Sample Paper

Electronics & Communication Engineering

Max. Marks 100

Instructions for Candidates:

Attempt all 50 questions, each question carries 02 marks. There is no negative marking. Please mark the correct answer as A/B/C/D at appropriate place, on the right hand side of the question, in blue or black ink.

Q. 1 The very high frequency (VHF) range extends from

(A) 3-30MHz (B) 30-300MHz

(C) 300-3000MHz (D) 3000-30000MHz [ ]

Q.2 The function of the transducer in a communication system is

(A) To transmit the massage signal

(B) To modulate the massage signal

(C) To convert massage sound signal into electrical signal

(D) None [ ]

Q.3 If G (f) represents the Fourier transform of a signal g (t) which is real and old symmetric in time, then

(A) G (f) is complex (B) G (f) is imaginary

(C) G (f) is real (D) G (f) is real and non negative [ ]

Q.4 The trigonometric Fourier series of an even function of time does not have the

(A) dc term (B) cosine terms

(C) sin terms (D) odd harmonic terms [ ]

Q.5 The power spectral density (psd) of a deterministic signal is given by $[sine(f)/f2]$, where f is frequency. The auto correlation function of this signal in the time domain is

(A) A rectangular pulse (B) A delta function

(C) Sine pulse (D) Triangular pulse [ ]

Q.6 A 4GHz carrier is DSB-SC modulated by a low pass message signal with maximum

frequency of 2MHz. The resultant signal is to be ideally sampled. The minimum frequency of the sampling in train should be

(A) 4MHz (B) 8MHz

(C) 8GHz (D) 8.004GHz [ ]

Q.7 The maximum power efficiency of AM modulator is

(A) 25% (B) 50%

(C) 75% (D) 100% [ ]

Q.8 1 MHz sinusoidal carrier is amplitude modulated by symmetrical square wave of period 100per sec. which of the following frequency will not be present in the modulated signal?

(A) 990KHz (B) 1010KHz

(C) 1020KHz (D) 1030KHz [ ]

Q.9 The probability density function of the envelope of narrowband Gaussian noise is

(A) Poisson (B) Gaussian

(C) Rayleigh (D) Rician [ ]

Q.10 The amplitude spectrum of a Gaussian pulse is

(A) Uniform (B) A sine function

(C) Gaussian (D) An impulse function [ ]

Q.11 The space charge limited current in a in a thermionic diode is given by

(A) Richardson's equation (B) Child-Langmuir equation

(C) Plank constant (D) none [ ]

Q.12 Schottky effect originates from

(A) Field emission (B) Photo electric emission

(C) Secondary emission (D) none [ ]

Q.13 A good ohmic contacts is obtained with

(A) A wide band gap semiconductor (B) A low barrier height

(C) Low doping (D) None [ ]

Q.14 The reverse saturation current desity of a schottky diode is

(A) Much larger than that of a pn junction diode

(B) Much less than that of a pn junction diode

(C) Equal to that of a pn junction diode

(D) None [ ]

Q.15 The cutin voltage of a si p-n diode is about

(A) 0.6v (B) 0.6mv

(C) 6v (D) None [ ]

Q.16 The emission from a laser is spontaneous /stimulated

(A) a tunnel diode offers (B) a negative resistance

(C) a negative differential resistance (D) None [ ]

Q.17 If α=0.95, then the value of β of the transistor is

(A) 190 (B) 19

(C) 0.05 (D) None [ ]

Q.18 A transistor is an amplifier circuit is

(A) An active element (B) A passive element

(C) Both (D) None [ ]

Q.19 The self-bias arrangement gives a better Q-point stability when

(A) Re is small (B) β is small, but Re is large

(C) Both β and Re are large (D) None [ ]

Q.20 For a emitter follower the gain is

(A) Unity (B) Greater than unity

(C) Less than unity (D) None [ ]

Q.21 A Hartley oscillator is used in the -

(A) dc supply (B) AC supply

(C) Both (D) None [ ]

Q.22 The frequency stability of a crystal oscillator is

(A) Very high (B) Very Low

(C) Both (D) None [ ]

Q.23 If E=(3x*2+y) ax+ xay kv/m, what is the work done in moving a-2μc charge from (0,5,0) to (2,-1,0) by taking the path (0,5,0)→(2,5,0)→(2,-1,0)

(A) 12mJ (B) 6mJ

(C) 10mJ (D) None [ ]

Q.24 A telephone line has R=30/km, L= 100mH/km, G=0 and C = 20μF/km at f=1 kHz, what is characteristic impedance of the line.

