

## Electronics & Communication

### Electronics Sample Questions :

**Q-8** A circuit has a resistance of  $11 \Omega$ , a coil of inductive reactance  $120 \Omega$ , and a capacitor with a  $120 \Omega$  reactance, all connected in series with a  $110\text{-V}$ ,  $60\text{-Hz}$  power source. What is the potential difference across each circuit element?

- A) (a)  $V_R = 110 \text{ V}$ , (b)  $V_L = V_C = 1.2 \text{ kV}$
- B) (a)  $V_R = 120 \text{ V}$ , (b)  $V_L = V_C = 2.4 \text{ kV}$
- C) (a)  $V_R = 4.8 \text{ V}$ , (b)  $V_L = V_C = 0 \text{ kV}$
- D) (a)  $V_R = 5.0 \text{ V}$ , (b)  $V_L = V_C = 8.0 \text{ V}$

**Q-2** Applying DeMorgan's theorem to the expression , we get

- A)  $(A+B)+C$
- B)  $A(B + C)$
- C) Both A & B
- D) None of above

**Q-4** Refer Below figure to Determine the resonant frequency...

- A)  $123.4 \text{ kHz}$
- B)  $61.7 \text{ kHz}$
- C)  $45.97 \text{ kHz}$
- D)  $23.1 \text{ kHz}$

**Q-4** Express the decimal number 57 in binary.

- A) 100101
- B) 111010
- C) 110010
- D) 111001

**Q-5** A vertical electric dipole antenna

- a) radiates uniformly in all directions.
- b) radiates uniformly in all horizontal directions, but more strongly in the vertical direction.
- c) radiates most strongly and uniformly in the horizontal directions
- d) does not radiate in the horizontal directions

**Q-6** A particle oscillates according to the equation  $y=5.0 \cos 23 t$ , where  $y$  is in centimeters. Find its frequency of oscillation and its position at  $t=0.15$  s.

- a)  $f = 23$  Hz,  $y = -4.8$  cm
- B)  $f = 3.7$  Hz,  $y = -5.0$  cm
- C)  $f = 3.7$  Hz,  $y = -4.8$  cm
- D)  $f = 3.7$  Hz,  $y = +4.8$  cm

**Q-7** A  $10.0\text{-}\mu\text{F}$  capacitor is in series with a  $40.0\text{-}\Omega$  resistance, and the combination is connected to a  $110\text{-V}$ ,  $60.0\text{-Hz}$  line. Calculate (a) the capacitive reactance, (b) the impedance of the circuit, (c) the current in the circuit, (d) the phase angle between current and supply voltage

- A) (a)  $0.0038\Omega$  (b)  $305\Omega$  (c)  $0.415$  A (d) voltage lags by  $8.58^\circ$
- B) (a)  $266\Omega$  (b)  $269\Omega$  (c)  $0.409$  A (d) voltage lags by  $81.4^\circ$
- C) (a)  $16$  k $\Omega$  (b)  $72$  k $\Omega$  (c)  $2.75$  A (d) voltage lags by  $6.63^\circ$
- D) (a)  $2.6$  k $\Omega$  (b)  $262\Omega$  (c)  $0.256$  MA (d) voltage leads by  $81.4^\circ$

**Q-8** A circuit has a resistance of  $11\ \Omega$ , a coil of inductive reactance  $120\ \Omega$ , and a capacitor with a  $120\text{-}\Omega$  reactance, all connected in series with a  $110\text{-V}$ ,  $60\text{-Hz}$  power source. What is the potential difference across each circuit element?

- A) (a)  $V_R = 110$  V, (b)  $V_L = V_C = 1.2$  kV
- B) (a)  $V_R = 120$  V, (b)  $V_L = V_C = 2.4$  kV
- C) (a)  $V_R = 4.8$  V, (b)  $V_L = V_C = 0$  kV
- D) (a)  $V_R = 5.0$  V, (b)  $V_L = V_C = 8.0$  V

**Q-9** What is the primary function of multiplexing?

- A) To match the frequency range of a signal to a particular channel.
- B) To reduce the bandwidth of a signal.
- C) To select one radio channel from a wide range of transmitted channels.
- D) To allow a number of signals to make use of a single communications channel.

**Q-10** A second step to further increase system capacity is a digital access method called TDMA (Time Division Multiple Access). Using the same frequency channelization and reuse as FDMA analog but adding a time sharing element, the effective capacity is:

- A) Doubled
- B) Tripled
- C) Reduced by one third
- D) Unchanged

**Q-11** What are Pseudo-Random noise sequences, or P/N Sequences?

- A) P/N Sequences are known sequences which exhibit the properties or characteristics of

random sequences

- B) P/N Sequences can be used to logically isolate users on the same physical (frequency) channel
- C) P/N Sequences appear as random noise to everyone else, except to the transmitter and intended receiver
- D) All of the above

**Q-12** An op-amp integrator has a square-wave input. The output should be

- A) a sine wave.
- B) a triangle wave
- C) a square wave.
- D) pure DC.

**Q-13** What is the relationship between the series and parallel resonant frequencies of a quartz crystal?

- A) They are equal.
- B) Parallel resonant frequency is approximately 1 kHz higher than series resonant frequency
- C) Series resonant frequency is approximately 1 kHz higher than parallel resonant frequency.
- D) none of the above

**Q-14** Refer Below figure to Determine the resonant frequency...

- A) 123.4 kHz
- B) 61.7 kHz
- C) 45.97 kHz
- D) 23.1 kHz

**Q-15** Which FET amplifier(s) has (have) a phase inversion between input and output signals?

- A) common-gate
- B) common-drain
- C) common-source
- D) all of the above