

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE & ENGINEERING

DEPARTMENT OF OPTOMETRY

BACHELOR OF SCIENCE HONOURS DEGREE IN OPTOMETRY

NOV 2024

OPTC205. OPHTHALMIC OPTICS AND DISPENSING

DURATION.3 HOURS (100 MARKS)

CANDIDATE NUMBER:

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INSTRUCTIONS:

THIS PAPER CONTAINS TWO SECTIONS ANSWER SECTION A ON THE QUESTION PAPER AND SECTION B IN THE ANSWER BOOKLET.

SECTION A. Attempt ALL questions in this section (Encircle your choice)[40 marks]

1. The correct ophthalmic terminology for eyewear that is used for everyday and not for sports or safety is;

- A. casual eyewear
- B. formal eyewear
- C. dress eyewear
- D. standard eyewear

2. What term is synonymous for a "finished lens"?

- A. single vision lens
- B. semifinished lens
- C. uncut lens
- D. progressive addition lens

3. What colour lens is Kalichrome H"?

- A. Gray
- B. Green
- C. Pink
- D. Blue

4. Which of the following lenses should not be AR coated

- A. lightly tinted glass lenses
- B. sun lenses
- C. glass photochromic lenses
- D. All of the following may be AR coated

5. The steps in lens fabrication listed below, which process occurs last
- A. blocking
  - B. edging
  - C. spotting
  - D. focimetry
6. A prescription reads; OU +6.00DS when the optical centre is displaced 0.5mm, what is the amount of prism induced?
- A. 6 Centrad
  - B. 12 Centrad
  - C. 3 Centrad
  - D. 18 Centrad
7. The modern-day pupilometer measures the PD using a cornea reflex as reference point?
- A. True
  - B. False
  - C. None of the above
  - D. Splay angle measurement
8. The distometer is used in measuring.....?
- A. the photochromic reaction of lenses
  - B. the blue cut treated lens
  - C. the power of minor prescription lenses
  - D. the back vertex distance of the eyewear
9. A frame marked 52-18. The lens shape is round, what is the effective diameter of the lens?
- A. 70mm
  - B. 61mm
  - C. 58 mm
  - D. 52mm
10. When verifying lens powers for a pair of glasses, always;
- A. start with the right lens
  - B. start with the left lens
  - C. start with the lens with the highest power in the 180-degree meridian
  - D. start with the lens with the highest power in the 90-degree meridian
11. Which of the following base curves is the best choice to create -10.00D?

- A +6.00D
- B. Plano
- C. +8.00D
- D. +4.00D

12. The outermost area of a lenticular lens is called.....?

- A. aperture
- B. closure
- C. carrier
- D. cortex

13 For a frame with the following dimensions, what is the segment height?

A =51mm, B=47mm, C=49.5mm, DBL 19mm and Seg drop (distance below the horizontal midline) =4mm

- A .19.5mm
- B. 20mm
- C. 21.5mm
- D. 23.5mm

14. If  $F1=+8.00D$  and  $F2=-8.00D$ , the lens is;

- A. meniscus
- B. equiconvex
- C. biconvex
- D. planoconvex

15 Choose the odd one amongst these options;

- A. anti-scratch
- B. photochromic
- C. Crizal prevencia
- D. anti-reflecting coating

16. If salts from a salt pan stick to the frame, what may be done to alleviate the problem?

- A. use newer salt
- B. adds talcum powder to the salt
- C. wash the frame ahead of time
- D. has the heating element checked.

17. What is the meridian of highest absolute power for the prescription? -1.50/-0.75x180

- A. -1.50 D
- B. -2.75D
- C. -4.25D
- D. -1.25D

18. To check for the strain in spectacle lens, what instrument is used?

- A. ophthalmoscope
- B. Retinoscope
- C. Colmascope
- D. refractometer

19 What is a good material to use for a nose pad replacement when the wearer is allergic to standard nose pad materials?

- A. crystal
- B. nickel
- C. propionate
- D. acetate

20. A lens of refractive index 1.50 has a radius of curvature of +8.00cm. To the nearest 0.125D, what power does the lens surface power have in air?

- A.+0.50D
- B. +6.25DS
- C. -0.62D
- D. -3.25D

21. Clip-on, screw-on, twist-on, push-on, bayonet, split-clamp, stirrup and rivert are all terms which apply to;

- A. a type of temple end piece
- B. a type of rimless mounting
- C. a type of nylon cord mounting
- D. a type of adjustable nosepad

22. A cylinder lens has a power of +2.00D and axis orientation of 25 degrees. Where is the meridian of minimum power?

- A. 25 degrees
- B. 115 degrees
- C. 70 degrees
- D. 160 degrees

23. The surface power of a lens in air of +3.50D. If the radius of curvature is 20cm, what index of refraction does the lens have?

