ENTRANCE EXAMINATIONS – 2022

(Ph.D. Admissions July 2022)

PhD Health Sciences (Optometry)

HALL TICKET NUMBER

PLEASE READ THE FOLLOWING INSTRUCTIONS CAREFULLY BEFORE ANSWERING THE QUESTIONS

INSTRUCTIONS

i) This Booklet has eleven (11) pages. Please check the pages.

ii) Write your Hall Ticket Number in the OMR Answer Sheet given to you. Also write the Hall Ticket Number in the space provided above.

iii) There are 2(two) parts in the question paper- Part A (Question Numbers 1-35) and Part B (Question Numbers 36-70).

iv) Each question carries 1 mark and there is no negative marking.

v) Answers are to be marked in the OMR Answer sheet following the instructions provided there upon.

vi) Hand over the OMR answer sheet at the end of the examination to the invigilator.

vii) No additional sheets will be provided. Rough work can be done in the question paper itself/ space provided at the end of the booklet.

PART-A

1. In a coding system 'APPLE' is coded as 'MANGO', find out the code for 'GUAVA'
A. BANANA
B. GRAPES
C. KIWI
D. PEAR

2. Which among the following years did not have 366 days?
A. 1976
B. 1982
C. 2004
D. 2016

3. Find out the next number in the given series 1, 27, 125, _____

1

A. 216
B. 343
C. 512
D. 720

4. Which of the following is a qualitative variable?
A. Haemoglobin values of the patients
B. Body weight of the patients
C. Heart beat rate of the patients
D. Disease symptoms of the patients

5. Saturday is a day on the 3rd of a month, what day will it be on the 25th of the same month?
A. Sunday
B. Monday
C. Saturday
D. Friday

6. One health triad refers to:
A. Man Women and Child
B. Primary, secondary and tertiary health care
C. Centre, state and rural health programs
D. Agent, Host, Environment

7. The first step in conducting a research is
A. Propounding a hypothesis
B. Data collection
C. Defining a problem
D. Formulation of objectives

8. The gold standard laboratory test used to detect SARS CoV2 infection is:
A. RT-PCR
B. RAT
C. CRP
D. ELISA

9. When the participants in a research study are known but their identifying information is removed from your research article, you are following an ethical consideration referred to as
A. Confidentiality
B. Anonymity
C. Neutrality
D. Plagiarism

10. Body mass index is calculated as:
A. weight in pounds by height in meters
B. weight in kg by height in meters
C. weight in kg divided by square of height in meter squared
D. weight in kg divided by body surface area

11. What is an inoculating loop?
A. A tool used to streak a microorganism in a pure culture

B. A tool used to place agar in a pure medium
C. A tool used to count colonies of microorganisms
D. A tool used to view colonies of microorganisms

12. What is an enrichment culture?
A. Something that provides growth for all microorganisms
B. Something that inhibits growth for all microorganisms
C. An infectious culture
D. Something that provides growth for a certain microorganism but not for others

13. A genetic marker is
A. a place where a restriction enzyme cuts DNA
B. a chart the traces the family history of a genetic trait
C. a nucleotide sequence near a particular gene
D. a radioactive probe used to find a gene

14. The basic difference between ELISA and RIA lies in
A. primary antibody
B. blocking agent
C. type of microtitre plate
D. label conjugated to secondary antibodies

15. Animal cell culture is quite popular in raising:
A. hormones
B. enzymes
C. bacteria
D. vaccines

16. The following are methods for control of confounding except:
A. Restriction
B. Matching
C. Ensuring use of accurate instruments
D. Stratified analysis

17. All of the following are ethical principles except?
A. Justice
B. Malpractice
C. Beneficence
D. Non-Maleficence

18. The scatter plot is used to depict:
A. Causality
B. Correlation
C. Power
D. Type II error

19. A circle divided into sectors proportional to the frequency of items shown is called:
A. Bar chart

B. Pie chart
C. Frequency polygon
D. Histogram

20. In Qualitative Research, the data is in the form of:
A. Words
B. Numbers
C. Integers
D. Fractions

21. The type of study to find Haemoglobin level pattern among adolescents of age 14 to 19 years of each gender residing in a defined area is called:
A. Pilot Study
B. Observational Study
C. Descriptive Study
D. Analytical Study

22. WHO recommended method of sampling to estimate immunization coverage in developing countries is:
A. Simple Random Sampling
B. Multistage Random Sampling
C. Stratified Random Sampling
D. Cluster Random Sampling

