Soal ujian akhir semester

Mk : fisika

Prodi: Teknik Informatika

Dikerjakan di tempat masing masing, selanjutnya diupload di elena paling lambat hari Jumat, 19 Desember 2025 jam 23.00

Kerjakan soal sub A dan B sesuai dengan perintah yang ada !

A. Kerjakan 9 item soal saja, dari soal soal ***quick quiz*** berikut,

Quick Quiz 31.1 A circular loop of wire is held in a uniform magnetic field, with the plane of the loop perpendicular to the field lines. Which of the following will *not* cause a current to be induced in the loop? (a) crushing the loop; (b) rotating the loop about an axis perpendicular to the field lines; (c) keeping the orientation of the loop fixed and moving it along the field lines; (d) pulling the loop out of the field.

Quick Quiz 31.2 Figure 31.4 shows a graphical representation of the field magnitude versus time for a magnetic field that passes through a fixed loop and is oriented perpendicular to the plane of the loop. The magnitude of the magnetic field at any time is uniform over the area of the loop. Rank the magnitudes of the emf generated in the loop at the five instants indicated, from largest to smallest.

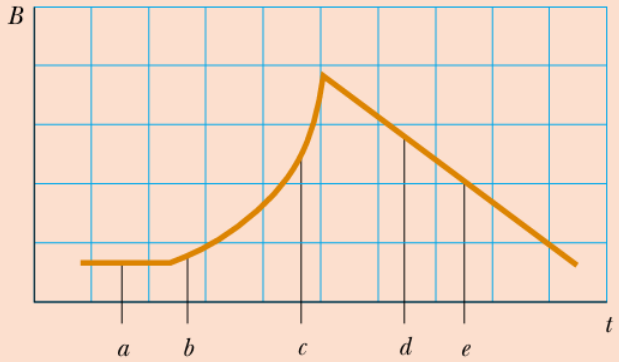

Figure 31.4 (Quick Quiz 31.2) The time behavior of a magnetic field through a loop.

Quick Quiz 31.3 Suppose you would like to steal power for your home from the electric company by placing a loop of wire near a transmission cable, so as to induce an emf in the loop (an illegal procedure). Should you (a) place your loop so that the transmission cable passes through your loop, or (b) simply place your loop near the transmission cable?

Quick Quiz 33.1 Consider the voltage phasor in Figure 33.4, shown at three instants of time. Choose the part of the figure that represents the instant of time at which the instantaneous value of the voltage has the largest magnitude.

(a) (b) (c)

Figure 33.4 (Quick Quizzes 33.1 and 33.2) A voltage phasor is shown at three instants of time.

Quick Quiz 33.2 For the voltage phasor in Figure 33.4, choose the part of the figure that represents the instant of time at which the instantaneous value of the voltage has the smallest magnitude.

Quick Quiz 33.3 Which of the following statements might be true for a resistor connected to a sinusoidal AC source? (a) $\mathcal{P}_{av} = 0$ and $i_{av} = 0$ (b) $\mathcal{P}_{av} = 0$ and $i_{av} > 0$ (c) $\mathcal{P}_{av} > 0$ and $i_{av} = 0$ (d) $\mathcal{P}_{av} > 0$ and $i_{av} > 0$.

Quick Quiz 33.4 Consider the AC circuit in Figure 33.8. The frequency of the AC source is adjusted while its voltage amplitude is held constant. The lightbulb will glow the brightest at (a) high frequencies (b) low frequencies (c) The brightness will be the same at all frequencies.

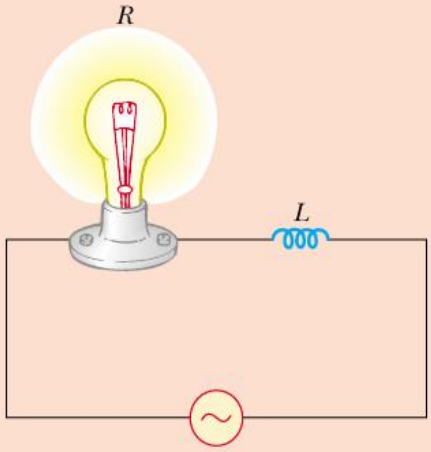

Figure 33.8 (Quick Quiz 33.4) At what frequencies will the bulb glow the brightest?

