

**ENTRANCE EXAMINATIONS - 2017****Ph.D.(Cognitive Science)**

Marks: 80

Time: 2.00 hrs.

(Ph.D Admission- January 2018 Session)

Hall Ticket No. -----

**Instructions**

1. Write your Hall Ticket Number in the OMR Answer Sheet given to you. Also write the Hall Ticket Number in the space provided above.
2. Read carefully the following instructions:
  - a. This Question paper has Two Sections: Part- I and Part- II .
  - b. Part - I has 40 and Part - II has 40 objective type questions of one mark each.
  - c. There is negative marking for all the questions in parts I and II. Each wrong answer carries -0.33 mark
  - d. Answers are to be marked on the OMR answer sheet following the instructions provided there upon.
  - e. Hand over the OMR answer sheet at the end of the examination to the Invigilator.
  - f. 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 I: Research Methodology**

1. When is the effect of an independent variable on a dependent variable considered to be statistically significant?
  - A) When  $p = 0.05$
  - B) When  $p > 0.05$
  - C) When  $p < 0.05$
  - D) When  $p < 0.5$
2. Twenty men and 20 women participated in a study examining height differences between men and women. During the analysis of the data from this experiment using repeated measures ANOVA, gender of the participants:
  - A) Would be considered as a within-subjects factor
  - B) Would be considered as a between-subjects factor
  - C) Would be considered as a dependent variable
  - D) Would be not included in the analysis
3. Which one of these statistics is unaffected by outliers?
  - A) Mean
  - B) Interquartile range
  - C) Standard deviation
  - D) Range
4. What is Interquartile range?
  - A)  $Q_3 - Q_1$
  - B)  $Q_3 + Q_1$
  - C)  $Q_2$
  - D)  $Q_1 + Q_2 + Q_3$

Where  $Q_1$ ,  $Q_2$ ,  $Q_3$  are first, second and third quartiles respectively.

5. Choose the alternative closest in meaning to the given word.  
Virtuoso:
  - A) skilled performer
  - B) Amateur
  - C) good person
  - D) professional

A study was done to compare the lung capacity of coal miners to the lung capacity of farm workers. The researcher studied 200 workers of each type. Other factors that might affect lung capacity are smoking habits and exercise habits. The smoking habits of the two worker types are similar, but the coal miners generally exercise less than the farm workers.

6. Which of the following is the explanatory variable in this study?
- A) Exercise
  - B) Lung capacity
  - C) Smoking or not
  - D) Occupation
7. Which of the following is a confounding variable in this study?
- A) Exercise
  - B) Lung capacity
  - C) Smoking or not
  - D) Occupation
8. Which one of the following variables is not categorical?
- A) Weight of a person.
  - B) Gender of a person
  - C) Choice on a test item
  - D) Marital status of a person
9. Select the pair that best expresses the relationship similar to that expressed in the original pair.
- Nuance: Subtle
- A) Pun: Sarcastic
  - B) Fib: Honest
  - C) Inquiry: Discreet
  - D) Hint: Indirect
10. Choose the correct alternative to complete the meaning of the given sentence
- Her written statements failed to be consistent \_\_\_\_\_ what she had said earlier
- A) on
  - B) with
  - C) in
  - D) to
11. Which one of the following alternatives is spelt correctly?
- A) extacy
  - B) ecstasy
  - C) ecstacy
  - D) extasy

12. Writing on the wall means
- A) graffiti
  - B) obvious truth
  - C) foreboding
  - D) prediction
13. A list of 5 pulse rates is: 70, 64, 80, 74, 92. What is the median for this list?
- A) 74
  - B) 76
  - C) 77
  - D) 80
14. The average age of a father and his only son is 25% more than the average age of that boy and his mother. When that boy was born, his mother was 30 years old and his father was 40 years old. Find the present age of father.
- A) 55
  - B) 48
  - C) 65
  - D) 45
15. In how many ways the letter 'SOLVING' can be rearranged to make 7 letter words such that none of the letters repeat?
- A) 49
  - B) 5040
  - C) 77
  - D) None of the above
16. What is the missing letter in this series?                      b e h k n ? t
- A) q
  - B) r
  - C) s
  - D) u
17. The average age of a group of 5 students was 10. The average age increased by 4 years when 2 new students joined the group. What is the average age of the two new students who joined the group?
- A) 15
  - B) 20
  - C) 22
  - D) 24



