



*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY MAIN EXAMINATIONS**

**2022/2023 ACADEMIC YEAR**

**FOURTH YEAR, SECOND-SEMESTER EXAMINATIONS**

**FOR THE DEGREE**

**OF**

**BACHELOR OF OPTOMETRY AND VISION SCIENCES**

**COURSE CODE: BOV 425**

**COURSE TITLE: CASE ANALYSIS: COMPREHENSIVE**

**DATE: 19/4/2023**

**TIME: 12.00-2.00 PM**

---

**INSTRUCTIONS TO CANDIDATES**

**Answer all Questions**

**SECTION A SHORT ANSWERED QUESTIONS 50 marks**

**TOTAL 50 MARKS**

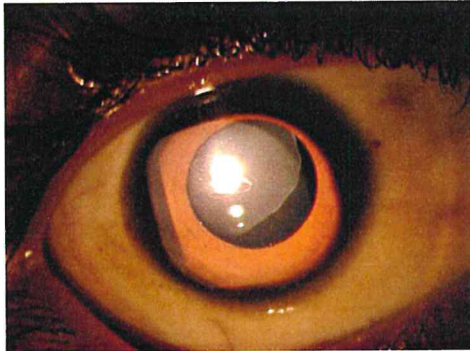
**TIME: 2 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of EIGHT Printed Pages. Please Turn Over.

## SECTION A: MULTIPLE CHOICE QUESTIONS

### QUESTIONS 1-2



1. Marfan syndrome is a common cause of subluxated lenses and patients should be evaluated with an echocardiogram to rule-out aortic root dilation. What other potentially life-threatening condition should the child be evaluated for?
  - a. Homocystinuria
  - b. Kearns-Sayre syndrome
  - c. Myotonic dystrophy
  - d. All of the above
2. Our patient has flat and steep meridian keratometry measurements of 42.5 D and 43.0 D respectively. If the measured refractive error is  $-7.00 + 6.00 \times 135$ , we therefore know that the observed astigmatism is lenticular in nature. Which of the following is not a good choice for optical correction of this patient?
  - a. Contact lens correction with dilated pupil
  - b. Contact lens correction with normal pupil
  - c. Spectacles
  - d. Surgical lensectomy

### QUESTION 3-4

3. A 2-year-old girl presents with a white pupil as shown in the photograph. The parents have noted this appearance for 6 months.



What is the most likely diagnosis?

- a. Retinoblastoma
  - b. Coats disease
  - c. Refractive error
  - d. Glaucoma
4. A baby is brought to the paediatrician for her 4-month-old well-baby checkup. Which finding would be concerning and merit an ophthalmology referral?
- a. baby opens her eyes and lids really wide if the lights are turned down
  - b. mom reports that in pictures the R pupil looks bright orange with the camera flash but not the L pupil - a check of the pupillary reflex with the direct ophthalmoscope confirms her findings
  - c. baby pays attention to a toy but loses interest rapidly
  - d. mom reports some light-yellow discharge in the eyes when the baby gets a cold - an exam of the lids shows white discharge in the nasal corner of both eyes

#### QUESTION 5-7

5. When initially evaluating a person with exposure of a chemical substance to the eye, what should be done first?
- a. Get a good history to help determine what kind of substance got in the eye
  - b. Check the vision, pressure, and do a slit lamp exam to determine the extent of damage done by the substance
  - c. Begin immediate ocular irrigation
  - d. Getting the patient some oral pain medications so the patient is more comfortable and able to undergo an ocular evaluation
6. Which substance is likely to cause the most severe chemical burn in the eye?
- a. Nail polish
  - b. Battery acid
  - c. Drano (lye)
  - d. Pepper spray
7. What type of ocular finding would be less likely due to a chemical burn?

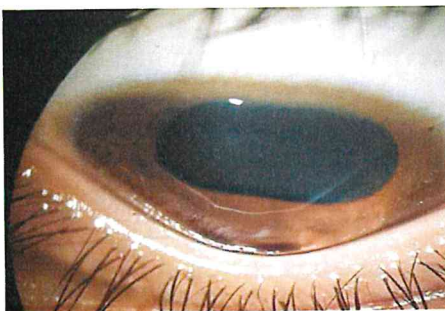
- a. Conjunctival whitening
- b. Corneal Scarring
- c. Increased ocular pressure
- d. Retinal detachment

