

**D 120550****(Pages : 2)****Name.....****Reg. No.....****FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION  
APRIL 2025****Electronics****ELE 4C 05—COMMUNICATION ELECTRONICS****(2019—2023 Admissions)****Time : Two Hours****Maximum : 60 Marks****Section A***Answer the following Questions (1-12), each carries 2 marks.*

1. What is the frequency range of microwaves ? List its main applications
2. A carrier of 100 V and 1200 kHz is modulated by a 50 V, 1000 Hz sine wave signal. Find the modulation factor.
3. Draw the pictorial representation of an FM wave.
4. What is narrowband FM ?
5. A carrier is frequency modulated with maximum frequency deviation of 20 KHz. Message signal frequency is given by 4 KHz. Find bandwidth.
6. Define Co-channel interference.
7. What do you mean by quantization ?
8. Define the term signal to noise ratio.
9. How PPM can be generated from PWM ?
10. What determines the bandwidth used by any FM communication system?
11. Differentiate between bit rate and Baud rate?
12. Draw the time domain representation of PSK signal.

**(Ceiling : 20 marks)****Turn over**

**Section B**

*Answer the following questions (13-19), each carries 5 marks.*

13. Explain the need for modulation.
14. Explain the need of AGC in radio receiver. A superheterodyne receiver with intermediate frequency 10.7 MHz is tuned to a station operating at 93 MHz. Calculate the local oscillator frequency and image frequency
15. Derive the expression for total power in case of an AM wave. A broadcast radio transmitter radiates 20 kW, when percentage of modulation is 0.7. Find out carrier power ?
16. What is Nyquist rate of sampling? Find out the Nyquist rate for a continuous time signal,  $x(t) = 100\cos 300\pi t + 480\sin 500\pi t - 125\cos 300\pi t$ .
17. Explain any *two* analog pulse modulation techniques.
18. Describe the detection of binary FSK signal.
19. Explain QPSK

(Ceiling : 30 marks)

**Section C**

*Answer any **one** question (20-21) ; carries 10 marks.*

20. Explain in detail Pulse Code Modulation.
21. Compare AM, FM and PM.

(1 × 10 = 10 marks)