GS-380

VI Semester B.Sc. Examination, May/June - 2019

ELECTRONICS - VII

Communication - II

(CBCS) (F+R) (2016-17 & Onwards)

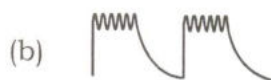Time : 3 Hours

Max. Marks : 70

Instruction : *Answer **all** the questions from **Part - A**, **any five** from **Part-B**, **any four** from **Part - C**.*

PART - A

Answer **all** the sub-divisions.

15x1=15

1. (i)   Pictorial representation of a typical PPM waveform is _____.

    (a)

    (b)

    (c)

    (d)

    (ii) According to Sampling theorem,

    (a)   The signal should be sampled at least twice each cycle of its lowest frequency

    (b)   The signal should be sampled at least twice each cycle of its highest frequency

    (c)   Guard time should be as large as possible

    (d)   Guard time should be as small as possible

    (iii) Waveform shown represents _____.

    (a)   PWM   (b)   PAM   (c)   PSK   (d)   FSK

    (iv) Echo in RADAR refers to :

    (a)   Transmitted signal   (b)   Reflected signal

    (c)   Modulated signal   (d)   Demodulated signal

(v) The main disadvantage of CW Doppler RADAR is that :

(a) It does not give the target range

(b) It does not give the target velocity

(c) A transponder is required at the target

(d) It does not give the target position

(vi) With reference to the Satellite orbit, 'Apogee' is the :

(a) Farthest point in the orbit

(b) Nearest point in the orbit

(c) Point in the parking orbit

(d) Name of the boost motor that puts the satellite in the right parking slot

(vii) In Geo stationary orbit, for Global communication, minimum number of satellites needed is :

(a) 1   (b) 3   (c) 6   (d) 4

(viii) In satellite systems, the uplink frequency is greater than downlink frequency. Is it true ?

(a) No

(b) Yes

(c) It is true only in DOMSATs

(d) It is true except in DOMSATs

(ix) A graded index fiber has :

(a) Uniform distribution of refractive index

(b) More value of refractive index at the centre and decreases towards the edges

(c) More value of refractive index at the centre and decreases towards the edges in steps

(d) Least value of refractive index at the centre and increases towards the edges

(x) The core of a fiber optic is surrounded by :

(a) Wire braid shield   (b) Kevlar

(c) Cladding   (d) Plastic insulation

(xi) Two important functions of SIM card are :

(a) Storing of Phone numbers and SMS

(b) Backup SMS and MMS

(c) Identification and Authentication of the Subscriber

(d) Chatting and location based services

(xii) IMEI number in a Cell phone is the :

   (a)   Information of Mobile Equipment Identity

   (b)   International Mobile Equipment Information number

   (c)   International Mobile Equipment Identity number

   (d)   Integrated Mobile Equipment Identity number

(xiii) Cell splitting is required in mobile communication to :

   (a)   Meet the requirements of increased traffic

   (b)   Identify and authenticate a subscriber

   (c)   Solve the power problem

   (d)   None of the above

(xiv) The data rate of 4G system is around _____.

   (a)   2 Mbps   (b)   10 Mbps   (c)   20 Mbps   (d)   100 Mbps

(xv) Bluetooth is the wireless technology for :

   (a)   Local Area Network

   (b)   Wide Area Network

   (c)   Metropolitan Area Network

   (d)   Both (a) and (b)

PART - B

Answer **any five** questions.   5x7=35

2.   (a)   List the advantages and disadvantages of digital communication over **6+1** Analog communication.

      (b)   What is the difference between a baud and bit rate ?

3.   Derive an expression for maximum range of a RADAR system.

4.   Explain with a block diagram, the operation of CW RADAR and write its **5+2** advantages and disadvantages.

      (a)   Explain with a block diagram, the operation of a C-band transponder in a satellite system.

      (b)   Write any two differences between FDMA and TDMA.

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5. (a) Write the Principle of light propagation through optical fiber.   2+5
    (b) Draw the block diagram of optical fiber communication system and explain the function of each block.

6. (a) Explain the construction and operation of a PIN photo diode.   5+2
    (b) Explain Rayleigh's scattering losses in fiber optic communication.

7. Explain the following with respect to cellular communication system :
    (a) Base station   (b) MTSO   (c) PSTN   (d) Hand off

8. (a) Explain Wi-Fi and Wi-Max.   4+3
    (b) Compare GSM and CDMA w.r.t Cellular Communication System.

PART - C

Answer **any four** questions :   4x5=20

9. A digital transmission system has a bandwidth of 4.5 kHz and 30 dB S/N ratio. Calculate the maximum information carrying capacity. What happens to the information carrying capacity if the S/N ratio becomes 20 dB.

10. Explain :

    (a) Distortion and   (b) Cross talk in a digital communication system.

11. Draw the block diagram of a pulsed radar system and explain its operation.

12. Explain with block diagram, the function of the downlink model of a satellite communication system.

13. Calculate the path losses in a Satellite communication system for a signal of 4 GHz at a distance of   (a) 20×10^3 kms   (b) 36×10^3 kms

14. A glass clad fiber is made with a core glass of refractive index 1.55. Cladding is doped to give a fractional difference of 0.004. Find the Refractive index of cladding, Critical Internal angle of reflection and Numerical Aperture.

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