VINAYAKA MISSION'S RESEARCH FOUNDATIONS, SALEM
(Deemed to be University)

B.OPTOMETRY DEGREE EXAMINATION – August 2019
First Year

PHYSICAL OPTICS

Time: Three hours   Maximum: 80 marks

I Choose the best answer   (10 x 1 = 10)

1. A wave length is commonly measured in which units
   a) Radians   b) Angstrom
   c) Electron Volt   d) Seconds
2. All light particles vibrate in same plane is called
   a) Dispersion   b) Polarisation
   c) Interference   d) Diffraction
3. The lens used in Newton's ring experiment in addition to the glass plate to trap the air film
   a) Concave   b) Plano concave
   c) Plano convex   d) None
4. In a S.H.M during the motion
   a) The kinetic energy is conserved   b) The potential energy is conserved
   c) The total energy is conserved   d) None of these
5. Interference due to reflected light is also called _____ law
   a) Sine law   b) Cosine law
   c) Tangent law   d) Cotangent law
6. All light particles vibrate in same plane is called
   a) Polarized light   b) Un polarized light
   c) Natural light   d) None of the above
7. The phenomenon of diffraction can be understood using
   a) Fraunhofer   b) Freshenel
   c) Hygens   d) Heisenberg
8. In a Newton's ring experiment , the diameter of the dark ring is proportional to
   a) Odd number   b) Natural number
   c) Even natural number   d) Square root of natural
9. In a Fraunhoffer diffraction the incident wavelength is
   a) Plane   b) Spherical
   c) Cylindrical   d) None of these
10. Which of these electromagnetic waves has the shortest wavelength?
    a) Radio waves   b) Infrared waves
    c) Ultraviolet waves   d) Light waves

II Fill in the blanks: (10 x 1 = 10)

1. Focal length of convex lens is minimum _____
2. The distance between two consecutive bright or dark fringes is called_____
3. Polarized surfaces produce _____ reflection which causes glare in our eyes
4. Stars are _____ sources of light
5. In grating the combined width of a ruling and slit is called_____
6. Candela is the unit of _____
7. Bending of light waves around the edges will give _____ property
8. In double refraction _____ ray obey the law of refraction.
9. Shadows are of two kind named _____
10. The wave nature of light is demonstrated by _____

III State whether the following statements are **TRUE** or **FALSE** (10 x 1 = 10)

1. For destructive interference path difference is odd number or half wavelength.
2. Bending of light waves on edges is called polarization.
3. Division of amplitude occurs due to refraction.
4. Two waves with phases difference 180 deg have resultant amplitude is zero.
5. Newton's rings can be viewed through gyroscope.
6. The phenomenon associated with colours of soap bubble is due interference.
7. Light travels fastest in glass.
8. The source of light used in young's double slit experiment is sun light.
9. Light is an electromagnetic wave.
10. A wedge shaped films is formed between curved surface.

IV Write any **FIVE** answers of the following: (5 x 6 = 30)

1. Write in brief dual nature of light.
2. How nicol prism act as polarizer? Explain.
3. Write a short note on radiant intensity.
4. How to find the flateness of the optical surface explain.
5. Describe in detail Raman scattering.
6. Explain Hygen's principle of law of reflection.
7. Explain in brief sources of spectrum – carbon arc, mercury.

V Write any **TWO** essays of the following: (2 x 10 = 20)

1. Draw with neat diagram – the production of circular and elliptically polarized light.
2. Explain with neat diagram working of Lummer brodhum photometer.
3. Describe in detail the concept and working of zone plate.

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