Sample Test Items

Part I (Applied Basic Science)

1. A 31-year-old female is deaf in her right ear and is unable to close her right eye, but has no loss of touch sensation on the right side of her face. The MOST likely site of a single lesion that would account for her symptoms is the:

a. superior orbital fissure
b. cavernous sinus
*c. internal auditory meatus
d. stylomastoid foramen
e. crus cerebri

Classification: Anatomy (Neuroanatomy): Systemic Health; Implicit

2. Which of the following cell types is capable of becoming a plasma cell?

a. Monocyte
*b. Lymphocyte
c. Eosinophil
d. Neutrophil

Classification: Immunology: Systemic Health; Implicit

3. Which of the following changes in plasma ion concentration is the major stimulus for parathyroid hormone secretion?

a. An increase in calcium
*b. A decrease in calcium
c. An increase in sodium
d. A decrease in potassium

Classification: Pathology: Systemic Health; Implicit

4. Which of the following tests would BEST differentiate staphylococci from streptococci?

*a. Catalase
b. Oxidase
c. Gram stain
d. Giemsa stain

Classification: Microbiology: Systemic Health; Implicit

5. Which type of antibody is involved in atopic disease?

a. IgA
*b. IgE
c. IgG
d. IgM

Classification: Immunology: Systemic Health; Explicit

6. Which of the following drugs acts by selective stimulation of β2-adrenergic receptors?

a. Theophylline
b. Isoproterenol
c. Norepinephrine
*d. Albuterol

Classification: Pharmacology: Systemic Health; Implicit

7. Tumors originating in which of the following organs typically do NOT metastasize?

a. Lung
b. Breast
c. Colon
*d. Brain

Classification: Pathology: Systemic Health; Explicit

8. The sensation of corneal pain is PRIMARILY transmitted through which of the following nerves?

a. Infraorbital
b. Lacrimal
*c. Nasociliary
d. Oculomotor

Classification: Anatomy (Gross): Conjunctiva / Cornea / Refractive Surgery; Explicit

9. A head tilt toward the left shoulder is MOST likely due to a paresis of the right:

a. inferior oblique
*b. superior oblique
c. inferior rectus
d. superior rectus

Classification: Optics (Physiological): Accommodation / Vergence / Oculomotor Function; Explicit

10. Occlusion of the central retinal artery will MOST likely cause necrosis of which of the following retinal cell layers?

a. Inner nuclear
*b. Ganglion cell
c. retinal pigmented epithelium
d. Outer nuclear

Classification: Anatomy (Gross): Vitreous / Retina / Choroid; Explicit

11. Which of the following preservatives is MOST likely to disrupt the corneal epithelium?
*a. Benzalkonium chloride
b. Chlorobutanol
c. Sorbic acid
d. Chlorhexidine

Classification: Pharmacology: Conjunctiva / Cornea / Refractive Surgery; Explicit

12. A +7.00 D lens has a real object located 20 cm from the lens. The conjugate image is:
*a. real and located 50 cm from the lens
b. virtual and located 50 cm from the lens
c. real and located 8.30 cm from the lens
d. virtual and located 8.30 cm from the lens
e. real and located 14.30 cm from the lens

Classification: Optics (Geometrical): Ametropia; Explicit

13. A lens is made of glass with a refractive index of 1.65. What would be the refractive index for the ideal anti-reflection coating?
*a. 1.28
b. 1.34
c. 1.41
d. 1.49
e. 1.65

Classification: Optics (Physical): Ametropia; Explicit

14. A 22-mm round bifocal lens has a power of +2.00 DS, Add +2.50 D. What is the "jump" with this bifocal in prism diopters?

a. 1.50
b. 2.20
*c. 2.75
d. 3.75
e. 4.50

Classification: Optics (Physical): Ophthalmic Optics / Spectacles; Explicit

15. An Executive bifocal has a base curve of +6.00 D and a segment surface of +8.00 D. The ocular surface measures -5.00 D when a lens gauge is placed on it vertically, and -3.00 D when placed horizontally.

The Rx is:

a. +3.00 DS -2.00 DC x 090, Add +2.00 D
b. +3.00 DS -2.00 DC x 090, Add +3.00 D
*c. +3.00 DS -2.00 DC x 180, Add +2.00 D
d. +3.00 DS -2.00 DC x 180, Add +3.00 D
e. +5.00 DS -4.00 DC x 180, Add +2.00 D

Classification: Optics (Physical): Ophthalmic Optics / Spectacles; Explicit

16. An eye under the influence of an extremely strong miotic agent has a pupil diameter of 1 mm. The resolution of this eye is considered to be limited by:

a. radial astigmatism
b. coma
*c. diffraction
d. spherical aberration
e. depth of focus

Classification: Optics (Physical): Ametropia; Implicit

17. The portion of the spectrum called blue-green by normals is MOST readily confused with the white portion for which of the following types of observers?

