Entrance Examinations – 2023
(Ph.D. Admissions – January 2024 session)

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 – I** and **Part – II** 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 examination is over.

6.   No additional sheet will be provided. Rough work can be done in the Question paper itself.

Part A

1. 785674316, 85674316, 8567431, 567431, ?

    A. 67431

    B. 56743

    C. 65431

    D. None of the above

2. Pick the correct answer after reading the following statement and conclusions.

    Statements: All students are musicians. All musicians are dancers

    Conclusions: *1. All dancers are musicians 2. All students are dancers*

    A. Only (1) conclusion follows.

    B. Only (2) conclusion follows.

    C. Neither (1) nor (2) follow

    D. Both (1) and (2) follow

3. What number comes next in this sequence?

    6, 4, 2.5, 1.5, ?

    A. 0.5

    B. B. -0.5

    C. C. 1

    D. D. -1

4. Which of the following fractions is the smallest?

    A. 11/16

    B. 29/40

    C. 5/8

    D. 65/80

5. Responding to a substance like a sugar pill as if it was a drug is called

    A. Placebo effect

    B. An extraneous factor

    C. Variability

D. Correlation

6. Which word does NOT belong with the others?

    A. Dodge

    B. Avoid

    C. Duck

    D. Flee

7. Here are some words translated from an artificial language.

    gorblflur means fan belt

    pixngorbl means ceiling fan

    arthtusl means tile roof

    Which word could mean "ceiling tile"?

    A. gorbltusl

    B. flurgorbl

    C. arthflur

    D. pixnarth

8. If 'POSTED' is coded as 'DETSOP', then how will you code for 'SPEED'?

    A. DEEPS

    B. DEESP

    C. DESEP

    D. SPEDE

9. Burglar : House : : Pirate : ?

    A. Sea

    B. Ship

    C. Sailor

    D. Crew

10. Wizard : Witch : : Monk : ?

    A. Madam

    B. Widow

    C. Nun

    D. Child

11. What is the opposite of RELINQUISH?

    A. Abdicate

    B. Renounce

    C. Possess

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D. Deny

12. Find the statement that must be true according to the given information.

Ten new television shows appeared during the month of September. Five of the shows were sitcoms, three were hour-long dramas, and two were news-magazine shows. By January, only seven of these new shows were still on the air. Five of the shows that remained were sitcoms.

A. Only one of the news-magazine shows remained on the air.

B. Only one of the hour-long dramas remained on the air.

C. At least one of the shows that was cancelled was an hour-long drama.

D. Television viewers prefer sitcoms over hour-long dramas.

13. PEDAL : BICYCLE

A. inch : yardstick

B. walk : skip

C. tire : automobile

D. oar : canoe

14. One New York publisher has estimated that 50,000 to 60,000 people in the United States want an anthology that includes the complete works of William Shakespeare. And what accounts for this renewed interest in Shakespeare? As scholars point out, his psychological insights into both male and female characters are amazing even today.

This paragraph best supports the statement that

A. Shakespeare's characters are more interesting than fictional characters today.

B. People even today are interested in Shakespeare's work because of the characters.

C. Academic scholars are putting together an anthology of Shakespeare's work.

D. New Yorkers have a renewed interested in the work of Shakespeare.

15. Botany : Plants : : Entomology: ?
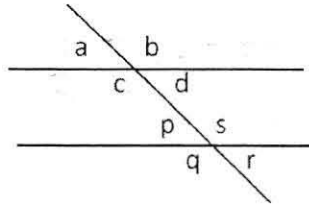
A. Snakes

B. Insects

C. Birds

D. Germs

16. 'Chef' is associated with 'Kitchen' in the same way as 'Scientist' is associated with

A. Medicine

B. Pharmacy

C. Laboratory

D. Chemist

4

17. Which is the correct pair that fills the blanks in the order the blank appears?

She was _____ about keeping _____ measurements while carrying out the experiments.

