PU M Tech Electronics and Communication Engg

1 of 100

182 PU_2015_304

The ratio of conduction current density to the displacement current density is:-

- jσ/ωε
- σ/jωε
- σω/jε
- σε/jω

2 of 100

171 PU_2015_304

The maximum data rate supported by IEEE 802.11a at 5 GHz is:-

- 100 Mbps
- 10 Mbps
- 48 Mbps
- 54 Mbps

3 of 100

107 PU_2015_304

In the interval [0, π], the equation $x = \cos x$ has:-

- no solution
- exactly one solution
- an infinite number of solutions
- exactly two solutions

4 of 100

111 PU_2015_304

Which of the following is not a logical operator in C programming?

- &
- !
- &&
- ||

5 of 100

160 PU_2015_304

100 Base T refers to:-

- Fibre Connectivity
- Thick Ethernet
- SONET
- Twisted Pair

6 of 100

144 PU_2015_304
Which of the following is used as a data selector?

- Encoder
- Decoder
- Demultiplexer
- Multiplexer

7 of 100

105 PU_2015_304
Laplace transform of $8t^3$ is :-

- $\frac{8}{s^4}$
- $\frac{16}{s^4}$
- $\frac{24}{s^4}$
- $\frac{48}{s^4}$

8 of 100

206 PU_2015_304
The phase angle corresponding to λ/4 in a standing-wave pattern is:-

- 30°
- 180°
- 45°
- 90°

9 of 100

141 PU_2015_304
The best electronic device for fast switching is:-

- MOSFET
- BJT
- Triode
- FET

10 of 100

153 PU_2015_304
What do the contents of instruction register specify?

- Op code for the instruction to be executed next
- Operand for the instruction to be executed next
- Operand for the instruction being executed
- Op code for the instruction being executed

11 of 100
162 PU_2015_304
The Ethernet protocol uses:-

- CSMA/CA
- Slotted ALOHA
- SCPC
- CSMA/CD

12 of 100
184 PU_2015_304
Strictly speaking, in a microstrip the propagating mode that is excited is:-

- only TE mode
- non-TEM mode
- only TM mode
- only TEM mode

13 of 100
142 PU_2015_304
The SCR is a semiconductor device made up of:-

- Three P-type and one N-type layers
- One P-type and three N-type layers
- Two P-type and two N-type layers
- Four N-type layers

14 of 100
146 PU_2015_304
The Darlington pair is a multistage configuration of:-

- CC-CC
- CE-CB
- CE-CE
- CC-CE

15 of 100
210 PU_2015_304
An emitter follower has high input impedance because of:-

- Negative feedback in the base emitter circuit
- Emitter resistance
- Large biasing resistance
- Large load resistance

16 of 100

150 PU_2015_304

ICs, which are made by sputtering materials on a ceramic substrate are called:-

- Thin film
- Hybrid
- Thick film
- Monolithic

17 of 100

165 PU_2015_304

The number of subcarriers used in OFDM technology for IEEE 802.16e network with the system bandwidth of 10 MHz is:-

- 256
- 1024
- 52
- 128

18 of 100

152 PU_2015_304

A fetch cycle is the:-

- First part of the instruction cycle
- Intermediate part of the instruction cycle
- Last part of the instruction cycle
- Auxiliary part of the instruction cycle

19 of 100

183 PU_2015_304

A transmission line with a characteristic impedance Z_1 is connected to a transmission line with characteristic impedance Z_2. If the system is being driven by a generator connected to the first line, then the overall transmission coefficient will be:-

- Z_1/Z_1+Z_2
- Z_2/Z_1+Z_2
- $2Z_2/Z_1+Z_2$
- $2Z_1/Z_1+Z_2$

20 of 100

204 PU_2015_304

A wave is propagated in a waveguide at frequency of 9 GHz and separation is 2 cm between walls. Find cut off wavelength for dominant mode.

- 8 cm
- 2 cm
- 4 cm
- 1 cm

21 of 100
200 PU_2015_304
For a type one system, the steady–state error due to step input is equal to:-

- zero
- 0.25
- 0.5
- infinite

22 of 100
127 PU_2015_304
Pilot carrier transmission is one in which:-

- Two sidebands as well as a trace of carrier are transmitted
- Only two sidebands are transmitted
- One sideband and carrier are transmitted
- Only one sideband is transmitted

23 of 100
192 PU_2015_304
In a series resonance circuit, the impedance of the circuit is:-

- minimum
- one
- zero
- maximum

24 of 100
121 PU_2015_304
The concept of segmenting an image based on discontinuity or similarity of the gray level values of its pixels is applicable to _____.

