

**ROYAL CIVIL SERVICE COMMISSION  
BHUTAN CIVIL SERVICE EXAMINATION (BCSE) 2021  
EXAMINATION CATEGORY: TECHNICAL**

**PAPER III: SUBJECT SPECIALISATION PAPER FOR OPTOMETRY**

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<b>Date</b>	: October 31, 2021
<b>Total Marks</b>	: 100
<b>Writing Time</b>	: 150 minutes (2.5 hours)
<b>Reading Time</b>	: 15 minutes (prior to writing time)

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**GENERAL INSTRUCTIONS:**

1. Write your Registration Number clearly and correctly on the Answer Booklet.
2. The first 15 minutes is to check the number of pages of Question Paper, printing errors, clarify doubts and to read the instructions. You are NOT permitted to write during this time.
3. This paper consists of **TWO SECTIONS**, namely SECTION A & SECTION B:
  - **SECTION A** has two parts: Part I - 30 Multiple Choice Questions  
Part II - 4 Short Answer Questions  
All questions under SECTION A are COMPULSORY.
  - **SECTION B** consists of two Case Studies. Choose only **ONE** case study and answer the questions of your choice.
4. All answers should be written on the Answer Booklet provided to you. Candidates are not allowed to write anything on the question paper. If required, ask for additional Answer Booklet.
5. All answers should be written with correct numbering of Section, Part and Question Number in the Answer Booklet provided to you. Note that any answer written without indicating the Section, Part and Question Number will NOT be evaluated and no marks will be awarded.
6. Begin each Section and Part in a fresh page of the Answer Booklet.
7. You are not permitted to tear off any sheet(s) of the Answer Booklet as well as the Question Paper.
8. Use of any other paper including paper for rough work is not permitted.
9. **You must hand over the Answer Booklet to the Invigilator before leaving the examination hall.**
10. This paper has **8 printed pages**, including this instruction page.

**GOOD LUCK**

**SECTION A**

**PART I: Multiple Choice Questions [30 marks]**

**Choose the correct answer and write down the letter of your chosen answer in the Answer Booklet against the question number e.g. 31 (d). Each question carries ONE mark. Any double writing, smudgy answers or writing more than one choice shall not be evaluated.**

1. With regard to pin-hole, which one of the following statements is FALSE?
  - a) Too small a pinhole can affect vision through interference.
  - b) The vision through the pinhole is usually worse in patients with macular disease.
  - c) It may allow presbyopic patients to read comfortably without optical correction.
  - d) Failure of the vision to improve to 6/6 with pinhole indicates the presence of macular disease.
  
2. The contact lens seems loose and rides high while blinking on slit lamp examination. With the diameter constant, altering which of the following parameters do we obtain an optimal fit?
  - a) BOZR decrease
  - b) Lens thickness increase
  - c) Peripheral optic zone decrease
  - d) Oxygen permeability increase
  
3. Which of the following drugs acts by inhibiting protein synthesis of micro-organism?
  - a) Ciprofloxacin
  - b) Chloramphenicol
  - c) Natamycin
  - d) Ayclovir
  
4. The materials used in making prosthetic eye is
  - a) Plasters of Paris
  - b) Hydroxy-appetites
  - c) Alginates
  - d) Borro-sillicates
  
5. The prism used in the slit lamp to make the inverted image erect is
  - a) Internal doubling prism
  - b) Porro Abbe prism
  - c) Integrated Fresnel Prism
  - d) Reflective polyhedral prism
  
6. The most important symptom differentiating orbital cellulitis from panophthalmitis is
  - a) Vision
  - b) Pain
  - c) Redness
  - d) Swelling

7. "Cotton wool spots" as seen in diabetic retinopathy lies in which layer of retina?
- Internal Limiting Membrane
  - Nerve fiber layer
  - Outer Plexiform Layer
  - Pigment Epithelial layer
9. "Pie in the sky defect" in the visual field is seen when a lesion affects
- medullary optic lamina of optic radiation.
  - visuopsychic peristriate area 18.
  - dorsolateral aspect of optic tract.
  - Myer's Loop.
8. A 7-year-old boy presents to you with a complaint of intense itching and discomfort. On slit lamp examination, conjunctival congestion and mild chemosis was noted. The most probable diagnosis is
- Adenoviral conjunctivitis
  - Vernal keratoconjunctivitis
  - Bacterial conjunctivitis
  - Chlamydial conjunctivitis
9. The clinical presentation of BRVO is most often seen in \_\_\_\_\_ retina.
- supero-nasal
  - infero-nasal
  - infero-temporal
  - supero-temporal
10. The instrument shown below is used to