a. Trichromats
*b. Deuteranopes
c. Tritanopes

Classification: Optics (Physiological): Perceptual Function / Color Vision; Explicit

18. In a block of 100 trials of a yes/no signal detection experiment, the signal is absent on 10 trials. The observer has 80 hits and 5 false alarms (false positives). How many responses are correct rejections?

a. 0
*b. 5
c. 10
d. 15

Classification: Optics (Physiological): Perceptual Function / Color Vision; Implicit

19. When measured with Teller acuity cards, the grating acuity of a 10-month-old infant is expected to be approximately:

*a. 10 cycles per degree
b. 30 cycles per degree
c. 50 cycles per degree
d. 70 cycles per degree

Classification: Optics (Physiological): Visual and Human Development; Normalcy

20**.** When you ask a patient to shrug his shoulders, which cranial nerve are you evaluating?

a. Vagus
b. Glossopharyngeal
*c. Spinal accessory
d. Hypoglossal
e. Trigeminal

Classification: Anatomy (Gross): Systemic Health; Implicit

21**.** Ankylosing spondylitis INITIALLY leads to inflammation and functional change within which skeletal region?

a. Cervical
b. Thoracic
*c. Sacroiliac
d. Coccyx

Classification: Pathology: Systemic Health; Explicit

22**.** Hematuria is MOST likely the result of which of the following conditions?

*a. Cystitis
b. Hepatitis
c. Pancreatitis
d. Hemosiderosis

Classification: Pathology: Systemic Health; Explicit

23**.** All of the following are extraintestinal manifestations of idiopathic inflammatory bowel disease

EXCEPT:

a. arthritis
b. hepatic disease
c. ocular inflammation
*d. pulmonary infections

Classification: Pathology: Systemic Health; Explicit

24**.** Which of the following laboratory tests will yield abnormal results in a patient who has liver damage?

a. Creatine phosphokinase
b. Blood urea nitrogen
c. Uric acid
*d. Bilirubin

Classification: Pathology: Systemic Health; Explicit

25**.** A child with mental retardation, single palmar creases, low set ears, prominent epicanthal folds, and short stature MOST likely has:

a. osteogenesis imperfecta
b. fetal alcohol syndrome
*c. trisomy 21
d. cretinism

Classification: Pathology: Systemic Health; Explicit

26**.** The MOST frequent etiology of a unilateral or bilateral proptosis in an adult is:

a. orbital pseudotumor
b. cavernous hemangioma
c. painful ophthalmoplegia
*d. Graves' disease

Classification: Pathology: Lids / Lashes / Lacrimal System / Ocular Adnexa / Orbit; Explicit

27. A 21-year-old patient has an enlarging, elevated reddish-blue eyelid lesion of recent onset. As the next step in evaluating this patient, you should order which of the following laboratory tests?

*a. HIV ELISA
b. C-reactive protein
c. Glycosylated hemoglobin (Hb A1c)
d. Alanine transaminase

Classification: Pathology: Lids / Lashes / Lacrimal System / Ocular Adnexa / Orbit; Implied

28. A 72-year-old female manifests lenticular changes and an increase in myopia. Which of the following types of cataracts is MOST likely responsible for these clinical signs?

a. Anterior cortical
*b. Nuclear
c. Cerulean
d. Posterior polar

Classification: Pathology: Lens / Cataract / IOL / Pre- and Post-Operative Care; Explicit

29. A 33-year-old female has iridocyclitis. Slit lamp examination findings include large, mutton-fat, keratic precipitates. The clinical procedure MOST likely to confirm your diagnosis is:

*a. a chest x-ray
b. an upper GI series
c. an antinuclear antibody test
d. urinalysis

Classification: Pathology: Episclera / Sclera / Anterior Uvea; Explicit

30. An incongruous homonymous hemianopsia that is MOST dense superiorly is usually indicative of a lesion in which cerebral lobe?

a. Frontal
*b. Temporal
c. Parietal
d. Occipital

Classification: Pathology: Optic Nerve / Neuro-Ophthalmic Pathways; Implicit

31. The Jackson crossed cylinder subjective test is begun with a -1.00 DS -1.75 DC x 090 lens in front of a patient's eye. If the correcting cylinder power is changed to -0.75 DC x 090, then the spherical power should now be:

a. -2.00 DS
*b. -1.50 DS
c. -1.00 DS
d. -0.50 DS
e. +0.50 DS

Classification: Optics (Physiological): Ametropia; Explicit

32. A 53-year-old male complains of occasional blur at distance and near. His visual acuities are 20/30 in each eye at distance and near with his present lens correction of OU +1.00 DS, Add +1.75 D. Your distance refraction for 20/20+ acuity is OU +1.50 DS. The BEST tentative Add for the new prescription will have a power of:

a. +1.25 D
*b. +1.75 D
c. +2.25 D
d. +2.50 D

Classification: Optics (Physiological): Ametropia; Explicit

33. Examination of a 15-year-old patient reveals the following:
Prescription: OD -2.50 DS -0.75 DC x 090
OS +3.25 DS -0.50 DC x 180

Keratometry: OD 43.50 D @ 180, 43.00 D @ 090
OS 39.00 DS

Which of the following spectacle lens designs should be the MOST effective in reducing aniseikonia for this patient?

