304 PU M.Tech Electronics & Communication Engineering

1 of 100
212 PU_2016_304_E
TWT is _____.

- Wide band Amplifier
- Oscillator
- Tuned Amplifier
- Both amplifier and Oscillator

2 of 100
207 PU_2016_304_E
The current gain of a PNP transistor is:-

- The ratio of collector current to base current.
- The collector current divided by the emitter current.
- The negative of the NPN current gain.
- Near zero.

3 of 100
219 PU_2016_304_E
The maximum power efficiency of an AM modulator is:-

- 100%
- 50%
- 75%
- 25%

4 of 100
188 PU_2016_304_E
Which of the following layer is not in OSI layer?

- Data link layer
- Physical layer
- Transport layer
- Internet layer

5 of 100
198 PU_2016_304_E
In an electromagnetic wave, the phase difference between electric and magnetic field vectors E and B is:-

- π
- zero
- π/ 2

- π /4

6 of 100

218 PU_2016_304_E

A device used for coupling microwave energy is known as:-

- Loop
- Resonator
- Transmitter
- Waveguide

7 of 100

151 PU_2016_304_E

Which transmission media has the highest transmission speed in a network:-

- Electrical cable
- Coaxial cable
- Twisted pair cable
- Optical fibre

8 of 100

167 PU_2016_304_E

The impulse response of a LTI system is a unit step function, then the corresponding transfer function is:-

- $\frac{1}{s^2}$
- $\frac{1}{s}$
- s
- 1

9 of 100

138 PU_2016_304_E

Which of the following technology results in least power dissipation?

- ECL
- NMOS
- TTL
- CMOS

10 of 100

104 PU_2016_304_E

e^z is periodic with a period of:-

- iπ
- π

- 2π
- 2πi

11 of 100

176 PU_2016_304_E

The next number in the sequence 3, 6, 11, 18 ,27 is:-

- 40
- 36
- 34
- 38

12 of 100

191 PU_2016_304_E

In asymmetric key cryptography, the private key is kept by:-

- Sender
- Receiver
- All the connected devices to the network
- Sender and receiver

13 of 100

111 PU_2016_304_E

Thermal runaway will take place if the quiescent point is such that:-

- $V_{CE} > \frac{1}{2} V_{CC}$
- $V_{CE} < 0.25\ V_{CC}$
- $V_{CE} > 0.25\ V_{CC}$
- $V_{CE} < \frac{1}{2} V_{CC}$

14 of 100

142 PU_2016_304_E

In a microprocessor, the register which holds the address of the next instruction to be fetched is:-

- Instruction register
- Accumulator
- Program counter
- Stack pointer

15 of 100

148 PU_2016_304_E

The time required for a satellite to make a complete trip around the earth is determined by:-

- Kepler's law
- Faraday's law

- Newton's law
- Ohm's law

16 of 100

181 PU_2016_304_E

A radio communication link is to be established via the ionosphere. The virtual height at the midpoint of the path is 300Km and the critical frequency is 9MHz. the maximum usable frequency for the link between the stations of distance 800Km assuming flat earth is:-

- 25MHz
- 12MHz
- 25.5MHz
- 15MHz

17 of 100

146 PU_2016_304_E

In a TDM system each signal is allotted in a frame with a unique and fixed:-

- Phase slot
- Time slot
- Amplitude slot
- Frequency slot

18 of 100

211 PU_2016_304_E

Reflex Klystron is a _____.

- Oscillator
- Amplifier
- Filter
- Attenuator

19 of 100

172 PU_2016_304_E

If the Laplace transform of a signal y(t) is Y(s)= 1/(s(s-1)), then its final value is:-

- Unbounded
- 1
- -1
- 0

20 of 100

186 PU_2016_304_E

Which of the following is not applicable for IP?

- Error reporting

- Handle addressing conventions
- Packet handling conventions
- Datagram format

21 of 100

131 PU_2016_304_E

The power spectral density of white noise is:-

- Band limited
- Constant
- Band passed
- Impulse

22 of 100

197 PU_2016_304_E

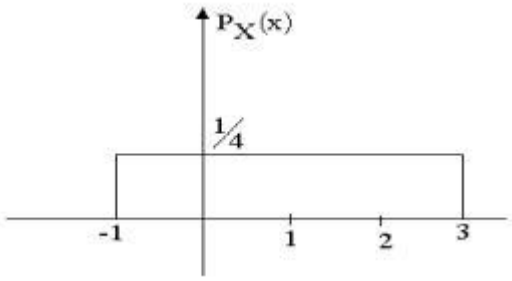
The intrinsic impedance of free space is:-

- 120 πohm
- 377ohm
- 75 ohm
- 73 ohm

23 of 100

217 PU_2016_304_E

For a random variable x having the PDF as shown in below Figure the mean and the variance are,



respectively:-

- 1 and 2/3
- 1 and 4/3
- 1/2 and 2/3
- 2 and 4/3

24 of 100

161 PU_2016_304_E

Simple Mail Transfer Protocol (SMTP) utilizes _____ as the transport layer protocol for electronic mail transfer.