- measure IPD.
  - measure HVID.
  - perform objective refraction.
  - perform funduscopy.
11. A one month old baby is diagnosed with a unilateral anterior polar cataract that is approximately 1.5 mm in diameter. The most appropriate initial management is
- Close observation
  - Lensectomy
  - Lensectomy with intraocular implant
  - Lensectomy with aphakic contact lens

12. The most common type of astigmatism found in patients with oculocutaneous albinism is
- with the rule astigmatism.
  - against the rule astigmatism.
  - oblique astigmatism.
  - mixed astigmatism.
13. The prescription of presbyopia glasses does not depend on
- age of the patient.
  - occupation of the patient.
  - educational status of the patient.
  - ocular refractive state of the patient.
14. Which one of the following is NOT a possible complication of the RGP contact lens?
- Residual refractive error
  - Dimple veiling
  - Lens flexure
  - Ptosis
15. In Bruckner test, the affected eye
- shines with dull, red reflex.
  - shines with bright, red reflex.
  - shines with dim, yellow reflex.
  - shines with bright, yellow reflex.
16. The new global targets for eye care by 2030 adopted by the 74<sup>th</sup> World Health Assembly is to achieve
- 30% increase in effective coverage of refractive errors and a 40% increase in effective coverage of cataract surgery.
  - 40 % increase in effective coverage of refractive errors and a 30% increase in effective coverage of cataract surgery.
  - 25% increase for both effective coverage of refractive errors and effective coverage of cataract surgery.
  - 30% increase for both effective coverage of refractive errors and effective coverage of cataract surgery.
17. In GAT, 4D of corneal astigmatism bring about the change in IOP error by
- 1 mm of Hg
  - 2 mm of Hg
  - 3 mm of HG
  - 4 mm of Hg
18. Intraocular lens power is increased if
- corneal curvature increases and axial length increases.
  - corneal curvature increases and axial length decreases.
  - corneal curvature decreases and axial length decreases.
  - corneal curvature decreases and axial length increases.

19. Due to an acquired retinal disease, a person's visual condition was so worse that he is diagnosed to fall under low vision criteria. He undergoes a sequential psychological process in the order of
- denial, anger, depression, bargaining, acceptance.
  - denial, bargaining, anger, depression, acceptance.
  - denial, bargaining, anger, acceptance, finding meaning.
  - denial, anger, bargaining, acceptance, depression.
20. The prismatic effect when a +5Ds lens is decentered by 10mm is \_\_\_\_\_ prism dioptre.
- 2
  - 5
  - 10
  - 50
21. A 65-year-old woman presented with a history of pain, tingling of the skin and erythema. This was followed by a vesicular rash in 18 hours later which became pustules over the next 2 days. The pustules dried out over the next 7 days and by day 12 most had crusted. Most of the crusts had fallen by week 3. Which cranial nerve is involved in this presentation?
- Oculomotor nerve
  - Trigeminal nerve
  - Facial nerve
  - Optic nerve
22. The illuminance of the room while using computer should be
- 50-100 lux
  - 100-200 lux
  - 300-500 lux
  - 500-700 lux
23. Age-related macular degeneration (ARMD) is responsible for which type of visual field defect?
- Central
  - Peripheral
  - Bitemporal hemianopia
  - Binasal hemianopia
24. For pterygium surgery, fibrin glue could be preferred over vicryl suture for which of following reasons?
- Less chance of recurrence
  - Less chance of graft dislocation
  - Less postoperative discomfort to patient
  - Cheaper than vicryl suture surgery
25. Direct ophthalmoscopy magnification of the image in comparison to indirect type is \_\_\_\_\_ times.
- 2
  - 3
  - 5
  - 6

26. Which of the following combinations of extraocular muscles and its function is correct?
- Superior rectus: adduction
  - Superior oblique: extorsion
  - Inferior rectus: abduction
  - Inferior oblique: intorsion
27. With regard to the contact lens, which of the following statements is NOT TRUE?
- Prism ballast is the most common stabilization technique used in soft toric lenses.
  - Fluorescein stain is useful in assessing the fitting of soft contact lenses.
  - Piggyback lenses are used to treat keratoconus.
  - ACT technology is used in Rose K lenses.
28. A low vision child sitting in the front row requires a minimum visual acuity of 6/12 to see the blackboard. The child has a best corrected visual acuity of 6/60. What telescopic magnification is required for the child to be able to read on the blackboard?
- 3x
  - 4x
  - 5x
  - 6x
29. All of the following are risk factors for primary open-angle glaucoma, EXCEPT
- Family history of glaucoma
  - High myopia
  - Hypertension
  - Young age
30. The most visually disabling type of cataract is
- Cortical cataract
  - Nuclear cataract
  - Posterior sub capsular cataract
  - Anterior capsular cataract

