

**ROYAL CIVIL SERVICE COMMISSION
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2010
EXAMINATION CATERGORY: TECHNICAL**

PAPER III: SUBJECT SPECIALIZATION PAPER FOR: OPTOMETRY

Date	: 24th November 2010
Total Marks	: 100
Examination Time	: 2.5 Hours
Reading Time	: 15 minutes

General Directions:

- 1. This question paper contains 9 pages. You will be given 15 minutes to read the questions before you write the answers.**
 - 2. All answers should be written on the Answer paper.**
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SECTION A

PART A. MULTIPLE CHOICE QUESTIONS

Directions:

In this part there are thirty multiple choice questions each carrying 1 mark. Each question is followed by four suggested answers. Choose **ONE** that best answers the question.

1. Two thin (small angled) prisms are combined to produce dispersion without deviation. One prism has angle 5° and refractive index 1.56. If the other prism has refractive index 1.7, what is its angle?
 - a. 3°
 - b. 4°
 - c. 5°
 - d. 6°

2. Keratan sulphate is found in abundance in –
 - a. Heart muscle
 - b. Liver
 - c. Adrenal cortex
 - d. Cornea
3. Polyuria can occur in –
 - a. Diabetes mellitus
 - b. Diarrhea
 - c. Acute glomerulonephritis
 - d. High fever
4. With regard to optical radiation, which statement is NOT true:
 - a. The wavelengths of visible light lies between 400nm and 780nm
 - b. Ultraviolet A has a shorter wavelength than ultraviolet C
 - c. The shorter the wavelength the higher the energy of an individual quanta (photon)
 - d. The crystalline lens is better at absorbing shorter than longer wavelengths
5. The following are true about colour vision EXCEPT:
 - a. Deuteranomaly is more common than deuteranopia
 - b. Blue pigment gene is found on chromosome X
 - c. Red-green defect is common in acquired optic nerve disease
 - d. blue-yellow defect is common in glaucoma
6. In colour vision testing, which statement is correct:
 - a. The Fransworth-Munsell hue 100 test contains 100 colour discs.
 - b. The colours of the Fransworth-Munsell hue 100 test differs in hue and saturation.
 - c. Ishihara test plates are designed mainly for congenital red-green colour defects.
 - d. Ishihara test plates cannot be used by pre-verbal children
7. Regarding diffraction, one of the following statements does not correctly describe the term -
 - a. It is best explained with the wave theory of light.
 - b. It occurs when there is an obstruction to the light.
 - c. Both constructive and destructive interference occurs.
 - d. It prevents the formation of a point image from a multiple sources.

8. From the following tests used in testing the vision of pre-verbal children, which is not suitable for this age?
- Log MAR
 - STYCAR
 - Catford drum
 - Cardiff card
9. Regarding visual acuity,
- It does not vary with the region of the retina
 - It can be represented a reciprocal of the minimum angle of resolution
 - General illumination has no affect.
 - Does not vary with the time of exposure.
10. Pinhole:
- If less than 1mm diameter improves the image quality
 - Requires the need for the eye to focus
 - Decreases the depth of focus
 - Improves ametropia of less than 4 D
11. Contrast sensitivity: find the incorrect statement –
- Measures the eye sensitivity to light
 - Is inversely proportional to contrast
 - Can be measured with VISTECH
 - May be reduced following LASIK
12. In stereoscopic vision testing, which statement is not appropriate –
- Corresponding retinal areas in both eyes are stimulated.
 - The TNO test can give stereoacuity from 450 to 15 degrees of arc.
 - The grading is based on the least horizontal disparity of retinal image that evokes depth perception.
 - In normal person, the value is about 60 seconds of arc or better.
13. The following refers to the amount of light arriving at a given point:
- Illuminance
 - Brightness
 - Shininess
 - Radiance

14. The following is true about the superior oblique muscle:
- It passes between the superior rectus and the levator palpebrae superioris on the way to its insertion.
 - It has the longest active muscle.
 - It becomes tendinous before reaching the trochlea.
 - It is the primary extorter of the globe in the primary position.
15. All the following structures are involved in the accommodation reflex EXCEPT:
- Lateral geniculate body
 - Visual cortex
 - Edinger-Westphal nuclei
 - All of the above.
16. The ophthalmic nerve:
- Is the biggest branch of the trigeminal nerve
 - Is a purely sensory nerve
 - Receives parasympathetic fibres from the internal carotid plexus
 - Give off three main branches after it enters the orbit
17. A lesion involving the facial nerve in the facial canal will give rise to all of the following EXCEPT –
- Loss of taste to the anterior two third of the tongue
 - Hyperacusis
 - Loss of lacrimation
 - Paralysis of the orbicularis oculi
18. It is true of endothelium that it –
- Maintains the integrity of the corneal epithelium through an ATP- Na^+ , K^+ -dependent pump.
 - Receives its nutrient from the blood vessels surrounding the cornea
 - Undergoes multiplication in response to trauma
 - Produces Descemet's membrane
19. A 95 % confidence interval:
- Can only be used in parametric data.
 - It is a test of the null hypothesis.
 - It is calculated at ± 1.96 times the standard error of the mean.
 - Is useful when comparing data with same population.