- SCTP

- UDP
- DCCP
- TCP

25 of 100

171 PU_2016_304_E

A system with an input x(t) and output y(t) is described by the relation: y(t)=t x(t).This system is:-

- Linear and time varying
- Linear and time-invariant
- Non-linear and time-varying
- Non-linear and time-invariant

26 of 100

147 PU_2016_304_E

In _____ handoff, a mobile station communicates with one base station.

- Moving
- Medium
- Soft
- Hard

27 of 100

107 PU_2016_304_E

The expression curl(grad f) where f is a scalar function is:-

- A scalar of zero magnitude
- Equal to div (grad f)
- A vector of zero magnitude
- Equal to $\nabla^2 f$

28 of 100

141 PU_2016_304_E

An instruction used to set the carry flag in a computer can be classified as:-

- Data transfer
- Program control
- Logical
- Arithmetic

29 of 100

137 PU_2016_304_E

In PCM, the quantization noise depends on:-

- Bandwidth

- Sampling rate
- Number of quantization levels
- Signal power

30 of 100

132 PU_2016_304_E

The message signal contains three frequencies 5 KHz, 10 KHz and 20 KHz respectively. The bandwidth of the AM signal is:-

- 30KHz
- 10 KHz
- 20KHz
- 40 KHz

31 of 100

122 PU_2016_304_E

Which of the following is not bilateral:-

- Inductor
- Capacitor
- Diode
- Resistor

32 of 100

206 PU_2016_304_E

An SCR is considered to be a semi controlled device because:-

- Only during one half cycle of an alternating current wave.
- It can be turned ON only during one half cycle of an AC
- It can be turned ON but not OFF with a gate pulse.
- It can be turned OFF but not ON with a gate pulseit conducts.

33 of 100

126 PU_2016_304_E

When load impedance equals to Z_0 of the line, it means that the load _____ all the power.

- Reflects
- attenuates
- Absorbs
- radiates

34 of 100

216 PU_2016_304_E

Communication in the traditional cable TV network is:-

- omnidirectional
- bidirectional.
- No direction
- unidirectional

35 of 100

177 PU_2016_304_E

PDF in histogram equalization stands for:-

- Probability density function
- Partial density function
- Parametric density function
- Probability dual function

36 of 100

112 PU_2016_304_E

The upper cut-off frequencies f_{21} and f_{22} of the two stages of a cascaded amplifier are respectively 5 MHz and 3.3 MHz. The equivalent upper cut-off frequency of the cascaded amplifier would be:-

- 2 MHz
- 4.16 MHz
- 5 MHz
- 3.33 MHz

37 of 100

208 PU_2016_304_E

Voltage Series feedback (also called series-shunt feedback) results in:-

- Decreases in both input & output impedances.
- Increase in input impedance & decreases in output impedances.
- Decrease in input impedance & increase in output impedance.
- Impedance Increase in both input & output impedances.

38 of 100

106 PU_2016_304_E

The inverse Laplace transform of $\frac{1}{(s^2 + 2s)}$ is:-

- $(1 + e^{+2t}) / 2$
- $(1 - e^{+2t}) / 2$
- $(1 - e^{-2t}) / 2$
- $(1 - e^{-2t})$

39 of 100

152 PU_2016_304_E
Which layer links the network support layers and user support layers:-

- Network layer
- Session layer
- Data link layer
- Transport layer

40 of 100

201 PU_2016_304_E
The multivibrator characterized by one quasi-stable state is:-

- Astable multivibrator
- Monostable multivibrator
- Schmitt trigger
- Bistable multivibrator

41 of 100

166 PU_2016_304_E
Solar cell works based on:-

- Photo-conduction
- Thermal emission
- Tyndall effect
- Laser technology

42 of 100

102 PU_2016_304_E
A hydraulic structure has four gates which operate independently. The probability of failure of each gate is 0.2.Given that gate 1 has failed, the probability that both gates 2 and 3 will fail is:-

