

ENTRANCE EXAMINATION, June 2018 QUESTION PAPER BOOKLET
Ph.D.(Cognitive Science)

Marks: 80
Time: 2.00 hrs.

Hall Ticket No. -----

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. What is the range of values that the Pearson correlation coefficient can take:
 - A. 0 to 1
 - B. less than 1
 - C. greater than 1
 - D. -1 to +1

2. Which of these is a form of statistical analysis?
 - A. Bayesian
 - B. regression
 - C. linear mixed effects
 - D. All of the above

3. In the design of a survey, which of the following minimises response bias?
 - A. Increase the sample size
 - B. Decrease the sample size
 - C. Randomly select the sample
 - D. Increase the number of questions in the survey

4. When is a null hypothesis in statistics rejected (with a confidence level of 95%):
 - A. When $p = 0.05$
 - B. When $p < 0.05$
 - C. When $p > 0.05$
 - D. None of the above

5. A list of 5 scores is: 70, 64, 85, 80, 92. What is the median for this list?
 - A. 74
 - B. 76
 - C. 77
 - D. 80

6. A candidate attempted 12 questions and secured full marks in all of them. If he obtained 60% in the test and all questions carried equal marks, then what is the number of questions in the test?
 - A. 36
 - B. 30
 - C. 25
 - D. 20

7. A cuboid has six sides of different colours. The red side is opposite to black. The blue side is adjacent to white. The brown side is adjacent to blue. The red side is face down. Which one of the following would be the opposite to brown?

- A. Red
- B. Black
- C. White
- D. Blue

8. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then, how is A related to D?

- A. Grandmother
- B. Granddaughter
- C. Grandfather
- D. Daughter

9. 120, 99, 80, 63, 48, ?

- A. 35
- B. 38
- C. 39
- D. 40

10. In the series 2, 6, 18, 54, what will be the 8th term ?

- A. 4370
- B. 4374
- C. 7443
- D. 7434

11. Romeo has placed a ladder of length 5m to climb and reach the window of Juliet's room. The base of the ladder was placed against a stone 3m from the wall so as not to slip. How high is the window to Juliet's room.

- A. 3.5
- B. 2
- C. 4
- D. None of the above

12. In a set of repeated measurements of same parameter you find that a measurement is very different from others. You may take out this value for analysis if

- A. You may never take out this value.
- B. If you find that the instrument was not working properly during that measurements.
- C. You can always take out the measurement if the value is unexpected.
- D. You can toss a coin and decide to keep or not to keep the value based on heads or tails.

13. You have to perform a t-test when the numbers of measurements are less because.
- A. The measurements are not normally distributed
 - B. The standard deviation cannot be calculated
 - C. The means may not normally distributed
 - D. The means are close by
14. Which test is used to compare variances?
- A. Chocran's Q test
 - B. Chi-square test
 - C. ANOVA
 - D. ANCOVA
15. You think that playing hockey helps increase attention and test it in a set of people who do not have hockey experience by training them to play hockey before testing them in attention tasks. Which of these could be an appropriate control?
- A. Taking a set of people who already know hockey for testing
 - B. Training a set of people in football before testing them
 - C. Testing in a set of people who is not trained in any games
 - D. Control is not required
16. What is the value of $f(f(5))$?
- (i) $f(x) = x^2 + 1$ for odd x .
 - (ii) $f(x) = 4x + 1$ for even x .
- A. 100
 - B. 105
 - C. 95
 - D. 110
17. If a bee is travelling straight from its hive to a cluster of flowers with velocity v m/sec for half the total time to reach the flowers. $2v$ m/sec for quarter of the time and $v/2$ m/sec for the rest to the time. What is bees average velocity.
- A. v m/sec
 - B. $7v/8$ m/sec
 - C. $5v/9$ m/sec
 - D. $9v/8$ m/sec

Directions: In the following sentences a word is underlined. From the given alternatives choose the one which best substitutes the underlined word.

18. The greatest of all the cities of the ancient was the famous Atlantis.
- A. historical
 - B. fabled
 - C. fabulous
 - D. celestial
19. The General Election gave the party no such authority.
- A. mandate
 - B. permission
 - C. power
 - D. clout
20. It is more likely to be a momentous discovery than the result of a concerted effort to find it.
- A. casual
 - B. ordinary
 - C. consequential
 - D. fateful
21. Read the following two statements and choose the correct option:
- I. The planters have decided against selling their kharif crops to the Government agencies.
 - II. The Government has reduced the procurement price of kharif crops starting from last month to the next six months.
- Options:**
- A. Statement I is the cause and statement II is its effect
 - B. Statement II is the cause and statement I is its effect
 - C. Both statements are independent causes
 - D. Both statements are effects of independent causes
22. Find the odd one out
- A. Fish: Pisciculture
 - B. Birds: horticulture
 - C. Bees: apiculture
 - D. Silkworm: sericulture

23. After walking 6 Km, I turned right and travelled a distance of 2 Km, then turned left and covered a distance of 10 Km. In the end I was moving towards the north. From which direction did I start my journey?

- A. North
- B. South
- C. South-West
- D. North-East

24. Random sampling is helpful as it is

- A. Reasonably accurate
- B. Free from personal biases
- C. An economical method of data collection
- D. All of the above

25. Which of the following is not a major method of data collection?

- A. Interviews
- B. Focus groups
- C. Correlational method
- D. Secondary data

Read the following information carefully and answer the questions no. 26 to 30 that follows.