**PART II – Short Answer Questions [20 marks]**

**This part has 4 Short Answer Questions. Answer ALL the questions. Each question carries 5 marks.**

- A parent of a 9-year-old boy with -3.00 D myopia seeks advice from you on how to control the progression of myopia of his son. What would you advise? (5 marks)
- Describe the parts of a spectacle with the help of a diagram. (5 marks)
- Write a short note on ophthalmia neonatorum and its management. (5 marks)
- Define the following terms in relation to visual science. (2.5 x2=5)
  - Avoidable blindness
  - Interference

**SECTION B: Case Study [50 marks]**

**Choose either CASE I OR CASE II from this section. Each case study carries 50 marks. Mark for each sub-question is indicated in the brackets.**

**CASE I**

You are appointed as an Optometrist at one of the regional referral hospitals. During your clinical practice, a 17-year-old girl studying in class 12 is referred from a district hospital to you with complaints of blurred vision not improving with refraction. Her class teacher had told the father that his daughter was having difficulty in copying words from the blackboard. On examination, the following was noted:

<b>Examination</b>	<b>OD</b>	<b>OS</b>
PVA	20/200	20/80
Dry retinoscopy	+1.75/-5.50 x 180	+1.00.00/-1.50 x 180
BCVA at PMT	6/18	6/9

**Based on the above information, answer the following questions:**

1. What are the probable causes of vision not improving even after refractive correction? (2 marks)
2. What other ophthalmic investigations would you perform for the patient and why? (5 marks)
3. How would you check if the patient was malingering? (3 marks)
4. What would be your diagnosis, management and follow up if:
  - a) The keratometric reading was between 43D and 45D in both the eyes? (7 marks)
  - b) The keratometric reading was between 52D and 57D in both the eyes? (8 marks)
5. List down the pre-fitting assessment required for rigid gas permeable contact lenses. (5 marks)
6. What is dry retinoscopy? How is it different from wet retinoscopy? (3 marks)
7. Convert the presenting visual acuity of the patient from feet to meters notation? (2 marks)
8. Briefly describe the working principle of retinoscopy with the help of a diagram (5 marks)
9. Describe the different types of cycloplegics, its duration of action and its indications? (5 marks)
10. What is the role of optometrist in the school eye health program? (5 marks)

**CASE II**

During your clinical practice, a 64-year-old retired teacher visit you with a complaint of blurring of distance vision. He has been under medication for type II diabetes for the past 16 years but presently HbA1c is 7.6% .He had undergone cataract surgery in the right eye 8 years ago. Ophthalmologist had treated the left eye with an ophthalmic laser and told him that the visual prognosis in the left eye is poor. Ophthalmic examination revealed the following:

<b>Examination</b>	<b>Right Eye</b>	<b>Left eye</b>
UDVA	Jun-48	May-60
Objective refraction	- 2.50/-0.75 x 90 (dull reflex)	-2.50/0.75 x 90
BCVA	24-Jun	Jun-48
Posterior segment (dilated)	Not visible clearly. Grade II diabetic retinopathy noted	Proliferative diabetic retinopathy noted

**Based on the above information, answer the following questions:**

1. What is the most probable reason for blurred vision in the right eye? (2 marks)
2. Briefly describe the grades and management of diabetic retinopathy. (10 marks)
3. List down the risk factors for diabetic retinopathy? (3 marks)
4. Does the patient require laser treatment in the right eye? If yes, name the type of laser? (2 marks)
5. What kind of cataract surgery would that patient have undergone in the right eye? What are the types of cataract surgery? (3 marks)
6. ‘The patient is a potential referral to the low vision clinics’. Give justifications to support the statement. (5 marks)
7. Name the methods to perform objective refraction. Tabulate the difference between objective and subjective refraction. (5 marks)
8. What would be you advise to the patient if:
  - a) The patient wants glasses for distance vision. (3 marks)
  - b) The patient wants to undergo cataract surgery for the left eye. (2 marks)
9. What are the preoperative investigations for cataract surgery? (8 marks)
10. List down optical and non-optical low vision devices for patients with age-related macular diseases. (7 marks)

**TASHI DELEK**