

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2023  
(Third Semester)

Branch – PHYSICS

**DISCIPLINE SPECIFIC ELECTICE – I: DIGITAL COMMUNICATIONS**

Time: Three Hours

Maximum: 50 Marks

**SECTION-A (5 Marks)**

Answer ALL questions

ALL questions carry EQUAL marks (5 x 1 = 5)

1. In an SSB transmitter, one is most likely to find  
(i) class C audio amplifier (ii) Tuned modulator.  
(iii) class B RF amplifier (iv) class A RF amplifier
2. The two forms of angle modulation are  
(i) PM and AM (ii) AM and FM  
(iii) FM and PM (iv) AM and DSB
3. The range through which carrier is phase shifted by PSK is  
(i)  $+45^\circ$  to  $-45^\circ$  (ii)  $+135^\circ$  for mark and  $-135^\circ$  for OFF  
(iii)  $+90^\circ$  for mark and  $-90^\circ$  for OFF (iv)  $0^\circ$  to  $10^\circ$
4. In cell phone communication, signal strength will be \_\_\_\_\_ in the closest base station.  
(i) greatest (ii) poor (iii) less (iv) moderate
5. ISDN stands for  
(i) Information system digital network  
(ii) Integrated services digital network  
(iii) Indian standard digital network  
(iv) International services digital network

**SECTION - B (15 Marks)**

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 3 = 15)

6. a. Write short notes on independent side band system.  
OR  
b. Draw the circuit diagram of push pull FET balanced modulator and explain its working.
7. a. Define deviation ratio and modulation index in angle modulation.  
OR  
b. Write any three comparisons between FM and PM.
8. a. Briefly explain FSK modulation.  
OR  
b. Define pulse modulation. What are the types of pulse modulation? Explain any 2 characteristic features of pulse modulation.

Cont...

9. a. Write short notes on sectorized cell sites.  
OR  
b. Write any three advantages of using second generation cellular systems over first generation cellular system (1 G).
10. a. Write any three differences between ISDN and ATM networking.  
OR  
b. What is Network security? Write the benefits of Network security.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

11. a. Analyse mathematically suppressed carrier amplitude modulation.  
OR  
b. Write short notes on SSB transmitter and BFO receiver.
12. a. Briefly explain the action of FM modulator using Varactor diode. Draw the circuit and block diagram.  
OR  
b. Explain the working of indirect FM transmitter and FM receiver.
13. a. With neat circuit, explain the generation of pulse width signals.  
OR  
b. Explain how PPM signals can be generated and transmitted.
14. a. Write in detail about frequency reuse in cellular system.  
OR  
b. Explain some limitations of GSM.
15. a. What are the classifications of network protocol? Explain each.  
OR  
b. Write the differences between Wi-Fi and Ethernet connections and Explain their salient features.

Z-Z-Z

END