Department of Physics
University College of Science
Quiz-1

1) A node is a point where there is always
    a) Constructive interference
    b) Destructive interference
    c) Two crests
    d) Two troughs
2) Relation between frequency and tension in a standing wave
    a) $f^2 \alpha T$
    b) $f^2 \alpha 1/T$
    c) $f \alpha T$
    d) $f \alpha 1/T$
3) Relation between frequency and volume in a resonator
    a) $f^2 \alpha v$
    b) $f^2 \alpha 1/v$
    c) $f \alpha v$
    d) $f \alpha 1/v$
4) Fundamental frequency of an open organ pipe given by
    a) f=(v/2L)
    b) f=(v/4L)
    c) f=(v/3L)
    d) f=(v/5L)
5) For pipe open at one end only, the resonance frequencies can take values
    a) Continuous values
    b) Only odd multiples
    c) Only even multiples
    d) All the above
6) Colour of soap bubble is due
    a) **Interference**
    b) Diffraction
    c) Polarization
    d) Photo electric effect
7) An example for coherent source
    a) Fresnel's Biprism
    b) Prism
    c) Grating
    d) Telescope
8) Superposition waves from two coherent sources
    a) **Interference**
    b) Diffraction

c) Polarization
d) None of the above

9) Angles of Fresnel's Biprism are
a) 30',30', 179°
b) 0.5°, 0.5°,179°
c) Both a) and b)
d) 180°,180°,0°

10) Centre of interference pattern is
a) **Always bright**
b) Always dark
c) Always red
d) Always yellow

11) Incident wavefront in Fresnel diffraction is
a) Spherical
b) Plane
c) Both a) and b)
d) None of the above

12) Incident wavefront in Fraunhofer diffraction is
a) Spherical
b) Cylindrical
c) Plane
d) None of the above

13) Phase difference of 2π corresponds path difference of
a) $\lambda/2$
b) $\boldsymbol{\lambda}$
c) $\lambda/4$
d) 2λ

14) Area of half period zone is
a) $\boldsymbol{\pi b\lambda}$
b) $n\pi b\lambda$
c) $\pi b/\lambda$
d) πb

15) Unit of grating constant is
a) m^2
b) $\mathbf{m^{-1}}$
c) m
d) It is a unitless quantity

16) Which of the following is an example for the longitudinal wave?

a) Water wave
b) Sound wave
c) Electromagnetic wave
d) A wave in a stretched string

17) Of the following properties of a wave, the one that is independent of the others is

a) Velocity
b) Frequency
c) Wavelength
d) Amplitude

18) The equation for the displacement of a stretched string is given by $y=6\sin 2\pi (t/0.04-x/200)$ where y and x are in cm and t is in seconds. The Amplitude and direction of the propagation is

a) 6 cm and positive x-direction
b) 6 cm and negative x-direction
c) 6 cm and positive y-direction
d) None of the above

19) A wave of frequency f_1 and wavelength λ_1 goes from a medium in which its velocity is v to another medium in which its velocity is 2v. Find the frequency and wavelength of the wave in the second medium.

a) 2f1 and λ1
b) f1 and λ1
c) f1 and 2 λ1
d) None of the above

20) The phase difference between the two waves $y(x,t) = A\sin(\omega t - kx)$ and $y(x,t) = B\cos(\omega t - kx)$ is

a) $\pi/4$
b) π
c) $3\pi/4$
d) $\pi/2$