

SAMPLE QUESTIONS

S.Y.B.Sc. SEM IV

PHYSICS PAPER I

USPH401- Optics and Digital Electronics

1.	The bending of waves around the edges of an obstacle is called _____.	
	(a)	polarization
	(b)	interference
	(c)	diffraction
	(d)	dispersion
2.	The effect at a point due to any particular zone will depend on _____.	
	(a)	the distance of point from the zone only
	(b)	the obliquity of the point only
	(c)	the distance of point from the zone and the obliquity of the point
	(d)	neither the distance of point from the zone nor the obliquity of the point
3	In _____ the source of light and screen are effectively at infinite distances from the obstacle.	
	(a)	Fraunhofer diffraction
	(b)	Interference
	(c)	Fresnel's diffraction
	(d)	Polarization
4	In Fresnel's diffraction at a straight edge, minimum Intensity point is obtained on the screen when path difference is _____	
	(a)	$K\sqrt{2n}$
	(b)	2K
	(c)	$K\sqrt{2n + 2}$
	(d)	$K\sqrt{2n + 1}$

5	The refractive index of e-ray is 1.542 and the refractive index of o-ray is 1.532 in a doubly refracting crystal. The given crystal is _____.	
	(a)	positive crystal
	(b)	negative crystal
	(c)	neutral crystal
	(d)	single crystal
6	In Fraunhofer's Diffraction, a _____ wavefront is used.	
	(a)	spherical
	(b)	cylindrical
	(c)	curved
	(d)	plane
7	Width of central maxima obtained in case of Fraunhofer diffraction at a single slit is _____ to slit width.	
	(a)	equal
	(b)	inversely proportional
	(c)	directly proportional
	(d)	not equal
8	The thickness of double refracting plate capable of producing a path difference of $\lambda/4$ between extraordinary and ordinary waves is _____. Given : $\lambda = 4000 \text{ \AA}$, $\mu_o = 1.54$, $\mu_e = 1.55$	
	(a)	10 μm
	(b)	15 μm
	(c)	5 μm
	(d)	20 μm

9	The missing orders for a double slit Fraunhofer diffraction pattern, if the slit widths are 0.16 mm and they are 0.8 mm apart, are _____.	
	(a)	2,4,8 , etc
	(b)	6,12,18, etc
	(c)	3,6,9, etc
	(d)	1,2,3 etc
10	Resolving power of grating is expressed as _____.	
	(a)	$\frac{\lambda}{d\lambda} = n\lambda N$
	(b)	$\frac{\lambda}{d\lambda} = n\pi N$
	(c)	$\frac{\lambda}{d\lambda} = 2nN$
	(d)	$\frac{\lambda}{d\lambda} = nN$
11.	The decimal equivalent of $(1A)_{16}$ is given by	
	(a)	16
	(b)	26
	(c)	10
	(d)	19
12.	The 2s complement of 10011000 is	
	(a)	01100111
	(b)	10011000
	(c)	01101000
	(d)	10011001

13	The value of $(11001110)_2 - (10001001)_2$ is	
	(a)	01100101
	(b)	11001110
	(c)	10011100
	(d)	01000101
14	The bounce elimination circuit uses a	
	(a)	Half adder circuit
	(b)	RS Flip flop
	(c)	3 bit counter
	(d)	Shift register
15	In JK flip flop the condition of the output when both the inputs are one is called as	
	(a)	SET
	(b)	RESET
	(c)	Toggle
	(d)	Forbidden