

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

B.OPTOMETRY DEGREE EXAMINATION – September 2021

Second Year

OPTOMETRIC OPTICS

Time: Three hours

Maximum: 80 marks

I Choose the best answer

(10 x 1 = 10)

1. Coarse abrasive material, used during roughing process is
 - a) Aluminium oxide
 - b) Cerium oxide
 - c) Carbon
 - d) Carborundum
2. All are true about Hard Designs in PAL EXCEPT
 - a) Wider distance zones
 - b) Wider near zones
 - c) Closely spaced contours
 - d) Widely spaced contours
3. $R4^\Delta$ base down can be divided as
 - a) L 4Δ base down
 - b) R 3Δ base down, L 3Δ base up
 - c) R 2Δ base down, L 2Δ base down
 - d) R 5Δ base down, L 1^Δ base down
4. Combination of a +2.50D lens and a -4.50D lens will result in a focal length of
 - a) 50 m
 - b) 50 cm
 - c) 50 m^{-1}
 - d) 50nm
5. IN 22 X 17 X 2.5, CUT 5; '17' stands for
 - a) Cut
 - b) Segment diameter
 - c) Segment height
 - d) Geometrical inset
6. A periscopic lens has one surface power always as
 - a) 1.75D
 - b) 2.25D
 - c) 1.25D
 - d) 2.75D
7. _____ Thermodyne classification has fair resistance: tarnish spots may appear within two years
 - a) S1
 - b) S2
 - c) S3
 - d) S4
8. A _____ with four sides is called quadra
 - a) PRO
 - b) Contour
 - c) Modified saddle
 - d) None of the above
9. _____ rule is used to find decentration in a lens
 - a) Badal
 - b) Scheiner
 - c) Prentice
 - d) Drapers
10. In _____ notation, cylinder axis, zero is always located on the left side of each of the patient's eyes, 90° is up and 180° is on the right
 - a) Standard
 - b) Binasal
 - c) Bitemporal
 - d) Cosine

(p.t.o)

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

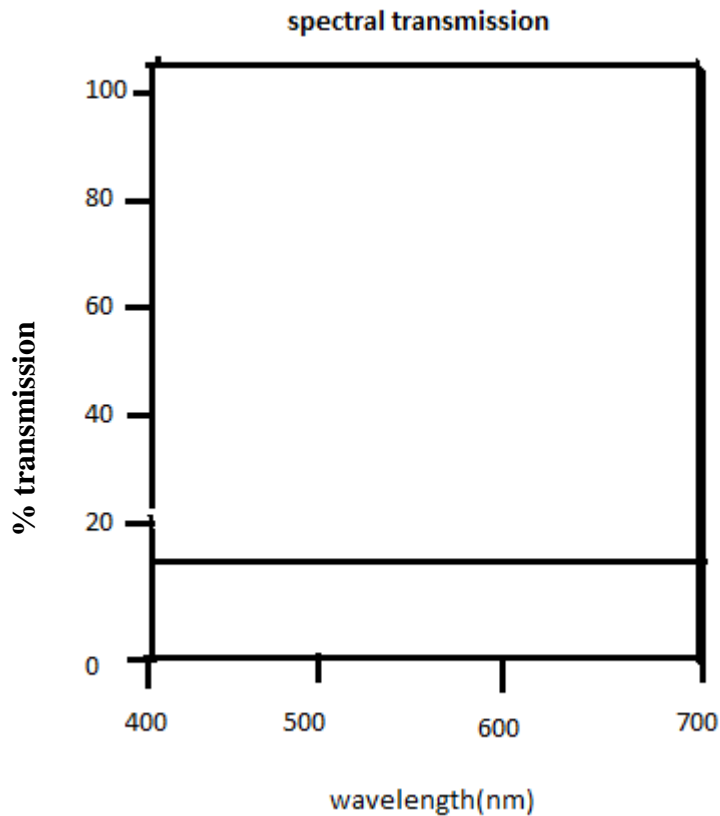
1. Hollow tool is required for working convex surfaces.
2. Polycarbonate is superior to other materials in terms of its impact resistance.
3. The pull of a prism on an eye is towards its apex.
4. Equiconvex lens is a meniscus form lens.
5. A safety frame must comply with specific standards and be identified with the mark "Z87" or "Z87-2" on both the temples and frame front.
6. Absorptive lens used for reducing the amount of transmitted light is called a filter.
7. Rotational movements are seen in cylindrical lenses.
8. If a convex lens is moved away from the eye, its back vertex power must be increased in order that it has the same effective power at the eye.
9. A "perfection" bifocal has one of its contact edges beveled to fit into a groove cut into the edge of the other component.
10. Plastics are heavier than glass.

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

1. The five stages of _____ process in order are melting, fining, stirring, forming and annealing.
2. Lighting tubes are known as _____
3. _____ is soda lime silica glass
4. _____ is the process of inserting a lens into a spectacle frame
5. _____ is a short scratch.
6. Coma is an _____ axis aberration.
7. Improper _____ of glass can result in index difference throughout the bulk of glass
8. Abbe value of Perspex is _____
9. A convex lens _____ rays of light
10. A _____ lens breaks down to silver + halide on exposure to sunlight.

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

1. Explain with a neat illustration: Optics of Anti reflection coating
2. Illustrate and explain: Various forms of astigmatism
3. A. Explain the graph



B. On what factors does the transmittance of a photochromic glass depend?

4. Write on plastic lens materials

5. Compound the prisms 3^{Δ} BU and BI @ 30 and 4^{Δ} BU and BO @ 140 into a single resultant prismatic effect.

6. Describe the various surfacing procedures for glass lenses.

7. Write on tilt induced power

V Write any **TWO** essays of the following:

(2 x 10 = 20)

1. Transpose the prescription $+3.00DS/-2.00DC \times 180$ to toric form with a $+6.00D$ base curve. This toric lens is made in glass of refractive index 1.6 and edged to a 48 X 44 oval shape. Its thin edge substance is 1.6 mm.

Calculate its thick edge substance.

2. Write in detail on concave and convex lenticular lenses.

3. Illustrate neatly a frame marking and measurements along with bifocal lens parts and temple parts and frame front parts also.

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