18. There are twenty four students in a certain class. For every nine girls there are three boys. How many girls and how many boys are there in the class?
- A) 19 and 5
  - B) 18 and 6
  - C) 15 and 9
  - D) 14 and 10
19. When is the performance on a 2AFC task considered to be at chance level?
- A) When  $d' = 0$
  - B) When  $d' < 0$
  - C) When  $d' = 1$
  - D) When  $d' = 1$
20. In a semantic/category fluency task, how much time is generally given to participants to produce words in each category?
- A) 3 minutes
  - B) 1 minute
  - C) 30 seconds
  - D) 5 minutes
21. \_\_\_\_\_ bias occurs when participants or items are not chosen at random but instead are selected so that an attribute is over- or under-represented.
- A) Response
  - B) Reliability
  - C) Validity
  - D) Sampling
22. Pick the choice that best completes the following sentence. If a relationship between two variables is called statistically significant, it means the investigators think the variables are
- A) related in the population represented by the sample.
  - B) not related in the population represented by the sample.
  - C) related in the sample due to chance alone.
  - D) very important.
23. Which of the following findings is not a correlation?
- A) As testosterone increases so too does verbal aggression
  - B) As download prices increase sales will decrease
  - C) Women scored higher than men on narcissism
  - D) None of these

24. One use of a regression line is
- A) to determine if any x-values are outliers.
  - B) to determine if any y-values are outliers.
  - C) to determine if a change in x causes a change in y.
  - D) to estimate the change in y for a one-unit change in x.
25. Pick the choice that best completes the following sentence. If a relationship between two variables is called statistically significant, it means the investigators think the variables are
- A) related in the population represented by the sample.
  - B) not related in the population represented by the sample.
  - C) related in the sample due to chance alone.
  - D) very important.
26. Randomly assigning treatment to experimental units allows:
- A) population inference
  - B) causal inference
  - C) both types of inference
  - D) neither type of inference
27. When asked questions concerning personal hygiene, people commonly lie. This is an example of:
- A) sampling bias
  - B) confounding
  - C) non-response bias
  - D) response bias
28. Since the mode is the most frequently occurring data value, it
- A) can never be larger than the mean
  - B) is always larger than the median
  - C) is always larger than the mean
  - D) None of the above answers is correct.
29. The value that has half of the observations above it and half the observations below it is called the
- A) range
  - B) median
  - C) mean
  - D) Mode
30. Which of these numbers cannot be a probability?
- A) -0.00001
  - B) 0.5
  - C) 0
  - D) 1

31. A card is drawn at random from a deck of cards. What is the probability of getting the 3 of diamond?
- A)  $1/13$
  - B)  $1/52$
  - C)  $4/52$
  - D)  $4/13$
32. In descriptive statistics, we study
- A) The description of decision making process
  - B) The methods for organizing, displaying, and describing data
  - C) How to describe the probability distribution
  - D) None of the above
33. Which one of the following measurement does not divide a set of observations into equal parts?
- A) Quartiles
  - B) Standard Deviations
  - C) Deciles
  - D) Median
34. The algebraic sum of deviations from mean is:
- A) Maximum
  - B) Zero
  - C) Minimum
  - D) Undefined
35. In statistics, a population consists of:
- A) All People living in a country
  - B) All People living in the are under study
  - C) All subjects or objects whose characteristics are being studied
  - D) None of the above
36. Method in which previously calculated probabilities are revised with new probabilities is classified as
- A) updating theorem
  - B) revised theorem
  - C) Bayes theorem
  - D) dependency theorem

37. Previous probabilities in Bayes Theorem that are changed with help of new available information are classified as
- A) independent probabilities
  - B) posterior probabilities
  - C) interior probabilities
  - D) dependent probabilities
38. A listing of the possible outcomes of an experiment and their corresponding probability is called
- A) Random Variable
  - B) Contingency table
  - C) Bayesian Table
  - D) Probability Distribution
39. If the occurrence of one event means that another cannot happen, then the events are
- A) Independent
  - B) Mutually Exclusive
  - C) Bayesian
  - D) Empirical
40. The joint probability is
- A) The likelihood of two events happening together
  - B) The likelihood of an event happening given that another event has already happened
  - C) Based on two mutually exclusive events
  - D) Also called Prior probability

