

Entrance Examinations – 2022
Ph.D. Cognitive Science

Duration : 2 hours

Max. Marks : 70

Hall Ticket No.

INSTRUCTIONS FOR THE CANDIDATE

1. Write your Hall Ticket No. in the OMR Answer Sheet given to you. Also, write your Hall Ticket No. in the space provided above.
2. This Question paper consists of two parts : **Part – A** and **Part – B** with 35 Questions in each **Part**. OMR Answer sheet will be provided separately.
3. Each question carries **One mark** and there is **no negative marking**.
4. Answers are to be marked on the OMR Answer Sheet following the instructions provided thereon.
5. Please handover the **OMR Answer Sheet** at the end of the examination to the Invigilator. You may take the Question Paper after the examinations is over.
6. No additional sheet will be provided. Rough work can be done in the Question paper itself.
7. The question paper contains eighteen (18) pages including this page.

2022-23 PhD Entrance Examination Questions

Part A

1. Antonym of BOISTEROUS:

- A. Rollicking
- B. Impetuous
- C. Rowdy
- D. Moderate

2. Find the odd option out.

- A. Beak
- B. Engine
- C. Wing
- D. Rudder

3. Antonym of RABID:

- A. Extreme
- B. Young
- C. Magical
- D. Liberal

4. "Lion" is related to "Pride" in the same way as "Panda" is related to-

- A. Embarrassment
- B. Drove
- C. Colony

D. Murder

5. If $n = 4$, then what is $n!$

A. 4

B. 12

C. 24

D. 64

6. Which set below has only monotonic (either increasing always or decreasing always) functions?

A. $y = \sin(x)$, $y = e^{x^2}$

B. $y = x^2$, $y = \log(x)$

C. $y = x$, $y = e^{|x|}$

D. $y = x^3$, $\log(x)$

7. If in a certain language, gorbflur means fan belt, pixngorbl means ceiling fan, arthtusl means tile roof, which word could mean "ceiling tile"?

A. gorbtlusl

B. flurgorbl

C. pixnarth

D. arthflur

8. What is the probability of getting one head and one tail if you throw two coins?

A. 0.5

B. 0.333

C. 0.25

D. 0.75

9. If the diameter of a tennis ball is 8 cm, then what will be the approximate surface area (cm^2)?

- A. 64
- B. 804
- C. 532
- D. 24

10. Which is the best pair that fills the blanks, in the order the blanks appears?

She invented many _____ variations on this _____ to test numerous specific hypotheses.

- A. deterministic, imbroglio
- B. ingenious, paradigm
- C. discovery, machine
- D. protocol, semester

11. "Bud" is related to "Flower" in the same way as "Seed" is related to-

- A. Plant
- B. Animal
- C. Water
- D. Earth

12. Sanya's grandmother was 8 times older to her 16 years ago. She would be 3 times Sanya's age 8 years from now. Eight years ago, what was the ratio of Sanya's age to that of her grandmother?

- A. $\frac{1}{2}$
- B. $\frac{1}{5}$
- C. $\frac{3}{8}$
- D. None of these

and industrial exhausts. Given the fact that most of us spend over 90% of our time indoors, it is most important to recognize that the air we breathe in at home or in offices can be polluted. It can be a cause of ill-health. Air pollutants that are generally present in very low concentrations can assume significance in closed ill-ventilated places. The indoor air pollution can lead to allergic reactions and cause irritation to the skin, the eyes and the nose. But as is logical to assume, the brunt of insult by pollutants is borne by the lungs. It can lead to the development of fresh breathing problems, especially in those who have allergic tendencies, or it can worsen the existing respiratory illnesses like asthma and bronchitis.

There can be several sources of indoor air pollution. Tobacco smoke is one of the most important air pollutants in closed places. "Passive smoking" or environmental tobacco smoke (ETS) pollution can lead to all the harmful effects of tobacco smoking seen in the smokers in their non-smoking companions. ETS as a health hazard has been unequivocally proven and is also getting social recognition now. One can occasionally see signs displaying the all-important message: "Your smoking is injurious to my health" in offices and homes. The children of smoking parents are among the worst affected persons. The exposure of young children to ETS leads to increased respiratory problems and hospital admissions as compared to non-exposed children. Several studies, including those done at the PGI, have shown an increased risk of lung cancer among women exposed to passive smoking. ETS also worsens the existing lung diseases like asthma and bronchitis. It may be responsible for the development of asthma in children.