- dynamic images
- static images
- indexed images
- dynamic and static images

25 of 100
120 PU_2015_304
Increased pulse-width in the flat top sampling leads to_____ in reproduction.

- greater aliasing errors
- attenuation of high frequencies
- no harmful effects
- attenuation of low frequencies

26 of 100

202 PU_2015_304

Peak overshoot of step-input response of an underdamped second-order system is explicitly indicative of:-

- settling time
- damping ratio
- rise time
- natural frequency

27 of 100

147 PU_2015_304

How many machine cycles will the execution of SIM instruction take in an 8085 microprocessor?

- 2
- 1
- 0
- 3

28 of 100

181 PU_2015_304

In a travelling electromagnetic wave, E and H vector fields are:-

- parallel in space
- perpendicular in space
- H is in the direction of wave travel
- E is in the direction of wave travel

29 of 100

110 PU_2015_304

The MATLAB function to generate “00000” as output is:-

- zeros (1,5)
- zeros(5x1)
- zeros(5,1)
- zeros (1x5)

30 of 100

180 PU_2015_304

The wavelength of 2 GHz wave is:-

- 15 mm
- 1.5 cm
- 15 cm
- 1.5 mm

31 of 100

205 PU_2015_304

A wave is propagated in a waveguide at frequency of 9 GHz and separation is 2 cm between walls. Calculate group velocity for dominant mode.

- 1.8×10^8 m/sec
- 5×10^8 m/sec
- 1.5×10^8 m/sec
- 3×10^8 m/sec

32 of 100

140 PU_2015_304

A push pull amplifier balances out:-

- Neither odd nor even harmonics
- Both odd as well as even harmonics
- Odd harmonics
- Even harmonics

33 of 100

112 PU_2015_304

The Fourier series of an odd periodic function contains only:-

- sine terms
- cosine terms
- even harmonics
- odd harmonics

34 of 100

126 PU_2015_304

The function of baffles in speaker system is:-

- To avoid cancellation of compression
- To produce echo effect and ratification of air
- To allow high frequencies to pass
- To provide stability to the speaker

35 of 100

161 PU_2015_304

RS232 interface:-

- a logic high uses positive voltage
- uses only positive logic
- uses only negative logic
- cannot transmit signals over long distance

36 of 100

129 PU_2015_304

In AM, if modulation index is more than 100%, then:-

- Efficiency of transmission increases
- Wave gets distorted
- Bandwidth increases
- Power of the wave increases

37 of 100

109 PU_2015_304

Eigen values of a real symmetric matrix are always:-

- negative
- complex
- positive
- real

38 of 100

145 PU_2015_304

An index register in digital computer is used for:-

- Pointing to the stack address
- Performing arithmetic and logic operations
- Address modification
- Storing one of the operands

39 of 100

108 PU_2015_304

All MATLAB variables are:-

- one dimensional array
- multidimensional array
- three dimensional array
- two dimensional array

40 of 100

125 PU_2015_304

Which of the following is not uniformly distributed over all frequencies?

- Flicker noise
- White noise
- Thermal noise
- Shot noise

41 of 100

193 PU_2015_304

In a loss free RLC circuit the transient current is:-

- Sinusoidal
- Square wave
- Cosine wave
- Oscillating

42 of 100

203 PU_2015_304

The input impedance of short-circuited line of length *l* where $\lambda/4 < l < \lambda/2$, is:-

- inductive
- resistive
- complex
- capacitive

43 of 100

172 PU_2015_304

A message signal band limited to 5 kHz is sampled at the minimum rate as dictated by the sampling theorem. The number of quantization levels is 64. If the samples are encoded in binary form, the transmission rate is:-

- 60 kbps
- 32 kbps
- 52 kbps
- 10 kbps

44 of 100

212 PU_2015_304

A cascade amplifier will have a higher cut off frequency that is:-

- Equal to that of single stage amplifier
- Less than that of single stage amplifier
- More than that of single stage amplifier
- Becomes double

45 of 100

163 PU_2015_304

The number of bits used to denote the address of source and destination in IPV4:-

- 32 bits
- 128 bits
- 256 bits
- 64 bits

46 of 100

213 PU_2015_304

An oscillator that uses a tapped coil in the LC tuned circuit is the:-

- Armstrong oscillator
- Colpitts oscillator
- Hartley oscillator
- Pierce oscillator

47 of 100

149 PU_2015_304

Microprogramming is a technique:-

- Microprogramming is a technique
- for writing small programs efficiently
- for programming the control steps of computer
- for programming output/input

