questions are compulsory.
ii. Assume suitable data wherever necessary.
iii. Neat labelled diagrams must be drawn wherever necessary.
iv. Figure to right indicates full marks.
v. Use of a non-programmable calculator is allowed.

		Marks
Q.1	**Attempt any one of the following**	**5 M**
A	Define data flow. Describe each category with an example.	**[5M]**
B	Explain role of TCP/IP reference model with respect to data communication.	**[5M]**
Q.2	**Attempt any three of the following**	**18 M**
A	Solve the following numerical i. How many bits are needed per level to represent a digital having 9 levels? ii. Find the required bit rate of the channel to download text documents at the rate of 100 pages per second. iii. A digitized voice channel is made by digitizing a 4 KHz bandwidth analog voice signal. If the signal is sampled at the rate of twice the highest frequency and if each sample requires 8 bits, determine the required bit rate?	**[6M]**
B	Write down short note on the following **(any two)** a. Analog and Digital Data and Analog and Digital Signal b. Periodic and Nonperiodic Signal c. Simple and Composite Signal	**[6M]**