Q.1 **The path difference between two wavefronts emitted by coherent sources of wavelength 5460 Å is 2.1 micron . The phase difference between the wavefronts at that point is –**

(A) 7.692 **(B) 7.692 π**

(C) $\frac{7.692}{\pi}$ **(D)** $\frac{7.692}{3\pi}$

Q.2 **The similarity between the sound waves and light waves is -**

(A) Both are electromagnetic waves

(B) Both are longitudinal waves

(C) Both have the same speed in a medium

(D) They can produce interference

Q.3 **Monochromatic light is that light in which**

(A) Single wavelength is present

(B) Various wavelengths are present

(C) Red and violet light is present

(D) Yellow and red light is present

Q.4 **The colours are ascertained by –**

(A) Frequency **(B) Amplitude**

(C) Speed **(D) Intensity**

Q.5 **The ratio of phase difference and path difference is –**

(A) 2π **(B)** $\frac{2\pi}{\lambda}$ **(C)** $\frac{\lambda}{2\pi}$ **(D)** $\frac{\pi}{\lambda}$

Q.6 The correct relation between time interval ∂ and phase difference δ is –

(A) $\partial = \frac{T}{2\pi}\delta$ **(B)** $\partial = \frac{2\pi}{T}\delta$

(C) $\partial = 2\pi\delta$ **(D)** $\partial = \frac{\delta}{2\pi}$

Q.7 The path difference between two waves $y_1 = A_1 \sin \omega t$ and $y_2 = A_2 \cos(\omega t + \phi)$ will be

(A) $(\lambda/2\pi)\,\phi$

(B) $(\lambda/2\pi)\,(\phi + \pi/2)$

(C) $(2\pi/\lambda)\,(\phi - \pi/2)$

(D) $(2\pi/\lambda)\,\phi$

Q.8 The resultant amplitude in interference with two coherent source depends upon -

(A) Intensity

(B) Only phase difference

(C) On both the above

(D) None of the above

Q.9 The necessary condition for phenomenon of interference to occur is

(A) There should be two coherent sources.

(B) The frequency and amplitude of both the waves should be same

(C) The propagation of waves should be simultaneously and in same direction

(D) All of the above

Q.10 The necessary condition for interference pattern of light is that light sources should be–

(A)Of same amplitude, frequency, constant phase difference and of same state of polarisation

(B) Of same amplitude, frequency but with varying phase difference and of same state of polarisation

(C)Of same frequency constant phase difference and of different sate of polarisation

(D)Of same amplitude, different frequency, constant phase difference and of same state of polarisation

Q.11 For a persistent interference to occur, it is necessary that phase difference of waves should

(A) be zero

(B) Depend upon time

(C) Change at constant rate

(D) Not depend upon time

Q.12 Interference event is observed in

(A) Only transverse waves

(B) Only longitudinal waves

(C) Both types of waves

(D) Not observed in both type of waves

Q.13 In the phenomenon of interference, energy is

(A) Destroyed at bright fringes

(B) Created at dark fringes

(C) Conserved, but it is redistributed

(D) Same at all points

Q.14 The nature of light which is verified by the interference event is -

(A) Particle nature

(B) Wave nature

(C) Dual nature

(D) Quantum nature

Q.15 The phenomenon of interference is based on the principle of –

(A) Diffraction **(B) Superposition**

(C) Refraction **(D) Polarisation**

Q.16 For constructive interference the path difference should be (λ = wavelength of light)

(A) Even multiple of $\lambda/2$

(B) Odd multiple of $\lambda/2$

(C) Even or odd multiple of $\lambda/2$

(D) None of the above

Q.17 The equation for two waves obtained by two light sources are as given below :

$y_1 = A_1 \sin 3\omega t$, $y_2 = A_2 \cos (3\omega t + \pi/6)$. What will be the value of phase difference at the time t –

(A) $3\pi/2$ **(B) $2\pi/3$** **(C) π** **(D) $\pi/2$**

Q.18 The maximum intensity produced of two coherent waves of intensity I_1 and I_2 will be -

(A) $I_1 + I_2$ (B) $I_1^2 + I_2^2$

(C) $I_1 + I_2 + 2\sqrt{I_1 I_2}$ (D) zero

Q.19 Two coherent waves are represented by $y_1 = a_1 \cos\omega t$ and $y_2 = a_2 \sin \omega t$. The resultant intensity due to interference will be -

(A) $(a_1 + a_2)$ (B) $(a_1 - a_2)$

(C) $(a_1^2 + a_2^2)$ (D) $(a_1^2 - a_2^2)$

Q.20 Two coherent sources have intensity ratio of 100 : 1, and are used for obtaining the phenomenon of interference. Then the ratio of maximum and minimum intensity will be -

(A) 100 : 1 (B) 121 : 81

(C) 1 : 1 (D) 5 : 1

Q.21 Two phase coherent sources of intensity ratio 4 coincides. Visibility in the interference pattern will be -

(A) ¼ (B) 1/5 (C) 3/4 (D) 4/5

Q.22 Two independent mono-chromatic sources of light are -

(A)Coherent

(B) Incoherent

(C)Coherent or incoherent depending upon the nature of source

(D)None of the above

Q.23 Two coherent sources of light can be obtained by -

(A)Two different lamps

(B) Two different lamps but of the same power

(C)Two different lamps of same power and having the same colour

(D)None of these

Q.24 Coherence is measure of -

(A)Capability of producing interference by waves

(B) Waves being diffracted

(C)Waves being reflected

(D)Waves being refracted

Q.25 In coherent sources it is necessary that their -

(A) Amplitudes are same

(B) Wavelengths are same

(C) Frequencies are same

(D) Initial phase remains constant

Q.26 Two coherent sources can be obtained by -

(A) Division of wavefront only

(B) Division of amplitude only

(C) Both by division of wavefront and amplitude

(D) None of the above

Q.27 Two independent monochromatic sodium lamps can not produce interference because

(A) The frequencies of two sources are different

(B) The phase difference between two sources changes with respect to time

(C) The two sources become coherent

(D) The amplitudes of two sources are different

Q.28 The Young's double slit experiment is performed in succession using blue light of wavelength 4360Å and green light of wavelength 5460Å. If the distance of fourth maximum from central maximum is x, then -

(A) $x_{blue} > x_{green}$

(B) $x_{blue} < x_{green}$

(C) $x_{blue} = x_{green}$

(D) $\frac{x_{blue}}{x_{green}} = \frac{5460}{4360}$

Q.29 In Young's double slit experiment 62 fringes are visible in the field of view with sodium light (λ = 5893Å). If green light (λ = 5461Å) is used then the number of visible fringes will be -

(A) 62 **(B) 67**

(C) 85 **(D) 58**

Q.30 In Young's experiment coherent sources are produced by -

(A) Division of wave front

(B) Division of amplitude

(C) Division of wave front and amplitude

(D) None of the above

(D)The intensity all bright is same the darkness of all dark fringes is also same but have different widths

ANSWER KEY

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	B	D	A	A	B	A	B	C	D	A
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	D	C	C	B	B	A	B	C	C	B
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	D	B	D	A	C	C	B	B	B	A