48 of 100

128 PU_2015_304

In delta modulation, the slope overload distortion can be reduced by:-

- Increasing step size
- Decreasing step size
- Decreasing sampling rate
- Increasing granular noise

49 of 100

124 PU_2015_304

In TDM system, different signals are distinguished from each other:-

- Only in frequency
- Only in amplitude
- Only in time
- Both in time and frequency

50 of 100

113 PU_2015_304

The amplitude spectrum of Gaussian pulse is:-

- Gaussian
- an impulse function
- a sine function
- uniform

51 of 100
201 PU_2015_304
The LVDT is primarily used for the measurement of:-

- displacement
- velocity
- acceleration
- humidity

52 of 100
151 PU_2015_304
8085 has _____ software restarts and _____ hardware restarts.

- 6, 6
- 10, 5
- 7, 5
- 8, 4

53 of 100
211 PU_2015_304
The typical turn off time of a transistor is:-

- 10 ns
- 70 ns
- 40 ns
- 60 ns

54 of 100
148 PU_2015_304
Which of the following interrupts in 8085 microprocessor has highest priority?

- RST 5.5
- INTR
- TRAP
- RST 6.5

55 of 100
143 PU_2015_304
Frequency stability in an oscillator is achieved by:-

- Controlling its gain
- Adjusting the phase shift
- Employing automatic biasing
- Incorporating tuned circuit

56 of 100

114 PU_2015_304

If a signal f(t) has energy E, the energy of the signal f(2t) is equal to:-

- 2E
- E
- E/2
- 4E

57 of 100

170 PU_2015_304

Which of the following requirements is necessary for fast communication,

- Higher transmitter power
- Higher channel Capacity
- Larger Bandwidth
- High S/N ratio

58 of 100

164 PU_2015_304

The IEEE 802.15.4 standard is used to specify_____ technology.

- WBAN
- Bluetooth
- ZigBee
- UWB

59 of 100

173 PU_2015_304

Consider a single error correcting (7,4) cyclic code with the generator matrix $g(x) = x^3 + x^2 + 1$ .What will be the transmitted data if received vector is 1101101?

- 1100
- 1010
- 1110
- 0001

60 of 100

106 PU_2015_304

The product of two complex numbers 1 + *i and* 2 - 5*i* is:-

- 7 + 3i
- -3 - 4i
- 3 - 4i
- 7- 3i

61 of 100

253 PU_2015_304

A 12bit ADC is operating with a 1μs clock period and the total conversion time is seen to be 14 μs. The ADC must be of the:-

- Successive Approximation Type
- Integrating Type
- Counting Type
- Flash Type

62 of 100

233 PU_2015_304

A transmitted using AM has in modulated carrier output power of 10 kW and can be modulated to a maximum depth of 90% by a sinusoidal modulating voltage without causing overloading. Find the value to which an modulated carrier power can be increased without resulting in overloading if the maximum permitted modulating index is 40%:-

- 14 kW
- 26.96 kW
- 2.96 kW
- 12.96 kW

63 of 100

251 PU_2015_304

A signal of maximum frequency of 10 kHz is sampled at Nyquist rate. The time interval between two successive samples is:-

- 100 μs
- 1000 μs
- 50 μs
- 500 μs

64 of 100

232 PU_2015_304

A 10 km long line has a characteristic impedance of 400 ohms. If line length is 100 km, the characteristic impedance is:-

- 400 Ω
- 40 Ω
- 4 Ω
- 4000 Ω

65 of 100

228 PU_2015_304

A (75 - j 40) Ω load is connected to a co-axial line of Z_0 = 75 Ω at 6 MHz. The load matching on the line can be accomplished by connecting:-

- an inductance at the load
- a short circuit stub at the load

- a short circuit stub at a specific distance from the load
- a capacitance at a specific distance from the load

66 of 100
252 PU_2015_304

An npn transistor with C=0.3 pF has a unity gain cut-off frequency f_T of 400 MHz at a dc bias current I_c=1 mA and V_T=26 mV. The value of its Cμ is approximately:-

- 50 pF
- 15 pF
- 30 pF
- 96 pF

67 of 100
250 PU_2015_304
The power content of a sideband of an AM wave with 60% modulation is 720 W. If the modulation is increased to 80%, then sideband power will become:-

- 1280 W
- 460 W
- 960 W
- 540 W

68 of 100
230 PU_2015_304
A transmission line is feeding 1 watt of power to a horn antenna having a gain of 10 dB. The antenna is matched to the transmission line. The total power radiated by the horn antenna into the free space is:-

- 75 W
- 100 W
- 10 W
- 1 W

69 of 100
222 PU_2015_304
If for a matrix, rank equals both the number of rows and number of columns, then the matrix is called:-

- singular
- minor
- non-singular
- transpose

70 of 100

249 PU_2015_304

If an 18 MHz band were to be considered for use with the same standards that apply to the 88 -108 MHz FM broadcast band, how many FM stations could be accommodated?