23. Matching in case-control studies is done to control uncertainties due to:
A. Loss of patient to follow up
B. Sampling fluctuation
C. Lack of statistical power
D. Bias arising from confounders

24. Longitudinal studies:
A. Can provide Incidence of Disease
B. Are Economical
C. Are good for studying rare outcomes
D. Are easy to conduct

25. Coefficient of Variation is:
A. Mean/SD
B. SD/Mean
C. Mean/Variance
D. Variance/Mean

26. Which test is the part of the parametric test?
A. Sign Test
B. Run Test for Randomness
C. Kruskal-Willis Test
D. z-test

27. What type of chart is useful for showing trends or changes over time?
A. Pie Chart

B. Column Chart
C. Line Chart
D. Dot Graph

28. The split-half method is used as a test to determine:
A. Stability
B. Internal reliability
C. Inter-observer consistency
D. External validity

29. Find the median of the call received on 7 consecutive days 11, 13, 17, 13, 23, 25, 19:
A. 13
B. 23
C. 25
D. 17

30. A show card is:
A. One that prevents respondents from expressing their opinions about a statement
B. One that encourages explicit discussion of sensitive or personal information
C. One that prompts respondents to choose from a range of possible answers
D. One that researchers must present when they compete at pony club events

31. The standard error is a statistical measure of:
A. The normal distribution of scores around the sample mean
B. The extent to which a sample mean is likely to differ from the population mean
C. The clustering of scores at each end of a survey scale
D. The degree to which a sample has been accurately stratified

32. Cohen's kappa is a measure of:
A. Inter-surveyor consistency
B. Intra-observer validity
C. Intra-coder validity
D. Inter-observer consistency

33. The ability of the test to call it negative in those who do not have the disease is known as:
A. sensitivity
B. validity
C. specificity
D. Reliability

34. What is the role of the moderator in a focus group?
A. To stimulate discussion and keep the conversation on track
B. To ask leading questions and dominate the discussion
C. To sit away from the group and observe their behaviour
D. To evaluate the group's performance on a particular task

35. COVID-19 stands for:
A. Corona Virus Induced Disease - 2019
B. Corona Virus Infectious Disease - 2019

C. Corona Virus Influenza Disease - 2019

D. Corona Virus Inflammatory Disease - 2019

PART-B

36. Spectacle correction is -100 D.Sph. / -0.50 D.Cyl. X 180. Keratometer readings are 45.00/43.00 @ 180.

What is the predicted residual astigmatism in the example given above?

A. -2.00 against the rule astigmatism

B. 0.25 TO 1.25 with the rule astigmatism

C. TO 1.00 With the rule astigmatism

D. TO 1.25 Against the rule astigmatism

37. Which one of the following methods are used to determine the minimum corneal oxygen supply in contact

lens wearers:

A. Transmissibility (Dk/L) measurements

B. Equivalent Oxygen percentage measurements

C. Corneal swelling response measurements

D. All of the above

38. For a spectacle ametrope, if a corrective lens needed at a principal plane is -7.00 D.Sph. The effective

correction for the principal plane would be -6.33 D.Sph. What is the stimulus for accommodation when viewing

an object at 33.3 cm away from the lens?

A. 6.33 D

B. -8.70 D

C. -2.37 D

D. -2.87 D

39. Which of the following percentage of contact lens wearers using silicone hydrogels on daily and extended

wear reported to have more than 2 lines of vision loss?

A. 10% and 20%

B. 17% and 27%

C. 5% and 22%

D. 11.2% and 25%

40. Which one of the following indicates the annual incidence of contact lens associated microbial keratitis with

extended wear contact lenses?

A. 2.2 to 6.9 per 10,000 wearers

B. 9.3 to 20.9 per 10,000 wearers

C. 5.3 to 16.8 per 10,000 wearers

D. 10.0 to 20.0 per 10,000 wearers

41. Which one of the following is NOT a risk factor of infection with contact lenses including overnight use?

A. Female gender
B. Over use of contact lens
C. Living in a warm climate
D. Non-compliance with lenses

42. Which one of the following is NOT a risk factor of infection with contact lenses including overnight use?
A. Tear osmolality difference between the eyes is >8 mOsm/L
B. Ocular Surface Disease Index Score >= 13
C. A positive score of >9 conjunctival spots under Lissamine green staining
D. Positive lid wiper epitheliopathy >=5 mm in length and/or >25% sagittal width.