- 0.040
- 0.200
- 0.240
- 0.008

43 of 100

178 PU_2016_304_E
Let the peak power be 10,00,000 W and average power be 800 W. The duty cycle will be:-

- 8 %
- 0.008%
- 0.08%
- 0.8%

44 of 100

162 PU_2016_304_E

In a klystron amplifier the input cavity is called:-

- Buncher
- Catcher
- Collector
- Pierce gun

45 of 100

196 PU_2016_304_E

For a line of characteristic impedance, Z_o terminated in a load, Z_R such that $Z_R > Z_O$, the Voltage Standing Wave Ratio (VSWR) is given by:-

- $Z_R * Z_o$
- Z_R
- Z_R / Zo
- Zo / Z_R

46 of 100

103 PU_2016_304_E

X is uniformly distributed random variable that take values between 0 and 1.The value of E (X^3) will be:-

- ½
- 0
- 1/4
- 1/8

47 of 100

121 PU_2016_304_E

A branch of a network is said to be passive when it contains:-

- Current source
- Battery
- Voltmeter
- Voltage source

48 of 100

117 PU_2016_304_E

The minimum number of MOS transistors required to make dynamic RAM cell is:-

- 1
- 3
- 2
- 4

49 of 100
192 PU_2016_304_E
A _____ is a program that can infect other programs by modifying them, the modification includes a copy of the virus program, which can go on to infect other programs.

- Trap doors
- Zombie
- Worm
- Virus

50 of 100
168 PU_2016_304_E
If the transfer function of a first-order system is $G(s) = \frac{1}{(s+6)}$, then the time constant of the system is:-

- $\frac{1}{4}$
- $\frac{1}{8}$
- $\frac{1}{6}$
- $\frac{1}{2}$

51 of 100
187 PU_2016_304_E
Error detection at data link layer is achieved by:-

- Cyclic redundancy codes
- Hamming code
- Equalization
- Bit stuffing

52 of 100
156 PU_2016_304_E
Which of the following is not applicable to IP protocol:-

- Datagram format
- Handling address conventions
- Packet handling conventions
- Error reporting

53 of 100
127 PU_2016_304_E
The energy that neither radiated into space nor completely transmitted is:-

- Incident waves

- Standing waves
- Reflected waves
- Captured waves

54 of 100

157 PU_2016_304_E

What should be the flag value to indicate the last fragment:-

- 2
- 3
- 1
- 0

55 of 100

158 PU_2016_304_E

The size of IP address in IPv6 is:-

- 8 bits
- 100 bits
- 128 bits
- 4 bits

56 of 100

136 PU_2016_304_E

The PDM signal is converted into PPM with the help of a:-

- Flip-flop
- Astable
- Timer
- Monostable

57 of 100

202 PU_2016_304_E

In 8255, under the I/O mode of operation, we have _____ modes.

- 3
- 2
- 1
- 4

58 of 100

105 PU_2016_304_E

The value of the expression $\frac{-5+i10}{3+4i}$

- 1 + 2i
- 2 + i
- 2 - i
- 1 - 2i

59 of 100

116 PU_2016_304_E

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

- 16
- 65536
- 1024
- 256

60 of 100

182 PU_2016_304_E

For global communication, minimum number of satellite required is _____.

- seven
- three
- eleven
- one

61 of 100

258 PU_2016_304_M

ALE line of an 8085 microprocessor is used to_____.

- Execute the instruction supplied by external device
- Execute a NOP
- Execute RST by a hardware
- Execute an instruction from a memory location 20H

62 of 100

254 PU_2016_304_M

Write the Output for the program given below:

```
void main()
{
int a ,b;
a=1,b=2;
if(a++<=1&&b++>2)
printf ("hello a=%d b=%d", a, b);
else
printf (" welcome a=%d b=%d", a, b);
}
```

- hello a = 2 b = 3
- welcome a = 2 b = 3
- a = 3 b = 4
- a = 2 b = 3

63 of 100

257 PU_2016_304_M

For the 8085 assembly language program given below, the content of the accumulator after the execution of the program is

```
3000 MVI   A, 54H
3002 MOV   B, A
3003 STC
3004 CMC
3005 XRA   B
```