- 23
- 325
- 45
- 120

71 of 100

235 PU_2015_304

A loss less line of characteristic impedance Z_0 is terminated in pure reactance of $-jZ_0$ its VSWR is:-

- 0
- ∞
- 1.5
- 1

72 of 100

248 PU_2015_304

The auto correlation function for the function $x(t) = V \sin \omega t$ is given by:-

- $V^2 \cos^2 \omega t$
- $\frac{V^2 \cos \omega t}{2}$
- $V^2 \cos \omega t$
- $2V^2 \cos \omega t$

73 of 100

229 PU_2015_304

The depth of penetration of EM wave in medium having conductivity σ at a frequency of 1 MHz is 25 cm. The depth of penetration at a frequency of 4 MHz will be:-

- 12.5 cm
- 50 cm
- 25 cm
- 6.25 cm

74 of 100

254 PU_2015_304

The number of distinct Boolean expressions of 4 variables is:-

- 65536
- 256
- 16
- 1024

75 of 100

234 PU_2015_304

A 3 m long lossless air-filled transmission line has a characteristic impedance of 120 Ω, that is terminated by short circuit, and is excited with a frequency of 37.5 MHz. What is the nature of the input impedance (Zin)?

- Inductive
- Open
- Short
- Capacitive

76 of 100

231 PU_2015_304

A certain fiber-optic cable has the following characteristics: $n_1 = 1.82$ and $n_2 = 1.73$. What is the value of θ_c?

- 81.90°
- 71.90°
- 61.90°
- 91.90°

77 of 100

255 PU_2015_304

A 4 bit ripple counter and a 4 bit synchronous counter are made using flips flops having a propagation delay of 10 ns each. If the worst case delay in the ripple counter and the synchronous counter be R and S respectively, then:-

- R=10 ns ; S=40 ns
- R=20 ns ; S=30 ns
- R=30 ns ; S=20 ns
- R=40 ns ;S=10 ns

78 of 100

243 PU_2015_304

The library function used to find the last occurrence of a character in a string is:-

- strnstr( )
- laststr( )
- strrchr( )

- strstr( )

79 of 100

220 PU_2015_304

A body originally at 60^{o} cools down to 40^{o} in 15 minutes when kept in air at a temperature of 25^{o}C.What would be the temperature of the body at the end of 30 minutes?

- 35.2^{o}C
- 28.7^{o}C
- 31.5^{o}C
- 15^{o}C

80 of 100

227 PU_2015_304

The minimum required bandwidth for transmission of n signals, each band-limited to fm Hz is:-

- f_m /2n Hz
- f_mHz
- 2n f_m Hz
- f_m/2Hz

81 of 100

284 PU_2015_304

The noise figure of a radar receiver is 12 dB and its bandwidth is 2.5 MHz. The value of P_{min} for the radar will be:-

- $1.59x10^{-9}$ W
- $1.59x10^{-17}$ W
- $1.59x10^{-13}$ W
- $1.59x10^{-15}$ W

82 of 100

276 PU_2015_304

The radiation resistance of a circular loop of one turn is 0.01Ω. The radiation resistance of five turn of such a loop will be:-

- 0.52 Ω
- 0.05 Ω
- 0.15 Ω
- 0.25 Ω

83 of 100

265 PU_2015_304

A current of 2 A flows for 10 hour through a 100 ohm resistor. The energy consumed by the resistor is:-

- 2 kWh
- 0.5 kWh
- 4 kWh

- 0.02 kWh

84 of 100

275 PU_2015_304

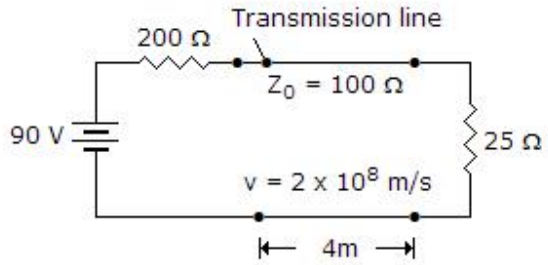
The bit rate of a digital communication system is R kbps. The modulation used is 32-QAM. The minimum bandwidth required for ISI free transmission is:-