	Base Curve OD	Center Thickness OD	Base Curve OS	Center Thickness OS
a.	+3.75 D	2.0 mm	+7.50 D	3.6 mm
b.	+3.75 D	2.0 mm	+3.75 D	6.0 mm
c.	+5.25 D	2.5 mm	+7.50 D	3.5 mm
***d.**	+6.25 D	3.4 mm	+6.25 D	3.4 mm

Classification: Optics (Physical): Ophthalmic Optics / Spectacles; Explicit

34. A 71-year-old monocular low vision patient has a distance correction of +3.00 DS. Through a single +5.50 DS lens in the trial frame, he can barely read 2M print at 40 cm. What is the SMALLEST print you should expect him to barely read at a distance of 20 cm, through a total lens power of +8.00 DS in the trial frame?

a. 0.6M
b. 0.8M
*c. 1.0M
d. 2.0M
e. 4.0M

Classification: Optics (Physiological): Low Vision; Explicit

35. How much more relative distance magnification is calculated by utilizing a 40-cm reference distance rather than a 25-cm reference distance?

*a. 1.6X
b. 2.0X
c. 2.5X
d. 4.0X

Classification: Optics (Physiological): Low Vision; Implicit

36. A 21-year-old patient has a history of previously uncorrected simple hyperopic astigmatism of 3.00 D in each eye. Which of the following is MOST likely to be associated with the patient's refractive error?

a. Eccentric fixation in one or both eyes
*b. Meridional amblyopia in both eyes
c. Monocular central suppression
d. Anomalous retinal correspondence
e. Strabismus secondary to the uncorrected refractive error

Classification: Optics (Physiological): Ametropia; Explicit

37. In performing the alternating cover test, a patient with normal correspondence reports that the target moves to the right and down as the right eye is uncovered and the left covered. Which of the following deviations is MOST likely present?

a. Double hyper
*b. Eso, right hyper
c. Eso, right hypo
d. Exo, right hyper
e. Exo, right hypo

Classification: Optics (Physiological): Accommodation / Vergence / Oculomotor Function; Explicit

38**.** The near point of accommodation (NPA) of a patient wearing a +1.25 D Add over his BEST distance correction is 19 cm. If the Add is removed, the NPA would then be at approximately:

a. 15 cm
b. 20 cm
*c. 25 cm
d. 30 cm

Classification: Optics (Physiological): Accommodation / Vergence / Oculomotor Function; Explicit

39. Consider a patient with the following clinical data:

Spectacle prescription at the corneal plane: +7.00 DS -3.50 DC x 180
Keratometry findings: 41.50 D @ 180, 44.00 D @ 090

A diagnostic rigid contact lens for the patient has the following characteristics:
Power: +2.00 DS
Base curve: 42.00 D (8.04 mm)

The expected over-refraction is:

*a. +4.50 DS -1.00 DC x 180
b. +4.50 DS -3.00 DC x 180
c. +5.00 DS -1.50 DC x 180
d. +5.50 DS -1.87 DC x 180

Classification: Optics (Physiological): Contact Lenses; Explicit

40. Which of the following tests would be LEAST appropriate for assessing visual information processing skills?

a. Gardner Reversal Frequency Test
b. Visual Motor Integration Test
c. Test of Visual Perceptual Skills
*d. The Grooved Pegboard Test

Classification: Optics (Physiological): Visual and Human Development; Implicit

41. When an elderly person is driving toward a sunset, his vision is disturbed MOST by the normal aging changes in:

a. tear film
b. pupil size
c. dark adaptation
*d. the crystalline lens

Classification: Optics (Physiological): Visual and Human Development; Normalcy

42. A 65-year-old patient had a cerebrovascular accident and now manifests strabismus. In testing this patient for correspondence, the MOST likely result would be:

a. unharmonious anomalous correspondence
b. harmonious anomalous correspondence
*c. normal correspondence

Classification: Optics (Physiological): Accommodation / Vergence / Oculomotor Function; Explicit

43. Both a husband and wife pass standard color vision tests. If the wife's father has an inherited red-green color defect, what is the probability that the couple's daughter will be color defective?

*a. 0.00
b. 0.25
c. 0.50
d. 1.00

Classification: Optics (Physiological): Perceptual Function / Color Vision; Explicit

Last revised: 12/16/08 (13:40)