(6 pages) **Reg. No. :** .....

Code No. : 41138 E **Sub. Code : JMPH 5 C**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2018.

Fifth Semester

Physics – Main

Major Elective II — COMMUNICATION ELECTRONICS

(For those who joined in July 2016 and afterwards)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer:

1. When a receiver is tuned to 1200 kHz the load oscillation frequency is

   (a) 1200 KHz (b) 1655 KHz

   (c) 2110 KHz (d) 745 KHz

2. The modulating signal contains

   (a) USB and LSB (b) USB and LSF

   (c) USF and LSF (d) USF and LSB

3. A carrier wave can be represented by

   (a) $E_c \cos \omega_e t$ (b) $E_c \cos \omega^2 t$

   (c) $E_c \cos^2 \omega t$ (d) none of the above

4. The RF amplifier uses a tuned ———— circuit.

   (a) series (b) parallel

   (c) mixed (d) variance

5. In phase modulation

   (a) only the phase of the carrier wave varies

   (b) only the frequency of the carrier wave varies

   (c) both the phase and frequency of the carrier wave varies

   (d) there is no change in the frequency and phase of carrier wave

6. FM systems are operated at

   (a) 30 MHz (b) 40 MHz

   (c) 60 MHz (d) 70 MHz

7. The modulating signal is produced from

(a) oscillator (b) carrier

(c) microphone (d) amplifier

8. Carrier swing is

(a) variation from low frequency to high frequency

(b) variation from high frequency to low frequency

(c) variation is equal

(d) no variation

9. DPSK signal can be represented by

(a) DPSK = $a_k \cos \omega_e t$

(b) DPSK = $a_c \sin \omega_e t$

(c) DPSK = $a_k \tan \omega_e t$

(d) DPSK = $a_k \sec \omega_e t$

10. The number of different phase shifts used in QPSK is ————————.

(a) 1 bit (b) 3 bits

(c) 2 bits (d) 4 bits

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Describe AM power distribution.

Or

(b) What is double side band suppressed carrier AM? With neat sketch explain it.

12. (a) Compare different AM systems.

Or

(b) Briefly explain super heterodyne receiver.

13. (a) Differentiate PM to FM and FM to PM conversions.

Or

(b) Explain direct method of FM generation.

14. (a) Explain Foster-Seeley detector.

Or

(b) Explain Ratio detector.

15. (a) Explain correlative coding.

Or

(b) Describe Mary FSK.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain AM modulator circuit.

Or

(b) Explain the phasor representation of AM with carrier.

17. (a) Explain quadrature amplitude modulation.

Or

(b) With neat sketch describe double frequency conversion AM receiver.

18. (a) Explain the phasor representation of FM and PM.

Or

(b) Explain FM transmitters.

19. (a) Describe the balanced slope detector.

Or

(b) Explain how noise is suppressed in FM detectors.

20. (a) Explain the performance comparison of digital modulation schemes.

Or

(b) Describe duobinary encoding.

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