- R/5 kHz
- R/5 Hz
- R/10 kHz
- R/10 Hz

85 of 100

274 PU_2015_304

In the given figure reflection coefficient at load is:-



- -0.5
- -0.6
- 0.6
- 0.5

86 of 100

269 PU_2015_304

For a series RLC circuit energized with a sinusoidal voltage source of frequency 4 rad / sec, the applied voltage lags the current by an angle of $\tan^{-1}2°$. Then the value of R for L = 1H and C = 0.05 F is:-

- 0.25 Ω
- 1 Ω
- 0.1 Ω
- 0.5 Ω

87 of 100

277 PU_2015_304

In BiCMOS inverters, the design approach is to use:-

- MOS - Logic BIPOLAR – Driving
- MOS – Logic & Driving BIPOLAR - Switching
- MOS - Driving BIPOLAR – Logic

- None of the above

88 of 100

273 PU_2015_304

A hollow rectangular waveguide has dimensions of *a* = *2b*. Calculate the amount of attenuation, if the frequency is 3 GHz, and b = 1 cm.

- 47.33 dB
- 50 dB
- 49 dB
- 50.33 dB

89 of 100

270 PU_2015_304

ZL = 200 Ω and it is desired that Zi = 50 Ω The quarter wave transformer should have a characteristic impedance of:-

- 75 Ω
- 100 Ω
- 50 Ω
- 25 Ω

90 of 100

290 PU_2015_304

Consider the following devices:-

1. RTL
2. High Speed TTL
3. ECL
4. CMOS

The correct sequence of their decrease in power dissipation is:-

- 1, 3, 2, 4
- 3, 1, 4, 2
- 3, 2, 4, 1
- 3, 1, 2, 4

91 of 100

294 PU_2015_304

The depth of penetration of electromagnetic wave in a medium having conductivity σ at a frequency of 1 MHz is 25 cm. The depth of penetration at a frequency of 4 MHz will be:-

- 6.25 cm
- 50 cm
- 100 cm
- 12.5 cm

92 of 100

292 PU_2015_304

The peak to peak input to an 8-bit PCM coder is 2 volts. The signals power-to- quantization noise power ratio (in dB) for an input of 0.5coswmt is:-

- 49.8
- 95.6
- 47.8
- 99.6

93 of 100

285 PU_2015_304

Determine the power content of the carrier of an AM signal that has a percent modulation of 85% and contains 1200 W total power:-

- 402.5 W
- 20.4 W
- 881.5 W
- 48.7 W

94 of 100

287 PU_2015_304

Consider a cellular system which has a total of S duplex channels available for use. If each cell is allocated a group of K channels (K < S) and if the S channels are divided among N cells then the total number of available radio channels can be expressed as:-

- $S = \frac{K}{N}$
- $S = \frac{N}{K}$
- S = KN
- S = K+N

95 of 100

268 PU_2015_304

A circuit of resistance R ohm and inductance L Hendry has a direct voltage applied to it. The current has a direct voltage applied to it. The current reaches 3.2% of its steady state value of 1 mA in 1 second. After the current has reached its final steady state value the circuit is suddenly short circuited. What will be the current after 2 seconds?

- 0.27 mA
- 0.47 mA
- 0.17 mA
- 0.37 mA

96 of 100

293 PU_2015_304

The skin depth at 10 MHz for a conductor is 1 cm. The phase velocity of an electromagnetic wave in the conductor at 1000 MHz is about:-

- $6x10^6$ m/sec
- $6x10^7$ m/sec
- $3x10^7$ m/sec
- $3x10^8$ m/sec

97 of 100

291 PU_2015_304

A zero mean white Gaussian noise passed through an idle low pass filter of bandwidth 10 kHz. The output is uniformly sampled with sampling period t_s=0.03m/sec. The samples so obtained would be:-

- Uncorrelated
- Statistically dependent
- Correlated
- Orthogonal

98 of 100

266 PU_2015_304

In a RLC series circuit consisting V_R = 3 V, V_C = 8 V and V_L = 4 V, Find the value of source excitation voltage?

- 4
- 3
- 9
- 5

99 of 100

286 PU_2015_304

A 5 kHz audio tone is used to modulate a 50MHz carrier causing a frequency deviation of 20 kHz. The modulation index of the FM signal is:-

- 5
- 3
- 6
- 4

100 of 100

267 PU_2015_304

An electric circuit consists a resistance 10 kΩ and a capacitor 1 μF. What is the transient voltage across the resistor and capacitor after 5 sec. if 200 V DC is applied to the circuit?

- 121.306 V, -121.306 V
- -242.612 V, 242.612 V
- 242.612 V, - 242.612 V
- -121.306 V, 121.306 V