## Part II – Cognitive Science

41. The Load theory of selective attention was proposed by whom?
- A) Anne Triesman
  - B) Nilli Lavie
  - C) Donald Broadbent
  - D) Stanislas Dehaene
42. In which of the following cases does the slope of the Response time (RT) to the target remain constant as a function of the number of distractors present in the search array?
- A) Serial search task
  - B) Parallel search task
  - C) Working memory task
  - D) All of the above



43. The words "fan" and "farm" are:
- A) phonological cohorts of each other
  - B) semantic competitors of each other
  - C) cross-linguistic competitors of each other
  - D) phonological rhymes of each other
44. In functional magnetic resonance imaging, what does BOLD stand for?
- A) Blood oxygenated label description
  - B) Blood onset list description
  - C) Blood oxygenated level dependent
  - D) Blood onset level dependent
45. The electrical activity in the motor cortex just before the initiation of a voluntary movement is commonly called as:
- A) Movement potential
  - B) Onset potential
  - C) Initiation potential
  - D) Readiness potential
46. According to the dual stream model of visual processing proposed by Goodale and Milner, which stream(s) is/are responsible for guidance of actions, such as, reaching for an object?
- A) Ventral stream
  - B) Dorsal stream
  - C) Both of the above
  - D) None of the above
47. The performance in which of the following tasks is a measure of conflict resolution abilities?
- A) Stroop
  - B) Posner cueing task
  - C) Visual search
  - D) None of the above
48. What is the average time taken to initiate a saccade in humans?
- A) About 0.02 s
  - B) About 0.2 s
  - C) Greater than 0.5 s
  - D) Greater than 1 s

49. In a standard Posner cueing task, which of the following is most commonly observed at long cue-target SOAs?
- A) RT on valid trials = 2 \* RT on invalid trials
  - B) RT on valid trials > RT on invalid trials
  - C) RT on valid trials = RT on invalid trials
  - D) None of the above
50. Which of the following would be categorized as a congruent trial in a colour-word stroop task?
- A) The word "RED" written in red ink
  - B) The word "APPLE" written in blue ink
  - C) The word "RED" written in blue ink
  - D) Both a and b
51. Some measures of brain function reveal what brain region is necessary (causal) for a mental ability, and other brain measures reveal what brain region is associated (correlated) with a mental ability. Which answer below contains only causal measures?
- A) lesions and functional magnetic resonance imaging (fMRI)
  - B) fMRI and transcranial magnetic stimulation (TMS)
  - C) lesions and TMS
  - D) fMRI and diffusion tensor imaging (DTI)
52. Perception of stimulus that is below the threshold of awareness is known as:
- A) Just noticeable difference
  - B) Differential threshold
  - C) Subliminal perception
  - D) Signal detection
53. When central arrows are used to orient a participant's attention to a target in a Posner cueing task, it is an example of which form of attentional orienting:
- A) Endogenous
  - B) Exogenous
  - C) Either of the above
  - D) Selection history
54. Who proposed the global workspace theory of consciousness?
- A) Baars
  - B) Dennett
  - C) Chalmers
  - D) Dehaene

55. Which of the following paradigms/tasks is used to examine the parallel activation of two languages in bilinguals?
- A) Visual search
  - B) Visual world
  - C) Inhibition of return
  - D) Stop signal
56. In the bilingualism literature, what does 'cognitive advantages of bilingualism' refer to?
- A) Bilinguals tend to perform better than monolinguals on certain tasks measuring inhibitory control etc.
  - B) Bilinguals tend to be more social than monolinguals
  - C) Bilinguals tend to be wealthier than monolinguals
  - D) Bilinguals like participating more in cognitive science experiments than monolinguals.
57. Which of the following is not a component of 'executive control'?
- A) conflict resolution
  - B) inhibitory control
  - C) set shifting
  - D) none of the above
58. A secondary task involving the repetition of a redundant and irrelevant word is known as:
- A) Irrelevant speech effect
  - B) Visual suppression
  - C) Articulatory suppression
  - D) Fractionation
59. What does CFS stand for in the study of unconscious processing?
- A) Continuous flash suppression
  - B) Continuous flashing of sequences
  - C) Continuous filtering of stimuli
  - D) Combined flash suppression
60. How many levels does the perceptual awareness scale (PAS) proposed by Ramsoy & Overgaard to measure subjective awareness of unconscious stimuli have?
- A) 2
  - B) 3
  - C) 4
  - D) 7