A. performer, meticulous

B. accurate, meticulous

C. meticulous, accurate

D. meticulous, performing

18. Which point lies to the top right side of the line x+y=2?

A. (0.5,2.1)

B. (0.2,1.75)

C. (0.2,0.1)

D. None of the above

19. Decimal system representation for the number 102 in base 4 number system is:

A. 57

B. 19

C. 18

D. None of the above

20. Ruth and Noel have 45 mangoes together. After losing 5 mangoes each, the product of the number of mangoes they both have now is 124. Find out how many mangoes they had to start with.

A. 40/5

B. 20/25

C. 36/9

D. 14/31

21. The 6th term of an Arithmetic Progression is 6 and the 16th term is 14. What is the 27th term?

A. 106/5

B. 22/5

C. 118/5

D. 114/5

22. Calculate the area of an equilateral triangle (in cm^2) having side length 4 cm?

A. 4√3

B. 64

C. 12√3

D. 12

23. If a, b, c, d, p, q, r, s, t are angles as indicated and the two horizontal lines are parallel to each other, what is a+c+2q+r

A. 0

B. 270+a

C. 360-b

D. 180+b

24. Which of the following is a statistical analysis for comparing means of two groups?

A. Principal component analysis (PCA)

B. Analysis of variance (ANOVA)

C. Regression analysis

D. t-test

25. Find the odd one out.

A. Apple

B. Orange

C. Tomato

D. Potato

26. A chord of a circle of radius 3cm is 2cm away from the centre. What is the length of the chord?

A. cm

B. 2 cm

C. 2 cm

D. cm

27. If you did a Euclidean distance-based clustering procedure on multidimensional data points and found that there are two distinct clusters, then you can conclude that

A. There are two classes which do not overlap

B. There are two classes with distinct centre of mass

C. There are two classes with some overlap

D. Euclidean distance is a good measure.

28. What is the correct order to make this a correct sentence in English:

is that nature cannot   the truth, of course,   do the work of
P   Q   R

saving us from ourselves
S

A. RQPS

B. RQSP

C. QPRS

D. QPSS

29. What is the probability of getting three heads if you throw four coins?

A. 3/8

B. 1/8

C. 3/16

D. ¼

30. I am facing East. Turning to the right I go 20 m, then turning to the left I go 20 m and turning to the right I go 20 m, then again turning to the right I go 40 m and then again, I go 40 m to the right. In which direction am I from my original position?

A. North

B. West

C. South

D. East

31. Solve the following equations and find the value of x:

141x + 103y = 217; 103x + 141y = 27

A. 0.5

B. 5

C. 10

D. 23

Read the following passage carefully, and answer the following questions (Q. No. 32 to 35)

The old lighthouse stood sentinel on the windswept cliff, its weathered stone etched with the stories of a thousand storms. Its once-brilliant beam, now a dim ember, had guided countless ships through treacherous waters, its rhythmic pulse a comforting beacon in the vast, starlit night. Yet, time had taken its toll. The salty air had gnawed at its iron bones, and the relentless waves had chipped away at its base, leaving it precariously perched on the edge of oblivion.

Inside, the air hung heavy with the scent of dust and decay. Cobwebs draped the rusted gears and cracked lenses, whispering secrets of forgotten nights. A lone chair sat slumped by the window, its paint peeling like sunburnt skin, facing the restless sea. A faded photograph, tucked in its frame, showed a young couple, their faces beaming with the promise of forever, framed against the backdrop of the lighthouse's majestic glow.

One day, a young girl with eyes the colour of the ocean climbed the winding steps, her hair whipping in the salty breeze. She had heard whispers of the lighthouse's magic, of its ability to grant wishes carried on the wind. As she stood at the railing, the vastness of the sea stretching before her, a tear rolled down her cheek. She whispered a wish, her voice barely a sigh against the roar of the waves.