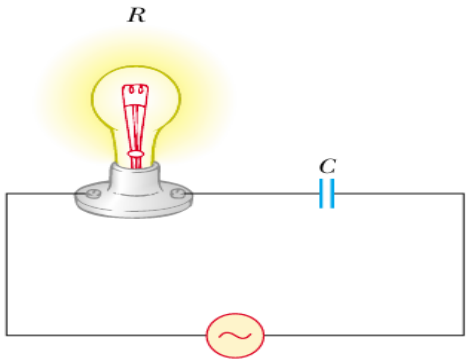

Figure 33.11 (Quick Quiz 33.5)

Quick Quiz 33.5 Consider the AC circuit in Figure 33.11. The frequency of the AC source is adjusted while its voltage amplitude is held constant. The lightbulb will glow the brightest at (a) high frequencies (b) low frequencies (c) The brightness will be same at all frequencies.

Quick Quiz 33.6 Consider the AC circuit in Figure 33.12. The frequency of the AC source is adjusted while its voltage amplitude is held constant. The lightbulb will glow the brightest at (a) high frequencies (b) low frequencies (c) The brightness will be same at all frequencies.

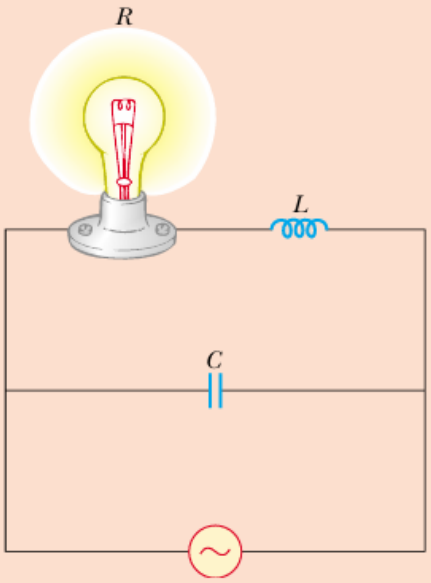

Figure 33.12 (Quick Quiz 33.6)

Quick Quiz 33.7 Label each part of Figure 33.17 as being $X_L > X_C$, $X_L = X_C$, or $X_L < X_C$.

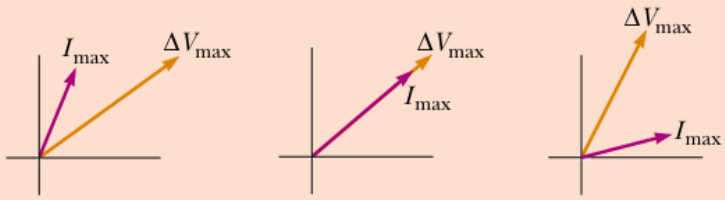

Figure 33.17 (Quick Quiz 33.7) Match the phasor diagrams to the relationships between the reactances.

Quick Quiz 17.1 The speed of sound in air is a function of (a) wavelength (b) frequency (c) temperature (d) amplitude.

Quick Quiz 17.2 If you blow across the top of an empty soft-drink bottle, a pulse of sound travels down through the air in the bottle. At the moment the pulse reaches the bottom of the bottle, the correct descriptions of the displacement of elements of air from their equilibrium positions and the pressure of the air at this point are (a) the displacement and pressure are both at a maximum (b) the displacement and pressure are both at a minimum (c) the displacement is zero and the pressure is a maximum (d) the displacement is zero and the pressure is a minimum.

Quick Quiz 17.3 An *ear trumpet* is a cone-shaped shell, like a megaphone, that was used before hearing aids were developed to help persons who were hard of hearing. The small end of the cone was held in the ear, and the large end was aimed toward the source of sound as in Figure 17.5. The ear trumpet increases the intensity of sound because (a) it increases the speed of sound (b) it reflects sound back toward the source (c) it gathers sound that would normally miss the ear and concentrates it into a smaller area (d) it increases the density of the air.