The next most important source of indoor air pollution is the allergens. House dust mites (HDM) are very small insects not visible to the naked eye and are the commonest source of allergy in the house. They are ubiquitous and thrive in a warm and moist atmosphere. They breed very fast and are very difficult to eradicate. Modern houses present ample breeding spaces for them in the form of carpets, curtains, mattresses, pillows, etc. Exposure to HDM can be prevented by the frequent washing of linen and by encasing the mattresses and pillows in a non-permeable cover. Pets form an important part of life for some of us. But they can add plenty of allergens to our indoor atmosphere. Cats are notorious for doing this. Fine particles from feline fur can remain stuck to the upholstery and carpets for a long time even after the removal of the animal and lead to the worsening of asthma and skin allergies. Fortunately, owing to religious and social customs cats are not very popular pets in India. Dogs, however, are quite popular and can be as troublesome. Pets should be kept out of the bedrooms and washed frequently. To remove the fur particles, one has to use vacuum cleaners as the ordinary broom and mop are not effective.

16. In India, dogs are more problematic than cats for allergens, because:

A. Dogs breed faster than cats

B. The surface area of dog is more as compared to cats

- C. More dogs are kept as pets than cats
- D. All of these

17. The passage specifically talks about:

- A. Air pollution
- B. Outdoor air pollution
- C. Indoor air pollution
- D. Pets

18. What's the literal meaning of word "ubiquitous" in third paragraph?

- A. present everywhere
- B. invisible
- C. occasionally
- D. notorious

19. According to the passage, the almighty wants that human beings.....

- A. should become passive smokers
- B. should not pay attention to pollutants
- C. must ignore ETS
- D. should try to breathe clean air

20. What statistical method will you use when you have unlabelled data?

- A. ANOVA
- B. Kruskal-Walis test
- C. Classification
- D. ANCOVA

21. Normality assumption is valid for many data sets because
- A. Positive and negative values are equally likely to occur
 - B. Law of large numbers
 - C. Large values are less likely to occur
 - D. Variance is uniformly distributed
22. Histogram shape is an approximation of?
- A. Standard deviation
 - B. Gaussian
 - C. Density function
 - D. Variance
23. Which point lies below the curve described by $y = -2x^2$?
- A. (-3, 1)
 - B. (0, 0)
 - C. (-2, -7)
 - D. (1, -3)
24. ANOVA is used for comparing
- A. Distribution of samples
 - B. Variance of samples
 - C. Means of samples
 - D. Spread of the data.
25. Which of the following can be categorized as unethical research practices
- A. Designing studies based on someone else's idea without citing their past work.
 - B. Seeking volunteers instead of paying individuals to participate as a study subject.

- C. Collaborating with a private organization for acquiring data on a special population.
- D. Using your intuition to design experiments instead of following theoretical developments.

26. Chair : Carpenter :: ?

- A. Bridge : Engineer
- B. Grass : Gardener
- C. Radio : Radiology
- D. Medicine : Doctor

27. Find the odd one out.

- A. Guitar
- B. Flute
- C. Violin
- D. Mandolin

28. In this series: V, VIII, XI, XIV, __, XX, ... What should fill the blank?

- A. XXIII
- B. IX
- C. XV
- D. XVII

29. Complete the following correlation, Passable: Excellent:: Defiant:?

- A. Subversive
- B. Feisty
- C. Cooperative

D. Hostile

30. The difference between an asymptote and a tangent is that _____

- A. An asymptote meets a curve at multiple points but a tangent meets it only once.
- B. A tangent goes parallel to a curve but an asymptote goes perpendicular to it.
- C. An asymptote can be a curve or a line whereas a tangent is always a line.
- D. A tangent meets a curve once at a finite distance but an asymptote does not.