#### QUESTION 8-10

8. The patient is a 70-year-old, retired building contractor, who presents with severe left eye pain, tearing, photophobia and blurry vision after being kicked in the eye by his grandson 2 hours ago. After fluorescein examination, it's discovered that the patient has a corneal abrasion. What is the most likely cause of management?
- a. Debridement of the corneal epithelium
  - b. Use a steroid three times daily
  - c. Broad spectrum antibiotic
  - d. Artificial tears
9. What medicated drop should NEVER be given to a patient to be used at home or regularly when patients present with a corneal abrasion and why?
- a. proparacaine drops, it anaesthetizes the cornea and can cause a corneal melt if used for too long
  - b. gentamycin drops, it can cause surface irritation and redness
  - c. tropicamide drops, it can cause persistent dilation and decreased focusing
  - d. timolol drops, it can cause hypotension in frail elderly patients
10. How would you test for the presence of a corneal abrasion in the Emergency Room?
- a. add a fluorescein drop to the affected eye and examine the eye in white light
  - b. add a drop of proparacaine and examine the eye at the slit lamp
  - c. check visual acuity at near, one eye at a time
  - d. add a drop of proparacaine to a fluorescein strip and put a drop in the eye, examine eye with a blue light lamp

#### QUESTION 11-13

11. The V-shaped protrusion of the lower eyelid, as seen in this photo on downward gaze, is known as what?



- a. Rizutti's sign
  - b. Munson's sign
  - c. Shaffer sign
  - d. Von Graefe's sign
12. This finding is MOST TYPICAL of patients with which ONE of the following diagnoses?
- a. Terrien's marginal degeneration
  - b. Pellucid marginal degeneration
  - c. Megalocornea
  - d. Keratoconus
13. Which of the following is the best description of the condition named in II above?
- a. Progressive, non-inflammatory, asymmetrically bilateral, peripheral corneal thinning. Associated with corneal neovascularization, opacification, and lipid deposition
  - b. Progressive stromal thinning and cone-like bulging (ectasia) of the cornea leading to vision loss. Inflammation may play an important role
  - c. Developmental defect characterized by non-progressive enlargement of the corneal diameter, very deep anterior chamber, and a normal-to-thin corneal thickness.
  - d. Degenerative, non-inflammatory disorder of the cornea with general thinning in the periphery and globular changes in the corneal curvature

**QUESTION 14-15**

14. A 73-year-old female presents with a recent history of flashing lights and new floaters in her right eye. Two days ago she noticed a "curtain" coming over her vision from right to left. She has a visual acuity of 20/25 in the right eye. On your indirect exam you see a retinal detachment in the right eye. Which region of the retina would you be most likely to see the detachment?
- a. Inferior retina
  - b. Superior retina
  - c. Temporal retina
  - d. Nasal retina
15. Which of the following is not a typical symptom of a retinal detachment?
- a. Flashing lights
  - b. Decreased vision



- c. Ocular pain
- d. Increased floaters

**QUESTION 16-17**

16. A patient presents with a sudden increase of intraocular pressure to 55 mmHg in the Left eye. Gonioscopic examination demonstrates a closed angle with trabecular meshwork obstruction. Which of the following is not a likely presenting symptom in this patient:
- a. Nausea/vomiting
  - b. Diplopia
  - c. Ocular pain
  - d. Headache
  - e. Halos around lights
17. What is the mechanism of angle closure in an episode of acute angle closure glaucoma resulting from a pupillary block?
- a. The apposition of the pupil border against the lens obstructs aqueous humour flow through the pupil and creates a pressure gradient with increased pressure behind the iris. This moves the iris forward with subsequent apposition of the peripheral iris with the trabecular meshwork.
  - b. Decreased drainage by the trabecular meshwork causes increased pressure in the anterior chamber and pushes the iris against the lens.
  - c. A portion of vitreous humour moves anteriorly and around the lens, blocking the trabecular meshwork.
  - d. Increased aqueous humor drainage through the trabecular meshwork causes a decreased pressure in the anterior chamber, causing a pressure gradient that presses the iris forward and blocks the angle.