- 7EH
- 44H
- E7H
- 54H

64 of 100

224 PU_2016_304_M

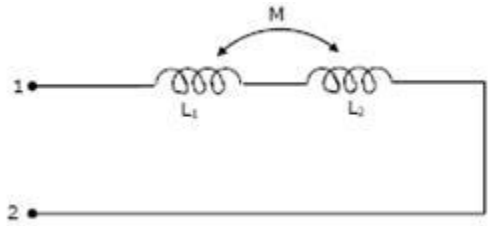
The voltages across R and L in a series RL circuit are found to be 200 V and 150 V respectively. The rms value of the voltage across the series combination is:-

- 250
- 360
- 200
- 450

65 of 100

242 PU_2016_304_M

The equivalent inductance measured between the terminals 1 and 2 for the circuit shown in figure, is:-



- $L_1 + L_2 - 2M$
- $L_1 + L_2 + 2M$
- $L_1 + L_2 + M$
- $L_1 + L_2 - M$

66 of 100

253 PU_2016_304_M

Predict the output for the program given below.

```
main()
{
    float me = 1.1;
    double you = 1.1;
    if(me==you)
            printf("Welcome to C");
    else
            printf("Welcome to C++");
}
```

- C++
- C
- Welcome to C++
- Welcome to C

67 of 100

237 PU_2016_304_M

Light is confined within the core of simple optical fibre by:-

- Total internal reflection at the core cladding boundary
- Refraction

- Total internal reflection at the outer edge of the cladding
- Reflection from fibre's plastic coating

68 of 100

228 PU_2016_304_M

A long wire composed of a smooth round conductor runs above and parallel to the ground. A high voltage exists between the conductor and the ground. The maximum electric stress occurs at:-

- The lower surface of the conductor
- The ground surface
- Midway between the conductor and the ground
- The upper surface of the conductor

69 of 100

222 PU_2016_304_M

The system $y(n) = 2x(2^n)$ is _____.

- Time - variant and non-causal
- Time -invariant and non-causal
- Time -invariant and causal
- Time -variant and causal

70 of 100

232 PU_2016_304_M

The bandwidth required for transmitting 4KHz signal using PCM with 128 quantizing levels is:-

- 24 KHz
- 28 KHz
- 8 KHz
- 16 KHz

71 of 100

248 PU_2016_304_M

If $f(x, y) = x^2+y^2 + 6x + 12$ then minimum value f(x, y) is:-

- -3
- 3
- 0
- 6

72 of 100

238 PU_2016_304_M

The type of light source and the fibre chosen for FDDI networks are:-

- Single mode fibre and 1550 nm lasers

- Multi mode fibre and 1300 nm lasers
- Single mode fibre and 1300 nm lasers
- Multi mode fibre and 1300 nm LED's

73 of 100

244 PU_2016_304_M

An independent voltage source in series with an impedance $Z_s = R_s + jX_s$ delivers a maximum average power to a load impedance Z_L when:-

- $Z_L = R_s + jX_s$
- $Z_L = R_s - jX_s$
- $Z_L = R_s$
- $Z_L = jX_s$

74 of 100

233 PU_2016_304_M

The noise margin of a TTL gate is about:-

- 0.4 V
- 0.2 V
- 0.8 V
- 0.6 V

75 of 100

223 PU_2016_304_M

A system with an input x(t) and output y(t) is described by the relation: y(t)=t x(t).This system is:-

- Non-linear and time-varying
- Linear and time varying
- Non-linear and time-invariant
- Linear and time-invariant

76 of 100

252 PU_2016_304_M

Predict the output for the program given below:

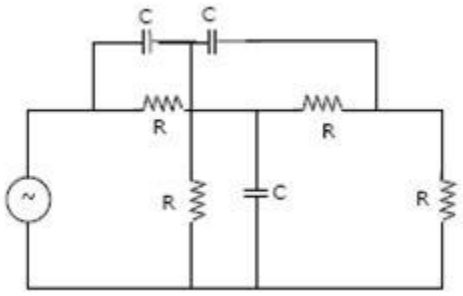
```
void main()
{
        Int a.b;
        a=10, b=5;
        a=a++ + ++b;
        b=b++ + ++a;
        printf ("a=%d b=%d", a, b);
}
```

- a = 16 b = 22
- a = 25 b = 18
- a = 17 b = 24
- a = 18 b = 25

77 of 100

243 PU_2016_304_M

The minimum number of equations required to analyze the circuit shown in figure is:-