32. What is the main theme of the passage?
    A. The power of the ocean
    B. The passage of time and the fading of hope
    C. The importance of family and memories
    D. The magic of wishes and dreams

33. What literary device is used in the phrase "its once-brilliant beam, now a dim ember"?
    A. Simile
    B. Metaphor
    C. Personification
    D. Hyperbole

34. What can be inferred about the young couple in the photograph?
    A. They were the lighthouse keepers.
    B. They were lost at sea.
    C. They had a happy and fulfilling life together.
    D. They were separated by distance.

35. What is the most likely outcome of the girl's wish?

A. The lighthouse is magically restored to its former glory.

B. The girl finds solace and hope in the face of her challenges.

C. The girl becomes the new lighthouse keeper.

D. The passage ends on an ambiguous note, leaving the outcome open to interpretation.

Part B

36. Which structure allows communication between the left and right hemispheres?

A. Reticular formation

B. Temporal lobe

C. Medulla oblongata

D. Corpus callosum

37. The hierarchical semantic network model was proposed by

A. Collins and Quillian

B. Allen Newell

C. Green and Abutalebi

D. Rumelhart and Todd

38. Feature Integration Theory was proposed by:

A. Martin Seligman

B. Ned Block

C. Michael Posner

D. Anne Treisman

39. An alpha helix represents

A. primary structure of a protein

B. secondary structure of a protein

C. tertiary structure of a protein

D. aggregation of proteins

40. What does a protein lose when it denatures?

A. Its primary structure

B. Its peptide bonds

C. Its sequence of amino acids

D. Its three-dimensional conformation

41. Perception of stimulus that is below the threshold of awareness is known as:

    A. Just noticeable difference

    B. Subliminal perception

    C. Signal detection

    D. Differential threshold

42. Beriberi is a disease caused by a deficiency of vitamin:

    A. Thiamine

    B. Retinol

    C. Folic acid

    D. Riboflavin

43. Kilowatt is the unit of:

    A. Electricity

    B. Power

    C. Current

    D. Energy

44. Who was the proponent of the dualist position of the mind-body problem?

    A. David Hume

    B. Rene Descartes

    C. John Searle

    D. Ivan Pavlov

45. Attentional orienting can be measured using which of the following tasks?

    A. Stroop task

    B. Stop signal task

    C. Posner's cueing task

    D. Wisconsin card sorting test

46. According to George Miller, what is the number of items an average human can hold in working memory?

    A. 3 ± 2

    B. 7 ± 2

    C. 5 ± 1

    D. < 4

47. If a particle is in uniform circular motion, which is the point about which the angular momentum of the particle remain conserved?

    A. Along the circumference of the circle

B. Centre of the circle

C. Inside the circle

D. Outside the circle

48. What is the average time taken to initiate a saccade in humans?

    A. About 20ms

    B. About 200ms

    C. Greater than 500s

    D. About 2s

49. The neuronal cytoskeleton is made up of:

    A. Neurofilaments

    B. Microfilaments

    C. Microtubules

    D. All of these

50. When information that is newly learnt interferes with information learnt earlier it is called

    A. Reactive interference

    B. Retroactive interference

    C. Proactive interference

    D. Cognitive Dissonance

51. SOA stands for:

    A. Stimulus Onset Asynchrony

    B. Simultaneous Onset Activity

    C. Stimulus Offset Asynchrony

    D. Stimulus Offset Activity

52. A battery has voltage rating 12V has an internal resistance of 0.05 ohms. When we connect a light bulb that draws 10A, what will be the voltage across the cell?

    A. 12 V

    B. 11.5 V

    C. 12.5 V

    D. 2 V

53. When you boil an egg, you convert the albumin into a white solid mass. In chemical terms, you would say that

    A. the protein was dehydrated by heat

B. the protein was denatured by heat

C. the protein was cross-linked by heat

D. the protein was degraded by heat

54. Which one of the following is NOT an epigenetic mechanism?

A. DNA methylation

B. DNA alkylation

C. Histone methylation

D. Histone phosphorylation

55. Visual World Paradigm is used to measure which of the following phenomenon

A. Selective attention

B. Inhibitory control

C. Parallel language activation

D. Cognitive flexibility

56. Which of the following is NOT a neurodegenerative disorder?

A. Alzheimer's disease

B. Parkinson's disease

C. Amyotrophic lateral sclerosis

D. Lymphoma

57. The rebound period in which a person cannot pay attention to a different stimulus after having just paid attention to another stimulus is called _____.