- A. 1.33
- B. 1.50
- C. 1.60
- D. 1.70

24. Which lens material is least likely to break, crack or develop stress splits at the mounting point when used for rimless drillings mountings?

- A. crown glass
- B. CR-39
- C. polycarbonate
- D. Trivex

25. A new bifocal wearer must;

- A. keep the head erect and drop the eyes to see on the floor
- B. drop the eyes to read a book
- C. drop the chin and head to engage in near work
- D. sleep in here eyewear

26. When a lens is measured in the normal manner, with the back side of the lens against the lens meter stop, the power measured is called.....?

- A. the equivalent power
- B. the effective power
- C. the front vertex power
- D. the back vertex power

27. Which of the following is correct?

- A. (distance power) +(near power)=(near Rx)
- B. (near power)-(distance power)=(near addition)
- C. (near addition)=(distance power)-(near power)
- D. (near power)-(distance power)=(near Rx)

28. An executive bifocal lens is an example of which type of construction?

- A. fused
- B. one piece
- C. cement segment
- D. none of the above.

29. The lens meter reads; -1.00/-1.00x180 in the distance portion, +0.50/-1.00x180 in the intermediate and +1.50/-1.00x180 in the near portion. What is the near add?

- A. +1.50D

- B. +1.75D
- C. +2.00D
- D. +2.50D

30. A synonym for major reference point is;

- A. fitting cross
- B. distance reference point
- C. prism reference point
- D. near reference point

31. Which of the following may not be caused by or increased in severity by excessive exposure to UV radiation?

- A. photokeratitis
- B. cataracts
- C. diabetic retinopathy
- D. age related maculopathy

32. All the factors listed below are important in the fitting of progressive addition lenses, which factor has the most influenced or wearer satisfaction?

- A. fitting accuracy
- B. brand and style of the progressive lens chosen
- C. accuracy of verification
- D. type of lens material selected

33. If the eyelashes rub the back surface of the lenses, the fitter should;

- A. spread the temples
- B. raise the frames
- C. increase the vertex distance
- D. spread the nose pads

34. All the following denotes GCD in frame measurement except

- A. distance between centres
- B. frame centre distance
- C. frame PD
- D. bevel

35. The difference the horizontal and the vertical of the frame is called.....?

- A. frame difference
- B. decentration

- C centration
- D prism induced

36. What is the ideal temperature for adjusting cellulose acetate frames?

- A. 57C
- B. 67C
- C. 100C
- D. B and C

37. Progressive addition lenses are engraved with all the following except.....?

- A. distance power prescription
- B. the add power
- C. prism reference point
- D. fitting cross

38. The following are all organic lens materials except

- A. Trivex
- B. Polycarbonate
- C. Cellulose acetate
- D. CR-39

39. Intersection of the horizontal and vertical centrelines of the rectangular box which circumscribes the lens shape.....?

- A. datum system
- B. boxing system
- C. concentric system
- D. universal system

40. A prescription reads; OU -3.75/-0.75x95 DC add +1.50. What will be the near power prescription for this patient?

- A. -2.25/-0.75x5
- B. -2.25/-0.75x95
- C. -2.25/+0.75x95
- D. -2.00/-0.75x95

**SECTION B. Attempt all questions in this section[60 marks]**

1 (a). Discuss the advantages and disadvantages of organic glass and mineral glass in contemporary ophthalmic dispensing. [15marks]  
(b). Explain systematically how you will measure the interpupillary distance of a ten-year-old boy in grade six with your PD rule. [5marks]

2 (a). State five methods by which photochromic treatment are applied during lens production. [5marks]  
(b). A prescription for a myope reads;  
OD -27.50 D  
OS -24.00D  
Refracting distance 14mm. If the Rx was to be worn at 11mm, what would be the necessary lens powers be? [5marks]  
(c). Discuss the significance of lens surface coatings to client. [5marks]  
(d). What essential factors influence the performance of photochromic reactions in lenses. [5marks]

3 (a). State five devices and their functions that an optometrist will employ on spectacles during quality control at the clinic. [5marks]  
(b). If a lens power of +3.00/-2.00x180 is to be ground in plus cylinder form, what front and back curves would be used if a base curve of +6.00D were chosen. [6marks]  
(c). Mention ten facial anthropometric measurements you employ as an optometrist in your daily clinical practice. [5marks]  
(d). Why are ophthalmic frames alloyed? [4marks]

END OF PAPER