- 4
- 7
- 6
- 3

78 of 100

247 PU_2016_304_M

The value of 'c' of Rolle's theorem for $f(x) = \frac{sinx}{e^x}$ in (0, π) is:-

- π

- $\frac{\pi}{3}$
- $\frac{\pi}{2}$
- $\frac{\pi}{4}$

79 of 100

227 PU_2016_304_M

The internal impedance of a source is 3 + j4Ω .It is desired to supply maximum power to a resistive load. The load resistance should be:-

- 5 Ω
- 4 Ω
- 3 Ω
- 7 Ω

80 of 100

234 PU_2016_304_M

What is the frequency range of 802.11a standard:-

- 5 Gbps
- 2.4 Gbps
- 2.4 GHz
- 5 GHz

81 of 100

284 PU_2016_304_D

A graded index fibre has a core with a parabolic refractive index profile which has a diameter of 50 μm. The fibre has a numerical aperture of 0.2. Estimate the total number of guided modes propagating in the fibre when it is operating at a wavelength of 1 μm.

- 256
- 125
- 147
- 247

82 of 100

266 PU_2016_304_D

A step voltage E is applied to an R-L series circuit. At t = 0, the current in the circuit is:-

- E/R
- E/L
- Zero
- Infinity

83 of 100

298 PU_2016_304_D

Maximum gain of antenna using an illuminated 6 feet parabolic reflector used at 6MHz will be:-

- 1008
- 8050
- 950
- 428

84 of 100

290 PU_2016_304_D

Radiation resistance of a monopole of height h=1/2 approximately equals:-

- $400(h\lambda)^2$
- $100\ (h/\lambda)^2$
- $400\ (h/\lambda)^2$
- $400(\lambda/h)^2$

85 of 100

268 PU_2016_304_D

An 8-bit microcontroller has an external RAM with memory map from 8000H to 9FFFH.The number of bytes this RAM can store is:-

- 8192
- 8000
- 8193
- 8191

86 of 100

278 PU_2016_304_D

The bit rate of a digital communication system is X Kbits/s. The modulation used is 32-QAM. The minimum bandwidth required for ISI free transmission is:-

- $\frac{X}{32}$
- $\frac{X}{5}$
- $\frac{X}{10}$
- $\frac{X}{2}$

87 of 100

295 PU_2016_304_D

The pinch off voltage for a n-channel JFET is 4 V, when V_{GS} = 1V,the pinch off occurs for V_{DS} equals to:-

- 5 V

- 3 V
- 4 V
- 1 V

88 of 100

288 PU_2016_304_D

The radiation resistance of a λ/16 wire dipole in free space will be nearly:-

- 3Ω
- 30Ω
- 13Ω
- 1Ω

89 of 100

276 PU_2016_304_D

If E_b, the energy per bit of a binary digital signal is10^{-5} watt-sec and the one-sided power spectral density of the white noise, $N_0 = 10^{-6}$W/Hz, then the output SNR of the matched filter is:-

- 20 dB
- 26 dB
- 10 dB
- 13 dB

90 of 100

274 PU_2016_304_D

c(t) and m(t) are used to generate an AM signal. The modulation index of generated AM signal is 0.5. Then the total quantity $\frac{\text{side band power}}{\text{carrier power}}$ is:-

- 1/6
- 1/8
- 1/4
- 1/2

91 of 100

293 PU_2016_304_D

The frequency of a continuous time signal x (t) changes on transformation from x (t) to x (a, t), a > 0 by a factor:-

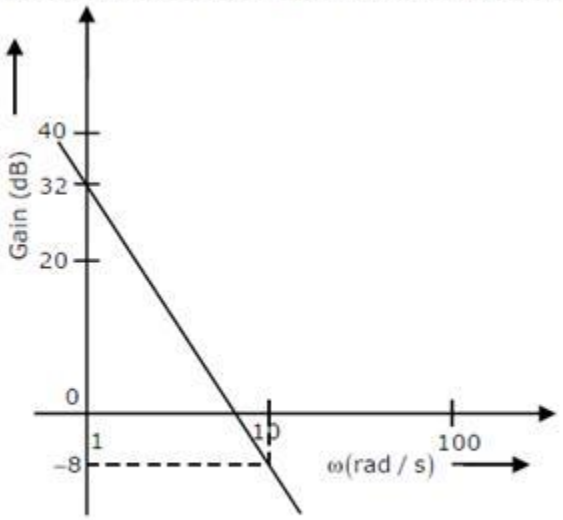
- α
- 1-α
- 1/α

- α^2

92 of 100

283 PU_2016_304_D

The Bode plot of a transfer function G (s) is shown in the figure below.



