



**NAVVRACHANA
UNIVERSITY**

a UGC recognized University

School: School of Engineering and Technology
Program/s: B.Tech-Electrical and Electronics Engineering
Year: 3rd **Semester:** 5th
Examination: End Semester Examination
Examination year: December - 2021

Course Code: EE324 **Course Name:** Electronics Communication and Networking
Date: 09/12/2021 **Total Marks:** 40
Time: 11:30 pm to 1:30 pm **Total Pages:** 02

Instructions:

- Write each answer on a new page.
- Use of a calculator is permitted
- * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

| Q. No. | | Marks | COs* | BTL# |
|--------|---|-------|------|----------------------|
| Q.1 | Which Phase shift keying system is the capable of transmitting the binary signal over four different phases. Explain how is it achieved and briefly explain about the Transmitter and receiver of the system. | 6 | CO3 | BT1, BT2 BT 4 |
| Q.2 | A television signal with the bandwidth of 6.4 MHz is transmitted using binary PCM the number of quantization levels are 1024. Determine the a) Code word length b) Transmission Bandwidth c) Final bit rate | 6 | CO2 | BT1, BT2, |
| Q.3 | Differentiate between IPV4 and IPV6 addressing with respect to following parameters: a) Field names kept the same in IPV6 as in IPV4 and their functionalities b) Names and Positions changed in IPV6 and their functionalities c) Field names not kept in IPV6 and their functionalities | 6 | CO4 | BT1, BT2 |
| Q.4 | Find the carrier, modulating frequency, modulation index and maximum deviation of the FM wave represented by the equation $e_{FM}(t) = 18 \sin(4 \times 10^6 + 6 \sin 2150 t)$ what power will FM wave dissipate in a 260 Ω resistor (Bessel function table provided overleaf) | 8 | CO2 | BT1, BT2 |
| Q.5 | Encode the given bit stream for 10101010 for following line coding techniques: 1) NRZ – L 2) RZ – I 3) Manchester Coding 4) Differential Manchester Coding. Also State the advantages and disadvantages of each. | 8 | CO3 | BT1, BT2, BT 4 |

Q.6 The binary sequence 0010011 is to be transmitted using DEPSK .Show the step by step procedure for obtaining DEPSK signal. Assuming arbitrary starting bit as 0. Also give the methods of generation and detection of DEPSK system.

6 CO4 BT1,
BT2,
BT 4

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

Table 5.1 Values of Bessel functions for various values of m_f

| m_f | J_0 | J_1 | J_2 | J_3 | J_4 | J_5 | J_6 | J_7 |
|-------|---------|---------|---------|---------|---------|---------|---------|--------|
| 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0.5 | 0.9385 | 0.2423 | 0.0306 | 0 | 0 | 0 | 0 | 0 |
| 1 | 0.7652 | 0.4401 | 0.1149 | 0.0196 | 0 | 0 | 0 | 0 |
| 1.5 | 0.5118 | 0.5579 | 0.2321 | 0.061 | 0.0118 | 0 | 0 | 0 |
| 2 | 0.2239 | 0.5767 | 0.3528 | 0.1289 | 0.034 | 0 | 0 | 0 |
| 2.5 | -0.0484 | 0.4971 | 0.4461 | 0.2166 | 0.0738 | 0.0195 | 0 | 0 |
| 3 | -0.2601 | 0.3391 | 0.4861 | 0.3091 | 0.132 | 0.043 | 0.0114 | 0 |
| 3.5 | -0.3801 | 0.1374 | 0.4586 | 0.3868 | 0.2044 | 0.0804 | 0.0254 | 0 |
| 4 | -0.3971 | -0.066 | 0.3641 | 0.4302 | 0.2811 | 0.1321 | 0.0491 | 0.0152 |
| 5 | -0.1776 | -0.3276 | 0.0466 | 0.3648 | 0.3912 | 0.2611 | 0.131 | 0.0534 |
| 6 | 0.1506 | -0.2767 | -0.2429 | 0.1148 | 0.3576 | 0.3621 | 0.2458 | 0.1296 |
| 7 | 0.3001 | -0.0047 | -0.3014 | -0.1676 | 0.1578 | 0.3479 | 0.3392 | 0.2336 |
| 8 | 0.1717 | 0.2346 | -0.113 | -0.2911 | -0.1054 | 0.1858 | 0.3376 | 0.3206 |
| 9 | -0.0903 | 0.2453 | 0.1448 | -0.1809 | -0.2655 | -0.055 | 0.2043 | 0.3275 |
| 10 | -0.2459 | 0.0435 | 0.2546 | 0.0584 | -0.2196 | -0.2341 | -0.0145 | 0.2167 |