A. Vigilance

B. Change blindness

C. Attentional blink

D. Repetition blindness

58. The phenomenon of Inhibition of Return was first described by _____.

A. Posner and Cohen

B. Green and Abutalebi

C. David Chalmers

D. None of these

59. A drop of ink diffuses in the water because

A. Like molecules repel each other

B. Water has affinity to fill space between ink molecules

C. Ink molecules are moving randomly in every direction

D. Gravity pulls the ink molecules in to the interstitial spaces in the water

60. Blue colour of the sky is caused by

    A. Diffraction

    B. Scattering

    C. Refraction

    D. Hallucination

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

    A. diffusion

    B. osmosis

    C. active transport

    D. operon

62. Action potentials are conducted more rapidly in

    A. small diameter axons than large diameter axons

    B. large diameter axons than small diameter axons

    C. bent axons than straight axons

    D. long axons than short axons

63. The white appearance of a rotating colour-wheel is because

    A. All colours are present in the colour wheel

    B. The wavelengths of different colours superpose in the air to produce white light

    C. The processing in the eye is slow and cannot detect very rapid fluctuations of light intensity.

    D. The colours on the colour-wheel are arranged in the same order as the spectrum of white light.

64. All of the following philosophers are the founding members of Gestalt School of Thought, except one. Identify which one.

    A. Kurt Koffka

    B. Wolfgang Kohler

    C. Charles Darwin

    D. Max Wertheimer

65. The 3 components of executive control (Inhibitory control, Working Memory, and Cognitive flexibility) were given by:

    A. Dunbar

    B. Miyake

C. Abutalebi

D. None of the Above

66. Which one of the following is a correct hierarchy for biological classification?

A. Class-Family-Phylum-Genus-Order

B. Genus-Phylum-Class-Order-Family

C. Phylum-Class-Order-Family-Genus

D. Genus-Order-Family-Phylum-Class

67. In cell biology, the process of reverse transcription stands for the:

A. Conversion of RNA into DNA

B. Conversion of DNA into RNA

C. Conversion of RNA into protein

D. None of these

68. The major feature of Chomsky's nativist theory of language acquisition is that:

A. Infants can distinguish all the sounds of the world's languages at birth.

B. Children learn words by associating sounds with contexts.

C. Innate mechanisms guide the selection of rules for leaning any language.

D. There is a critical period for learning language in early childhood.

69. Hard problem of consciousness was given by:

A. David Chalmers

B. Steven Pinker

C. Ned Block

D. None of the above

70. Load theory of selective attention was proposed by _____.

A. Anne Treisman

B. Stanislas Dehaene

C. Donald Brodbent

D. Nilli Lavie

University of Hyderabad
Entrance Examinations 2023
Ph.D. Admissions – January 2024 session

Ph.D. Cognitive Science Answer Key

Part A			Part B	
1.	B		36.	D
2.	B		37.	A
3.	C		38.	D
4.	C		39.	B
5.	A.		40.	D
6.	D		41.	B
7.	D.		42.	A
8.	A		43.	B
9.	B		44.	B
10.	C		45.	C
11.	C		46.	B
12.	C		47.	B
13.	D		48.	B
14.	B		49.	D
15.	B		50.	B
16.	C		51.	A
17.	C		52.	B
18.	A		53.	B
19.	C		54.	B
20.	C		55.	C
21.	D		56.	D
22.	A		57.	C
23.	D		58.	A
24.	D		59.	C
25.	D		60.	B
26.	B		61.	C
27.	B		62.	B
28.	C		63.	C
29.	D		64.	C
30.	B		65.	B
31.	B		66.	C
32.	B		67.	A
33.	B		68.	C
34.	C		69.	A
35.	D		70.	D