The gain (20 log G(s)) is 32 dB and −8 dB at 1 rad /s and 10 rad /s respectively, The phase is negative for all w. The G(s) is

- $\frac{32}{s}$
- $\frac{39.8}{s}$
- $\frac{39.8}{s^2}$
- $\frac{32}{s^2}$

93 of 100

273 PU_2016_304_D

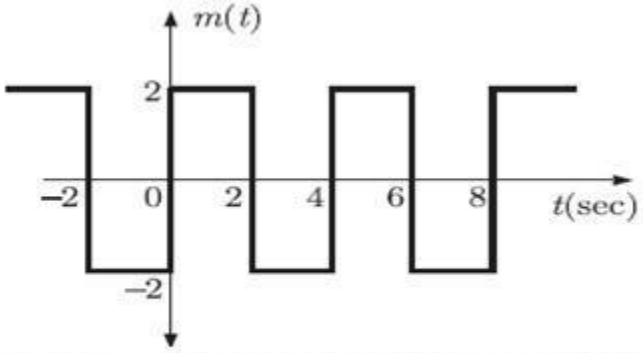
Four signals each band limited to 5 KHz, 10KHz, 10KHz, 10KHz are transmitted to a channel simultaneously after modulation the modulation used as AM,DSB-SC,SSB-SC and SSB-SC respectively assume the guard period 2KHz. Determine the bandwidth of multiplexed signal.

- 60KHz
- 50KHz
- 56KHz
- 40KHz

94 of 100

280 PU_2016_304_D

The signal m(t) as shown is applied to both a phase modulator (with $k_p$as the phase constant) and a frequency modulator (with $k_f$as the frequency constant) having the same carrier frequency.



The ratio k_p/k_f(in rad/Hz) for the same maximum phase deviation is

- π
- 8π
- 2π
- 4π

95 of 100

264 PU_2016_304_D

A recursive filter is described by $y(n) = 0.7\,y[n-1] - 0.3\,y[n-2] - 6x[n-1]$.

The static gain of the filter is:-

- 0
- 10
- 20
- 1

96 of 100

270 PU_2016_304_D

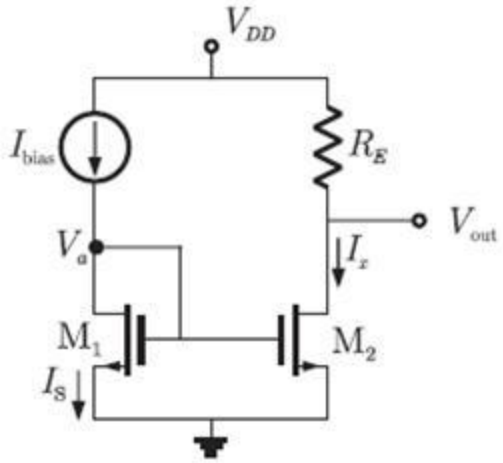
The number of comparators in a 4-bit flash ADC is:-

- 5
- 16
- 15
- 4

97 of 100

286 PU_2016_304_D

For the circuit shown in the following figure, transistor M_1 and M_2 are identical NMOS transistors. Assume the M2 is in saturation and the output is unloaded.



The current I_x is related to I_{bias} as _____.

- $I_x = I_{bias} - I_S$
- $I_x = -I_{bias}$
- $I_x = I_{bias}$
- $I_x = I_{bias} + I_S$

98 of 100

294 PU_2016_304_D

A quarter wave transformer matches a 100 ohm load to a transmission line with L=1.35 μH/m and C=60 pFm. The characteristic impedance of matching transformer is:-

- 122.5 Ω
- 150 Ω
- 275 Ω
- 300 Ω

99 of 100

275 PU_2016_304_D

A signal is sampled at 8 kHz and is quantized using 8 - bit uniform quantizer Assuming SNR_q for a sinusoidal signal, the correct statement for PCM signal with a bit rate of R is:-

- R = 32 kbps, SNR_q = 49.76 dB
- R = 64 kbps, SNR_q = 49.76 dB
- R = 64 kbps, SNR_q = 49.8 dB

- R = 32 kbps, SNR_q = 25.8 dB

100 of 100

260 PU_2016_304_D

The fundamental period of $x(n) = e^{j0.2n\pi} + e^{-j0.3n\pi}$ is:-

- 30
- 10
- 20
- 40