31. If the circumference of a circle is approx. 144.5 m, what is its radius?

- A. 1500 cm
- B. 22 m
- C. 2300 cm
- D. 16m

32. The Fibonacci series for $F_n = F_{n-1} + F_{n-2}$ and $n=13$, Find F_n .

- A. 372
- B. 377
- C. 230
- D. 233

33. Synonym of Contrived

- A. Spontaneous
- B. Unnatural
- C. Rustic
- D. Stopped

34. In this series: 5.2, 4.8, 4.4, 4, ... What number should come next?

A. 3.2

B. 3.5

C. 3.6

D. 3.0

35. "Heavy" is related to "Light" in the same way as "Smooth" is related to-

A. Rocky

B. Rough

C. Rigid

D. Dark

Part B

36. The Feature Integration Theory categorizes features into two categories

A. Separable and Integral

B. Separable and Inseparable

C. Integral and Secondary

D. Separable and Secondary

37. Purkinje cells are found in

A. Hypothalamus

B. Ganglia

C. Cerebellum

D. Pituitary gland

38. Donald Broadbent proposed the early filtering model of selective attention which suggested that _____

- A. abstract properties of stimuli are extracted before attentional filtering
- B. differential properties of stimuli are extracted at different time points during filtering
- C. all physical properties of stimuli are extracted post attentional filtering
- D. abstract properties of stimuli are extracted post attentional filtering

39. Rejection of stimuli that may appear task-relevant but possess additional characteristics apart from the task set is called

- A. Attentional overload
- B. Attentional blink
- C. Inattention blindness
- D. Distractor suppression

40. Aqueous humor is secreted by

- A. Choroids
- B. Ciliary body
- C. Retina
- D. Lacrymal gland

41. Ulric Neisser wrote the first book on which of the following topics?

- A. Evolutionary Psychology
- B. Neuroscience
- C. Cognitive Psychology
- D. Psychology

42. Subliminal priming refers to the process of

- A. subliminal stimuli influencing response systems
- B. liminal stimuli losing their value
- C. priming that leads to attentional shifts

D. subliminal processing of primary features

43. When an ion or solute is moved against a concentration gradient using energy, the process is called

- A. Active transport
- B. Transpiration
- C. Diffusion
- D. Regulated diffusion

44. What is the necessary criteria for a cue to be called an endogenous cue

- A. The cue must consist of a symbol
- B. The cue must be presented within 2 degrees of the visual field
- C. The cue must denote something meaningful
- D. The cue must orient attention to a location

45. Which of the following statement is NOT true for cerebrospinal fluid (CSF)?

- A. CSF helps in the removal of the waste products form the brain
- B. CSF helps in providing the nutrition to the brain cells
- C. CSF helps in the formation of blood-brain-barrier
- D. CSF acts as a shock absorber and protects our CNS

46. The spreading activation model of working memory suggests that

- A. Nodes are nothing but individual neurons
- B. Multiple nodes need to be activated to active one node
- C. Activation can also spread across unconnected nodes
- D. Concepts are represented in memory as nodes

47. Menthol balms produce cold sensation because

- A. Menthol evaporates at room temperature
- B. Exogenous activation of cold receptor

- C. Menthol can reach the brain cold centre via nasal epithelium
D. Menthol blocks sweat pores
48. The correct order of arrangement of ear ossicles from the tympanum onwards is
- A. Incus, malleus, stapes
 - B. Incus, stapes, malleus
 - C. Stapes, malleus, incus
 - D. Malleus, incus, stapes
49. Which of the following neurotransmitters is active at the neuromuscular junctions?
- A. GABA
 - B. Acetylcholine
 - C. Dopamine
 - D. Serotonin
50. A very common target for labelling known subpopulations of neurons by transgenic proteins is
- A. Ionotoporosis
 - B. Antibody against neuron specific protein
 - C. Promoter of a specific gene
 - D. RNAi of the transgenic protein
51. In the fluid mosaic model of the plasma membrane
- A. lipids are fluid and arranged in a bilayer with functional proteins embedded in them.
 - B. the lipid has no specific arrangement.
 - C. the protein is arranged in layers.
 - D. lipids and proteins are not arranged in any particular order.
52. Which of the gene and it's homologue is thought to be critical for development of language and other faculty of communication in organisms.
- A. EGFR

