

TELANGANA UNIVERSITY
S.S.R. DEGREE COLLEGE, NIZAMABAD (C.C:5029)
IV SEMESTER INTERNAL ASSESSMENT I EXAMINATIONS
PHYSICS (WAVES & OPTICS) QUESTION BANK

I. Multiple choice questions.

1. The velocity of transverse wave along string is [c]
 - a. \sqrt{T}
 - b. $\sqrt{\frac{M}{T}}$
 - c. $\sqrt{\frac{T}{M}}$
 - d. None
2. What is the ratio of string (clamedal) damped at both ends [d]
 - a. 1:3:5
 - b. 2:3:4
 - c. 3:4:5
 - d. 1:2:3
3. In the law of transverse wave vibrations of the string ν is directly proportional to [b]
 - a. \sqrt{M}
 - b. l
 - c. Both a & b
 - d. None
4. The frequency of longitudinal vibration of a bar free at both ends is [a]
 - a. $\frac{1}{2L}nv$
 - b. l
 - c. nv
 - d. $\frac{n}{l}$
5. The velocity of longitudinal wave is proportional to [c]
 - a. \sqrt{l}
 - b. \sqrt{p}
 - c. \sqrt{y}
 - d. None
6. In moles law intensity is proportional to [d]
 - a. $\cos \theta$
 - b. $\sin^2 \theta$
 - c. $\sin \theta$
 - d. $\cos^2 \theta$
7. Polarising angle is [b]
 - a. 180°
 - b. $58^\circ 45'$
 - c. 90°
 - d. 0°
8. Snell's law $\mu =$ [a]
 - a. $\frac{\sin i}{\sin r}$
 - b. $\frac{\sin r}{\sin i}$
 - c. $\frac{i}{r}$
 - d. None
9. In double reflection [c]
 - a. $r_2 = r_1$
 - b. $r_1 > r_2$
 - c. $r_2 < r_1$
 - d. $r_1 = r_2 = 0$
10. Polarimeter is used to measure angle of [d]
 - a. Incident
 - b. Reflection
 - c. Refraction
 - d. Rotation
11. For which interference amplitude is zero [c]
 - a. Constructive
 - b. Temporal
 - c. Destructive
 - d. Spatial
12. Which among the following is the example of division of wave front [d]
 - a. Newton rings
 - b. Fraunhofer
 - c. Michelson
 - d. Fresnel biprism
13. Condition for maxima in Fresnel (bri) biprism is [b]
 - a. $\sin \theta = \lambda$
 - b. $d \sin \theta = n\lambda$
 - c. $\theta = n\lambda$
 - d. $d \sin \theta = 0$
14. In Lloyd's mirror which one is central fringe [a]
 - a. dark
 - b. bright
 - c. red
 - d. violet
15. In non-reflecting film how much light is reflected [c]
 - a. 10%
 - b. 8%
 - c. 4%
 - d. 15%
16. In Newton rings when lens is used [d]
 - a. concave lens
 - b. Glass plate
 - c. plane lens
 - d. convex lens
17. How many lenses are used in Fresnel diffraction [b]
 - a. 2
 - b. 0
 - c. 4
 - d. 3
18. Dispersive power (D) is given by [a]
 - a. $\frac{d\theta}{d\lambda}$
 - b. $\frac{d\lambda}{d\theta}$
 - c. $d\lambda$
 - d. $d\theta$
19. Resolving power of grating (R) is equal to [c]
 - a. $d\lambda = nN$
 - b. $\lambda = nN$
 - c. $\frac{\lambda}{d\lambda} = nN$
 - d. $d\lambda = n$
20. Radius of nth half period zone plate is proportional [d]
 - a. $\sqrt{3}$
 - b. $\sqrt{2}$
 - c. $\sqrt{1}$
 - d. \sqrt{n}

II. Fill in the blanks

1. Crest of one wave superimposes with other wave crest is called constructive interference.
2. (D) is the distance between source and screen
3. Wavelength of the Fresnel biprism is $\lambda = \beta / D$
4. $t_1 t_2 = 1 - r_1^2$ is known as Stokes's equation.
5. Refractive index of air and glass are 1 & 1.5
6. Wavelength of the Newton rings is $\lambda = \frac{1}{4R} \times \text{slope}$
7. Example of Fraunhofer diffraction is diffraction grating
8. Focal length of red colour is shorter than (violet) violet colour in zone plate.
9. Monochromatic light has one wave length.
10. Obliquity factor $f = \frac{1 + \cos \theta}{2}$
11. The speed of transport is equal to the wave velocity.
12. Characteristic impedance is the ratio of E_0 & V_0
13. Young's modulus = F/A
14. The propagation constant $K = \frac{2\pi}{\lambda}$
15. Tuning fork is the form of V shape
16. Light is transverse (the) in nature
17. The phase difference of quarter wave plate is $\pi/2$
18. The Reflected & Reflected rays are perpendicular to each other.
19. Nicol prism is made up of calcite crystal.
20. Specific rotation is $100/IC$ (in cm).

III. Short Answers.

1. What is interference?
2. Write the formula for thickness of non-reflecting film?
3. Draw the graph of Newton rings?
4. Write the apparatus used in Fraunhofer diffraction?
5. Write two differences between zone plate and convex lens?
6. What is a bar?
7. Draw the 1st overtone diagram for longitudinal vibrations of bar fixed at both the ends?
8. What is meant by polarization of light?
9. Draw the diagram for positive crystal?
10. Write the formula for half wave plate?