20. In sympathetic ophthalmia, all is true EXCEPT –
- There is bilateral granulomatous inflammation involving the uvea
 - There is thickening of the uvea
 - Dalen-Fuchs nodules occur at the interface between the retina and the retinal pigment epithelium
 - The choriocapillaris is infiltrated by macrophages
21. With regard to retinoblastoma:
- Death is usually caused by early lymphatic spread
 - Calcification is an uncommon feature.
 - No widespread necrosis of the tumour occurs.
 - Flexner-Wintersteiner's rosette indicates attempted photoreceptor differentiation
22. The effect of topical non-steroidal anti-inflammatory drugs (NSAIDS) include:
- Maintenance of mydriasis during cataract surgery
 - Inhibition of lipoxygenase
 - Conjunctival hyperemia
 - Does not cause bronchospasm
23. Local causes of madarosis include all except
- Chronic lids diseases
 - Infiltrating tumors of lids
 - Ectropion
 - Burns
24. In anterior blepharitis due to staphylococcal infection, the following features are seen EXCEPT
- Chronic irritation worst in the morning
 - Collarettes (scales around the base of eye lashes)
 - Epiphora
 - Hyperaemia and telangiectasia of anterior lids margins
25. Pseudoptosis is not seen in -
- Phthisis bulbi
 - Enophthalmos
 - High myopia
 - Ipsilateral hypertropia

26. Most common eye lid tumours is

- a. Squamous cell carcinoma
- b. Sebaceous cell carcinoma
- c. Basal cell carcinoma (rodent ulcers)
- d. Melanoma

27. The clinical features of symblepharon include –

- a. Diplopia
- b. Lagophthalmos
- c. Disfigurement
- d. All of the above

28. Paralytic ptosis is due to –

- e. Complete or partial 3rd nerve palsy
- f. 4th nerve palsy
- g. 6th nerve palsy
- h. 7th nerve palsy

29. Shield corneal ulcer is seen in one of the following conditions

- a. Atopic Dermatitis
- b. Vernal keratoconjunctivitis (VKC)
- c. Fungal corneal ulcers
- d. Exposure keratitis

30. ROP is seen in -

- a. Advanced Diabetic retinopathy
- b. Retinitis pigmentosa
- c. Low birth infants exposed to high oxygen concentration.
- d. Retinoblastoma

PART B. WRITE SHORT ANSWERS

20 MARKS

General Directions:

In this part there are four short answer questions each carrying 5 marks. All the questions must be attempted.

1. What is malignant glaucoma? Write causes and outline the medical management? (5)
2. Define amblyopia and list the management modalities? (5)
3. Give a brief description of accommodative spasm? (5)
4. Describe Convergence Insufficiency? (5)

SECTION B

(50 Marks)

General Direction:

In this section there are two questions related to a case study. Choose ANY one question from the questions below and write your answer to the chosen question very carefully.

CASE STUDY I

Miss Wangmo, 23 years of age, living in Phuntsholing, presented to JDW NR Hospital, Thimphu complaining of pain, photophobia, watering, redness and decreased vision in her right eye for the last one week. She is myopic with - 4D in each eye and had used soft contact lens off and on along with spectacle wear to correct her vision. She has no history of trauma in the eye and no similar problems in the past. Her general health condition is good. Her visual acuity in (RE) is HM and in (LE) is 6/6 with glass. She has blepharospasm with lids swelling, intensely chemosed and congested conjunctiva and marked lacrimation. On prying open the lids, it is found that the cornea is edematous, 3x2 mm central corneal ulcer with 2 mm hypopyon.

Based on the above information, answer the following questions carefully.

1. Write down the complete diagnosis? [3]
2. List all the modalities for correcting the above refractive error and justify the best option. [5]
3. Is the above patient's condition a consequence of wearing contact lens wear? Justify your answer. [5]
4. Who was credited for describing the ideas of contact lens? [1]
5. What is the prevalence of contact lens induced keratitis in developed countries such as USA? [1]
6. How will you manage this patient? Ensure all the steps are included in the answer. [10]
7. Name common microbial pathogens causing microbial keratitis in contact lens wearer?[5]
8. What are the contraindications for contact lens wear? [5]
9. Which protozoal infection is common in contact lens user? Name the drugs used for treating this type of keratitis? [5]
10. What are the essential aspects to be covered in the patient's education for contact lens wear? [10]

CASE II

Mr. Dorji, a 80 years old farmer from Gasa, had undergone cataract surgeries in both eyes in Punakha Eye Camp organized by the Department of Ophthalmology, JDW NR Hospital, Thimphu in 1980.

As per the above information, answer the following questions carefully.

1. What is cataract? Name the cataract found after acute angle closure attack? [2]
2. Which type of cataract surgery did Mr. Dorji undergo in 1980? [1]
3. How would you have corrected his vision after his cataract surgery then? [5]
4. Enumerate the types of aberration? Explain how to overcome them? [10]
5. An accurate measurement of the refractive stage of the eye can be made by using an instrument called retinoscope. What is the technique called? [1]
6. With the help of simple ray diagram, explain the principle of functioning of streak retinoscope. [10]
7. When is aphakic situation ideal? [1]
8. He wants to know if there is any further surgical correction since its becoming problem for him at this old age. What is your recommendation to him? Discuss the pros and cons of your recommendation? [10]
9. Why is steroid indicated after cataract surgery? [2]
10. What are the signs and symptoms of endophthalmitis? [8]