43. Which one of the following antibiotic is reported to have least susceptibility to bacterial isolated from
contact lens-associated microbial keratitis?
A. Ciprofloxacin
B. Gatifloxacin
C. Gentamicin
D. Cefazolin

44. Which one of the following glands produce the the glycocalyx - inner tear film mucus layer?
A. Superficial epithelial cells
B. Goblet cells
C. Manz glands
D. Crypts of Henle

45. Which one of the following tear film component is needed for corneal epithelial maintenance?
A. Potassium
B. Sodium
C. Chloride
D. Bicarbonate

46. Substantia propria consists of the following, except
A. Collagen fibrils
B. Glycosaminoglycans
C. Keratocytes
D. Hassall-Henle warts

47. Amount of oxygen availability to the cornea under closed eye condition:
A. 155 mm Hg
B. 4 mm Hg
C. 55 mmHg
D. 0 mm Hg

48. Radiuscope readings 7.94 mm (42.50D) / 7.50 mm (45.00 D); Lensometer readings are - 1.25 D / -5.00 D. In
this case, the ratio between base curve toricity and power difference indicate the following:

A. Toric Base Curve & Spherical Front Surface
B. Both front and back curves are toric
C. Toric front curve & spherical back curve
D. None of the above

49. Fibrillary lines in OrthoK treatment is a pigmented ring shaped corneal deposition indicate the following,
EXCEPT:
A. Ethnicity Predisposition
B. Tear film stress forces
C. Tear stagnation underneath the treatment zone
D. Secondary corneal ectasia

50. A prescription of +6.00 +3.25 × 15 is determined using a vertex distance of 14 mm. If the frame is unwisely
fit for a 22-mm vertex distance, what must the theoretical power of the lens be?
A. +9.99 −3.69 × 105
B. +8.61 −2.88 × 105
C. +5.73 +3.25 × 15
D. +7.69 −2.39 × 105

51. A sign of mechanical friction due to poor lubrication between lid margins and anterior contact lens is called:
A. Contact lens induced dry eye inflammation
B. Meibomian gland dysfunction
C. Lid wiper epitheliopathy
D. Lid parallel conjunctival folds

52. Low Dk corneal lens wear is associated with small increase in myopia is seen in the following condition:
A. Corneal abrasion
B. Superior epithelial arcuate lesion
C. Lens binding
D. Corneal warpage

53. Impaired metabolic activity signs noticed under reverse illumination, seen in 85% to 100% of users of
overnight-wear of hydrogel lenses in the following condition:
A. Vacuoles
B. Tight lens syndrome
C. Epithelial edema
D. Microcysts

54. Which one of the following is not attributed to the long term, reversible contact lens induced hypoxic complication?
A. Corneal Warpage
B. Corneal vascularisation
C. Corneal exhaustion syndrome
D. Endothelial polymegethism

55. What is the corneal astigmatism of an eye with the following keratometry readings: 7.63
     mm (44.25 D)
along 140 & 8.28 mm (40.75 D) along 30:
A. –3.50 D Cyl x 30
B. –3.50 D Cyl x 75
C. –3.50 D Cyl x 140
D. –3.50 D Cyl x 185

56. Dr. Cornea has been fitted with the following RGP lens parameters in his left eye:

BC: 8.10 mm / BVP: -3.00 D / Diameter: 9.20 mm
 Over refraction = - 0.25 D
 Fit conclusion = Slightly steep & unacceptable
 (Note: the diameter is not altered)

If you were to order his final lens empirically, the RGP lens parameters would be BC:
_____ and BVP: _____:

A. BC 8.10 or 8.05 mm & BVP -3.00 or -2.75 D
B. BC 8.00 or 8.05 mm & BVP -3.00 or -2.75 D
C. BC 8.15 or 8.20 mm & BVP -3.00 or -2.75 D
D. BC 8.15 or 8.20 mm & BVP -2.50 or -2.25 D

57. Which one of the following statements regarding the assessment of wettability
 of a contact lens material is NOT true?
A. In the sessile drop method, a large contact angle indicates poor wettability
B. In the sessile drop method, the advancing angle is determined by adding more water
C. In the captive bubble method, the air is introduced under a lens in a wet cell
D. In the captive bubble method, the water is introduced on a lens surface without a wet cell

58. A new rigid gas permeable (RGP) lens shows persistent wettability problems on the eye.
     What is the most
likely cause of this problem?
A. Excessive tearing during the adaptation period
B. Inadequate edge clearance
C. Abnormalities in the glands of Krause
D. Excessive lens polishing during manufacture