**QUESTION 18-19**

18. A 47-year-old Caucasian female patient shows signs of severe punctate epithelial keratitis in both eyes and reports blurry vision causing difficulty driving. Her medical history includes chronic kidney disease treated with dialysis, short bowel syndrome, and a

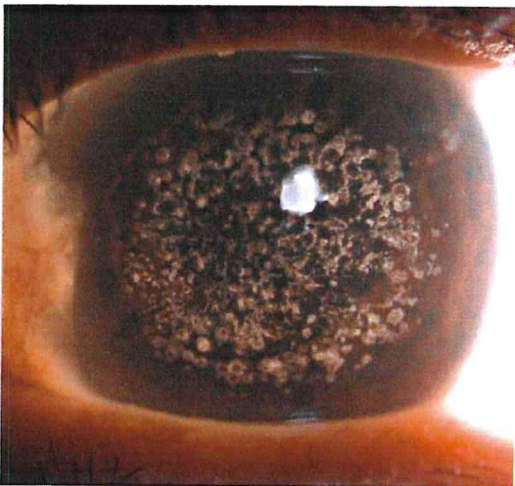
history of nutritional deficiency. **What vitamin level would you order to correlate the ocular signs?**

- a. Vitamin D
- b. Vitamin K
- c. Vitamin A
- d. Vitamin E

19. What ocular condition does the deficiency of the vitamin named above cause?

- a. Corneal ulcer
- b. Xerophthalmia
- c. Trichiasis
- d. Endothelial polymegathism

20. A 46-year-old woman complains of slowly worsening vision in both eyes over several years. Her deceased mother also had similar symptoms without diagnosis. Her best corrected visual acuity is 20/200 in right eye and 20/70 in left eye. The corneal findings are shown in the image below.



What is the most likely diagnosis?

- a. Lattice corneal dystrophy
- b. Granular corneal dystrophy type 1

- c. Macular corneal dystrophy
- d. Reiss buckler corneal dystrophy

## SECTION B SHORT ANSWER QUESTIONS

1. A 59-year-old female patient with sudden symptoms of unilateral vision loss, central scotoma and metamorphosis. The patient had suffered from hypertension for ten years. The key findings were decreased vision, contrast sensitivity reduction and Amsler grid abnormality in the left eye. On fundus examination suspected macular edema was found. Optical coherence tomography scan revealed fluid between the neurosensory retina and the retinal pigment epithelium with increased central retinal thickness. Habitual correction was with progressive lenses changed from OD +1.75 -0.50 x125 / OS +1.75 -0.50 x125 ADD 2.25 to +1.75 -0.50 x 125 OS +2.25 -0.25 45 ADD +2.225.

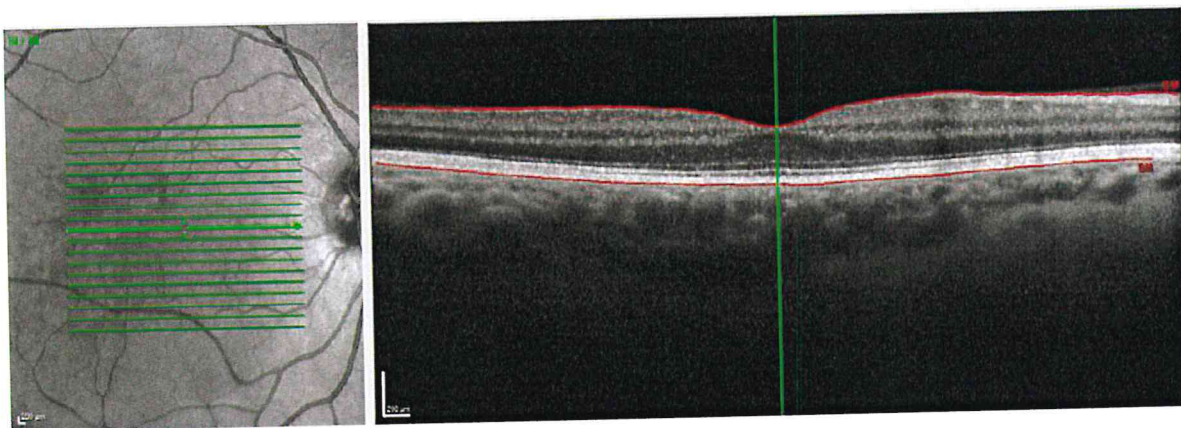


Figure 2: SD-OCT scan of patients' healthy right eye.



- a. With reason what is the tentative diagnosis (4marks)
  - b. Explain 3 differential diagnosis (6marks)
  - c. Write a brief case report on the case (10 marks)
  
2. A 7-year-old child comes to the clinic with a pair of spectacles in her hands after wearing them for 6 months; he says that he cannot see clearly while using them anymore. His previous prescription was OD -4.50Ds – OS 4.00Ds.
  - a. What is some test that may be relevant to this case apart from the cycloplegic refraction? (5marks)
  
  - b. Assuming the cycloplegic was done and the findings were OD -6.50Ds OS -6.00Ds, what is the best plan of management? And why? (5 marks)