- B. HoxP2.
- C. c-Fos
- D. Hox

53. Which of the following cell components is not part of the cytoskeleton of eukaryotic cells?

- A. Microfilaments
- B. Microtubules
- C. Intermediate filaments
- D. Mitochondria

54. Recognition-by-component theory suggests that

- A. objects are perceived in gist and then independent components
- B. geons are generated by perceptual mechanisms
- C. features of objects are combined by attention
- D. attention recognizes one component at a time

55. In an uncertain situation which type of control are you likely to exert?

- A. Refractive
- B. Repetitive
- C. Reactive
- D. Reductive

56. The accumulation of amyloid plaques and tau proteins outside the nerve cells is a characteristic feature of:

- A. Alzheimer's disease
- B. Parkinson disease
- C. Multiple sclerosis
- D. Neuroblastoma

57. The 'cocktail party effect' was proposed by _____
- A. Edward Camu Cherry
 - B. Edgar Colin Cherry
 - C. Edgar Camu Cherry
 - D. Edward Colin Cherry
58. Equilibrium potential for the Calcium ion in normal neurons is around
- A. -90mV
 - B. +100mV
 - C. -65mV
 - D. -30mV
59. The main function of smooth endoplasmic reticulum is:
- A. Synthesis of lipids and carbohydrates
 - B. Synthesis of proteins
 - C. Synthesis of nucleic acids
 - D. All of these
60. Who coined the phrase "Ghost in the machine"
- A. John Searle
 - B. John Watson
 - C. Gilbert Ryle
 - D. U T Place
61. Which of the following is not a model of Executive Functions
- A. Horse-race model
 - B. Biased Competition model
 - C. Miyake and Friedman's model
 - D. Miller and Cohen's model

62. Who was the first psychologist to systematically study cognitive development
- A. Charles Bartlett
 - B. Jean Piaget
 - C. Max Wertheimer
 - D. Wolfgang Kohler
63. Ocular dominance columns are observable by
- A. By microscopy of cortical grey matter
 - B. Testing the vision of left and right eye.
 - C. Optogenetic stimulation of the V1 on the two sides
 - D. Injecting radioactive tracers in to one eye
64. Which of the following is not a characteristic of the SWIFT model
- A. slower saccade latency to novel stimuli
 - B. attentional gradient
 - C. dynamic systems approach to eye movement control
 - D. parallel lexical processing
65. Which of the following brain areas play a role in semantic and syntactic processing
- A. Hippocampus
 - B. Anterior cingulate gyrus
 - C. Hypothalamus
 - D. Brodman's area
66. Who amongst the following is not considered a behaviorist?
- A. John Searle
 - B. Herbert Feigl
 - C. Hans Reichenbach
 - D. Alfred Ayer

67. Which one of the following can be used to detect a specific RNA in brain sample?

- A. Southern blotting
- B. Western blotting
- C. Northern blotting
- D. Eastern blotting

68. Rene Descartes wrote a book focused on the nature of the mind titled _____

- A. Beyond the Body
- B. Mind-body problem
- C. Philosophical Essays on the Nature of the Mind
- D. Meditations on First Philosophy

69. Synapses can be identified in transmission electron-micrographs by

- A. Shape of the pre and post synaptic membrane forming opposing interface
- B. Striped pattern in the presynaptic side
- C. Presence of electron-dense areas of the postsynaptic membrane
- D. Presence of mitochondria near the membrane on both sides.

70. The proteins are separated based on their during Native PAGE:

- A. Mass
- B. Size and charge
- C. Charge
- D. Size

University of Hyderabad
PhD Entrance Examinations - 2022

School/Department/Centre: Centre for Neural and Cognitive Sciences

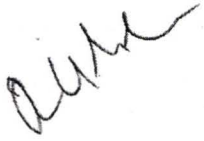
Course: PhD

Subject: Cognitive Sciences

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

21	B	46	D		
22	C	47	A		
23	D	48	D		
24	C	49	B		
25	A	50	C		

Note/Remarks: -



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