59. A patient who wears conventional soft contact lenses complains of a sudden reduction in
     lens tolerance and
wearing time in both eyes, as well as burning and stinging upon lens insertion. Slit-lamp
     biomicroscopy reveals
generalized conjunctival hyperaemia and diffuse corneal staining. What is the MOST likely
   cause of his
problems?
A. A solution sensitivity reaction
B. Lens front surface deposits
C. Bacterial conjunctivitis
D. Contact lens acute red eye

60. Each of the following factors warrant consideration when selecting a contact lens care and maintenance
system EXCEPT:
A. Lens back vertex power
B. Ocular sensitivity
C. Lens material
D. Wearing and replacement schedule

61. Which one of the following is not an optimal choice for a contact lens/drug combination for drug delivery?
A. Allow for a therapeutically meaningful uptake and release profile
B. Chemical nature of the drug
C. Lipophilic nature of the molecule absorbed by a hydrophobic silicone hydrogel material
D. Drug molecule has high affinity for the lens material

62. Which one of the following is not a primary disadvantage of drug delivery to the ocular surface?
A. Bioavailability of eye drops
B. High tear volume turnover rate
C. Low compliance rate
D. Low permeability of the cornea

63. A point object O is kept at a distance of OP = u. The radius of curvature of the spherical surface APB is CP
= R. The refractive indexes of the media are n1 and n2 which are as shown in the diagram. Then,
a) if n1 > n2, image is virtual for all values of 'u'
b) if n2 = 2n1, image is virtual when R > u
c) the image is real for all values of u, n1 and n2

Here, the correct statement/s is/are:
A. only a
B. a, b and c
C. only b
D. both a and b
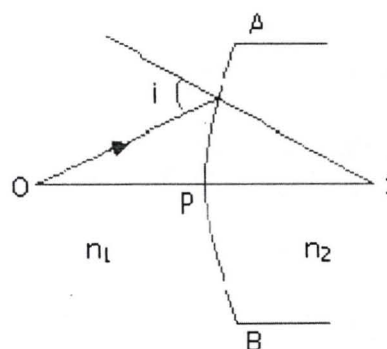
64. A ray of light is incident on the surface of separating two transparent medium at an angle 450 and is
refracted in medium at an angle 300 . Velocity of light in the medium will be:
A. 2.12x108 m/s
B. 3.8x108 m/s
C. 1.55x108 m/s
D. 2.88x108 m/s

65. Two beams of red and violet colours are made to pass separately through a prism of A = 60°. In the minimum deviation position, the angle of refraction inside the prism will be:
A. lesser for violet colour
B. 30° for both the colours
C. greater for red colour
D. equal but not 30° for both the colours

66. Blue colour of sea water is due to:
A. interference of sunlight reflected from the water surface
B. scattering of sunlight by the water molecules
C. image of sky in water
D. refraction of sunlight

67. If the critical angle for total internal reflection from a medium to vacuum is 30^0. Then velocity of light in the medium is:
A. 1.5×10^8 m/s
B. 2×10^8 m/s
C. 3×10^8 m/s
D. 0.75×10^8 m/s

68. Which of the following reactions is correct for the first order of reaction? (K = rate constant, r= rate of reaction, c= concentration of reactant)?
A. $K = r \times c^2$
B. $K = r \times c$
C. $K = c/r$
D. $K = r/c$

69. When $2x^3 + 2x^2 + ax - b$ is divided by (x+3), the remainder is -11. When the same polynomial is divided by (x-3), the remainder is 9. What is a, and b?
A. 8 & 1
B. 15 & - 15
C. 25 & - 15
D. 9 & 1

70. Suppose $y = 2x^2 + 4x - 5$. Find the value of y when the x = 3:
A. 15
B. 20
C. 25
D. 18

11

University of Hyderabad
Ph.D. Entrance Examinations - 2022

School/Department/Centre   :   School of Medical Sciences
Course : Ph.D.   Subject : Optometry

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	C	26	D	51	C
2	B	27	C	52	D
3	B	28	B	53	D
4	D	29	D	54	A
5	A	30	C	55	A
6	D	31	B	56	C
7	C	32	D	57	D
8	A	33	C	58	D
9	A	34	A	59	A
10	C	35	B	60	A
11	A	36	D	61	D
12	D	37	D	62	C
13	C	38	D	63	D
14	D	39	A	64	A
15	D	40	B	65	B
16	C	41	A	66	B
17	B	42	D	67	A
18	B	43	D	68	D
19	B	44	A	69	A
20	A	45	A	70	C
21	C	46	D		
22	D	47	C		
23	D	48	A		
24	A	49	A		
25	B	50	B		

Note/Remarks :

Signature
School/Department/Centre