

**2021**

**PHYSIOLOGY — HONOURS**

**Paper : CC-11**

**(Special Senses)**

**Full Marks : 50**

*The figures in the margin indicate full marks.  
Candidates are required to give their answers in their own words  
as far as practicable.*

**Group – A**

1. Answer **any five** questions : 2×5
- (a) What are the effects of mid-sagittal transection of optic chiasma?
  - (b) State the significance of stria vascularis.
  - (c) Which special sensory pathway can bypass thalamus? What is the function of orbitofrontal cortex?
  - (d) When and how the 'OFF'-bipolar cells in retina become activated?
  - (e) What do you understand by cataract and glaucoma?
  - (f) Name a pathophysiological condition when both ageusia and anosmia may develop.
  - (g) Mention the significance of 'orientation column' in occipital cortex.
  - (h) What is prestin?

**Group – B**

2. Answer **any two** questions :
- (a) State location and functions of Muller cells in retina. 2+3
  - (b) Describe briefly with a diagram the computational or across-fibre mechanism of gustatory coding. 2+3
  - (c) Discuss briefly the origin, circulation and functions of aqueous humour. 1+2+2
  - (d) Write a short note on Purkinje-Sanson images. 5

**Group – C**

3. Answer **any three** questions :
- (a) (i) What is hypermetropia? How can it be corrected?
  - (ii) How sound intensities and frequencies can be discriminated at different levels of the auditory system? (1+1)+(3+5)

**Please Turn Over**

- (b) (i) Why do the photoreceptors absorb light?  
(ii) State briefly the neurophysiological basis of visual acuity.  
(iii) What roles do calcium ion and carbon monoxide play in transducing olfactory signals? 2+3+(2+3)
- (c) (i) What is the main difference between the ionic composition of sclera media and sclera tympani?  
(ii) How is impedance matching obtained by the middle ear?  
(iii) Describe the role of tiplinks in genesis of auditory receptor potentials. 2+4+4
- (d) (i) What is the role of saliva in tasting foods?  
(ii) Describe with diagram the ipsilateral pathway of a special sense. 2+(3+5)
- (e) (i) Discuss the mechanism of dark adaptation and mention its physiological significance.  
(ii) Mention the causes and features of sensorineural hearing loss.  
(iii) What do you know about the simultaneous and successive contrast of taste sensation? (3+2)+3+2
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