(A) 70.75L-1.367°Ω (B) 60.82L-1.827°Ω

(C) 80.87L-1.367°Ω (D) None of these [ ]

Q.25 A certain antenna with an efficiency of 95% has Maximum radiation intensity of 0.5%w/sr., Input power is 0.4W, what is directivity is

(A) 20.94 (B) 15.67

(C) 25.11 (D) 8.12 [ ]

Q.26 z- transform of u (-n) is

(A) $\frac{z}{1-z}$ (B) $\frac{z}{1-z}$

(C) $\frac{1}{1-z}$ (D) $\frac{z^2}{1-z}$ [ ]

Q.27 If $x(n) \leftrightarrow X(Z)$, then valid one is

(A) $x(-n) \leftrightarrow X(Z)$ (B) $x(-n) \leftrightarrow zX(Z)$

(C) $x(-n) \leftrightarrow \frac{X(Z)}{z}$ (D) $x(-n) \leftrightarrow X(\frac{1}{z})$ [ ]

Q.28 z- transform of [a x (n)+b y (n)] is

(A) a x(z)+b x(z) (B) a x(z)b x(z)

(C) a x(z)-b x(z) (D) None of these [ ]

Q.29 The Boolean expression Y= A.B represent

(A) OR gate (B) XNOR gate

(C) AND gate (D) None [ ]

Q.30 Number of bits in nibble is

(A) Two (B) Three

(C) Four (D) Eight [ ]

Q.31 A flip- flop is

(A) By stable multivibrator circuit (B) Mono stable multivibrator circuit

(C) 1 & 2 both (D) None [ ]

Q.32 The voltage gain of FET source follower is

(A) -1 (B) greater than 1

(C) Slightly less than unity and positive (D) None [ ]

Q.33 A maximum saturation drain current can be attained in an n- channel JFET when Vgs is equal to

(A) pinch-off voltage (B) zero

(C) -4v (D) None [ ]

Q.34 An OP-AMP comparator circuit employs

(A) No feedback (B) Positive

(C) Negative feedback (D) None [ ]

Q.35 The high input impedance of an IC OP-AMP is achieved by using

(A) FET (B) CE transistor

(C) Darlington connection (D) None [ ]

Q.36 The input impedance of an active filter is

(A) Zero (B) 100Ω

(C) range from few KΩ to thousand MΩ (D) None [ ]

Q.37 For a second-order Butterworth LP filter, the damping factor is

(A) 2 (B) 1.414

(C) 0.707 (D) None [ ]

Q.38 A toggle switch operation is obtained from

(A) RS-Flip-flop (B) T-type FF

(C) JK- FF (D) None [ ]

Q.39 A CPU built on a single semiconductor chip serves as a

(A) Microprocessor (B) Microcontroller

(C) Computer (D) None [ ]

Q.40 In VLSI technology, the rectangles composing the image of mask exposed on a photographic plate called
(A) Reticle (B) Silicide
(C) Both (D) None [ ]

Q.41 The main component of CRO is
(A) CRT (B) Gun diode
(C) H-V plate (D) None [ ]

Q.42 A radar antenna generally uses a----- reflector
(A) Parabolic (B) Cylindrical
(C) Sphere (D) None [ ]

Q.43 A color camera employs ------vidicon tubes
(A) Three (B) Four
(C) Five (D) None [ ]

Q.44 The carrier frequency of the audio signal in TV transmission is greater than that for video signal by
(A) 4.5MHz (B) 5.5MHz
(C) 10.5MHz (D) None [ ]

Q.45 Microwave components can be characterized by
(A) h-parameter (B) y-parameter
(C) S-parameter (D) Z-parameter [ ]

Q.46 The state-space representation for multivariable system can write as?
(A) X=Ax+BU (B) X=AX+BU
(C) X= AX+BU (D) None [ ]

Q.47 The signal x (t) = cos(2∏)(100t)+ 5sin(2∏)(40t) is
(A) Periodic (B) None Periodic
(C) Both, (A) & (B) (D) None [ ]

Q.48 How many buses of 8085 microprocessor
(A) Two (B) Three

(C) Four (D) None [ ]

Q.49 ICBO _____ for every 100C rise in temperature

(A) Doubles (B) Triples

(C) Quadruples (D) None [ ]

Q.50 If $x(n) \leftrightarrow X(Z)$, then valid one is

(A) $x(-n) \leftrightarrow X(Z)$ (B) $x(-n) \leftrightarrow zX(Z)$

(C) $x(-n) \leftrightarrow \frac{X(Z)}{z}$ (D) $x(-n) \leftrightarrow X(\frac{1}{z})$ [ ]