61. In eye movement research, a fixation is a
- A) A small jerky movement
  - B) A smooth continuous movement
  - C) Movement to an optimal viewing position
  - D) A more or less stationary period
62. 'Congenital deafness' refers to:
- A) Hearing loss since birth
  - B) Hearing loss due to a neurological disease
  - C) Hearing loss due to an accident
  - D) All of the above
63. \_\_\_\_\_ scan measures brain activity through injecting a radioactive glucose that allows to observe the brain is functioning.
- A) EEG
  - B) TMS
  - C) PET
  - D) CAT
64. Cognitive processing influenced by an individual's expectations and knowledge rather than the available stimuli is called \_\_\_\_\_ processing.
- A) Serial
  - B) Parallel
  - C) Top-down
  - D) Bottom-up
65. An EEG records
- A) the number of neurons in the brain.
  - B) electrical impulses from the brain.
  - C) chemical activity in the cranial nerves.
  - D) direct electrical stimulation and activation of the brain.
66. Who proposed the distinction between access and phenomenal consciousness?
- A) Ned Block
  - B) David Chalmers
  - C) Hillary Putnam
  - D) None of the above



67. The school of psychology that emphasizes the "whole is greater than the sum of its parts" and that emphasizes the tendency to integrate separate stimuli into meaningful patterns is the school of

- A) Behaviorism
- B) Gestalt psychology
- C) Functionalism
- D) Structuralism

68. Foveal vision is limited to

- A) 1-2 degrees
- B) 4-5 degrees
- C) 10-12 degrees
- D) none of the above

69. WAIS is the abbreviation of:

- A) Weschler Adult Intelligence Scale
- B) Weiss Adult Intelligence Scale
- C) Weschler Associated Intelligence Scale
- D) Weschler Aptitude & Intelligence Scale

70. The conduction of a nerve impulse down the axon is called a(n)

- A) ion potential.
- B) action potential.
- C) resting discharge.
- D) synapse.

71. Heuristics are problem solving strategies which

- A) use a trial and error approach.
- B) use random search strategies.
- C) guarantee success in solving a problem.
- D) reduce the number of alternatives.

72. Neurons are made up of dendrites, a soma, and

- A) axons.
- B) axles.
- C) atoms.
- D) axes.

73. Seeing out of the corner of your eye, often important in sports activities and driving, is called
- A) tunnel vision.
  - B) peripheral vision
  - C) Astigmatism.
  - D) feature detection.
74. Who conducted elaborate EEG work that indicated brain activity in the motor cortex occurs before the intention to move?
- A) Benjamin Libet
  - B) Victor Lamme
  - C) Patrick Cavanaugh
  - D) Daniel Wegner
75. Injury to the orbitofrontal cortex in Phineas Gage primarily altered which capacity?
- A) motor control
  - B) language
  - C) audition
  - D) character
76. The tip-of-the-tongue phenomenon demonstrates what about the nature of memory?
- A) It is fragmentary
  - B) Words are stored as whole units
  - C) It is organized by sound
  - D) It is not systematic
77. Complete this analogy: syntax is to words as phonology is to \_\_\_\_\_
- A) semantics
  - B) letters
  - C) phonemes
  - D) Comprehension
78. What is a major criticism of strictly empiricist accounts of language acquisition?
- A) Children only produce sentences they have heard before
  - B) There is not enough information to learn all the rules of grammar based solely on what children hear
  - C) The mechanisms of the "language acquisition device" are not sufficiently specified
  - D) These accounts do not make any falsifiable hypotheses

79. Which is NOT true about IQ scores according to available evidence?

- A) IQ scores are holding steady around the world
- B) crystallized intelligence shows little decline in normal aging
- C) IQ scores, according to twin studies, are about 50% heritable
- D) birth-order has an effect on IQ scores

80. Which of the following is a major feature of Chomsky's nativist theory of language acquisition?

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