Courtesy Kenneth Burger Museum Archives/Kent State University

Figure 17.5 (Quick Quiz 17.3) An ear trumpet, used before hearing aids to make sounds intense enough for people who were hard of hearing. You can simulate the effect of an ear trumpet by cupping your hands behind your ears.

Quick Quiz 17.4 A vibrating guitar string makes very little sound if it is not mounted on the guitar. But if this vibrating string is attached to the guitar body, so that the body of the guitar vibrates, the sound is higher in intensity. This is because (a) the power of the vibration is spread out over a larger area (b) the energy leaves the guitar at a higher rate (c) the speed of sound is higher in the material of the guitar body (d) none of these.

Quick Quiz 17.5 A violin plays a melody line and is then joined by a second violin, playing at the same intensity as the first violin, in a repeat of the same melody. With both violins playing, what physical parameter has doubled compared to the situation with only one violin playing? (a) wavelength (b) frequency (c) intensity (d) sound level in dB (e) none of these.

Quick Quiz 17.6 Increasing the intensity of a sound by a factor of 100 causes the sound level to increase by (a) 100 dB (b) 20 dB (c) 10 dB (d) 2 dB.

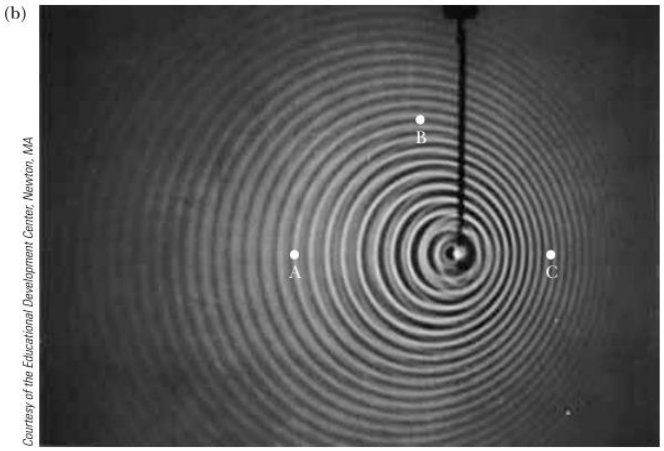

Figure 17.9b. The Doppler effect in water, observed in a ripple tank. A point source is moving to the right with speed vS. Letters shown in the photo refer to Quick Quiz 17.7

Quick Quiz 17.7 Consider detectors of water waves at three locations A, B, and C in Figure 17.9b. Which of the following statements is true? (a) The wave speed is highest at location A. (b) The wave speed is highest at location C. (c) The detected wavelength is largest at location B. (c) The detected wavelength is largest at location C. (e) The detected frequency is highest at location C. (f) The detected frequency is highest at location A.

Quick Quiz 17.8 You stand on a platform at a train station and listen to a train approaching the station at a constant velocity. While the train approaches, but before it arrives, you hear (a) the intensity and the frequency of the sound both increasing (b) the intensity and the frequency of the sound both decreasing (c) the intensity increasing and the frequency decreasing (d) the intensity decreasing and the frequency increasing (e) the intensity increasing and the frequency remaining the same (f) the intensity decreasing and the frequency remaining the same.

B. Pengamatan penggunaan Listrik AC di suatu tempat

Lakukanlah pengamatan penggunaan Listrik di suatu tempat (pilih sendiri), dengan mendata hal hal berikut :

Tentukan Lokasi, tempat pengamatan, lengkap dengan Alamat

- Berapakah daya total yang digunakan dalam rumah/Lokasi yang diamati
- Berapakah arus maksimum yang diperkenankan masuk dan tidak menyebabkan drop off di begester?
- Apa saja peralatan yang digunakan, yang memerlukan input listrik ?
- Berapa total daya yang dipakai, bila semua peralatan digunakan bersamaan?
- Pernahkan di Lokasi tersebut terjadi putus drop off di begester? Kalalu pernah sebutkan factor apa saja penyebabnya!
- Berapa rata rata pembayaran per bulannya ?

Dari data data yang tersebut, apa yang dapa anda simpulkan atau kemukakan !