I. P, Q, R, S, T and U are six students procuring their Master's degree in six different subjects- English, History, Philosophy, Physics, Neuroscience and Mathematics.

II. Two of them stay in hostel; two stay as paying guest (PG) and the remaining two stay at their home.

III. R does not stay as PG and studies Philosophy.

IV. The students studying Neuroscience and History do not stay as PG.

V. T studies Mathematics and S studies Physics.

VI. U and S stay in hostel. T stays as PG and Q stays at home.

26. Who studies English?

- A. R
- B. S
- C. T
- D. None of these

27. Which of the following combinations of subjects and place of stay is not correct?

- A. English- Hostel
- B. Mathematics- PG
- C. Philosophy- Home
- D. None of these

28. Which of the following pairs of students stay one each at hostel and at home?
- A. QR
 - B. SR
 - C. US
 - D. Data inadequate
29. Which subject does Q study?
- A. History
 - B. Neuroscience
 - C. History or Neuroscience
 - D. Data inadequate
30. Which of the following pairs of students stay at home?
- A. PQ
 - B. QR
 - C. RS
 - D. ST
31. A car always has
- A. Driver
 - B. Wheels
 - C. Bonnet
 - D. Bumper
32. A woman introduces a man as the son of the brother of her mother. How is the man, related to the woman?
- A. Nephew
 - B. Son
 - C. Cousin
 - D. Uncle to Grandson
33. Complete the following sentence with the most appropriate alternative.
- respect to your earlier suggestions, I think we should go ahead with your plans because they are sound.
- A. With
 - B. Within
 - C. Without
 - D. In

34. Complete the following sentence with the most appropriate alternative.

..... fail, Ravi did it again. He always puts his foot in his mouth and today is no exception.

- A. With
- B. Within
- C. Without
- D. None of the above

35. Arrange the words given below in a meaningful sequence.

1. Leaves 2. Branch 3. Flower

4. Tree 5. Fruit

- A. 4, 3, 1, 2, 5
- B. 4, 2, 5, 1, 3
- C. 4, 3, 2, 1, 5
- D. 4, 2, 1, 3, 5

36. $\cos^2\theta - \sin^2\theta =$

- A. $1+2\sin^2\theta$
- B. $1-2\sin^2\theta$
- C. $1+2\cos^2\theta$
- D. $1-2\cos^2\theta$

37. A team has won 60% of 60% of the matches it has played so far in a tournament. What percentage of the remaining matches it can afford to lose so that the average wins is exactly 75% of all matches it has to play in the tournament?

- A. 20%
- B. 10%
- C. 2.5%
- D. None of the above

38. Bhutia must be a football player; he is wearing a football jersey.

The conclusion above is valid only if it is true that

- A. football players often wear football jerseys
- B. all football players wear football jerseys
- C. football players never wear any kind of shirt other than football jerseys
- D. only football players wear football jerseys

39. It has been said that printing does as much harm as good, since it gives us bad books as well as good ones and _____ falsehood and error no less than _____.

- A. displays folly
- B. propagates knowledge
- C. betrays treachery
- D. flaunts Ignorance

40. One-half of a number is 17 more than one-third of that number. What is the number?
- A. 52
 - B. 84
 - C. 102
 - D. 204

Part II
Cognitive Science

41. Foveal vision is limited to
- A. 1-2 degrees
 - B. 4-5 degrees
 - C. 10-12 degrees
 - D. none of the above
42. What does SOA stand for?
- A. Stimulus onset asynchrony
 - B. Stimulus offset asynchrony
 - C. Stimulus on acquisition
 - D. None of the above
43. The words "mango" and "man" 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. _____ lobes control higher order cognitive skills; _____ lobes control vision.
- A. Occipital;temporal
 - B. Frontal;occipital
 - C. Occipital;frontal
 - D. Occipital;parietal

45. _____ is a disorder in which there is lack of awareness in one visual field due to damage to the contralateral side of the brain.
- A. Visual neglect
 - B. Agnosia
 - C. Blindsight
 - D. Hemi motor neglect
46. Who proposed the distinction between access and phenomenal consciousness?
- A. Ned Block
 - B. David Chalmers
 - C. Hillary Putnam
 - D. None of the above
47. In signal detection theory, how is d' prime calculated?
- A. $Z(\text{Hits}) - Z(\text{False alarms})$
 - B. $Z(\text{Hits}) + Z(\text{False alarms})$
 - C. $Z(\text{Hits}) * Z(\text{False alarms})$
 - D. $Z(\text{Hits}) / (Z(\text{Hits}) + Z[\text{False alarms}])$
48. Who proposed the global workspace theory of consciousness?
- A. Baars
 - B. Chomsky
 - C. Putnam
 - D. None of the above
49. Superior colliculus is associated with
- A. Olfaction
 - B. Eye movements
 - C. Speech
 - D. All of the above-mentioned
50. Which task is widely used to study attentional orienting?
- A. Stroop task
 - B. Double step task
 - C. Stop signal task
 - D. Posner's cueing task

51. Which ERP effect is traditionally linked with expectation violation?
- A. N400
 - B. P300
 - C. LRP
 - D. Both a and b.
52. Where are Purkinje cells found?
- A. Spinal cord
 - B. Cerebral cortex
 - C. Cerebellar cortex
 - D. All of the above
53. "Cocktail party effect" involves the mechanism of:
- A. Focussed auditory attention
 - B. Divided auditory attention
 - C. Change blindness
 - D. None of the above
54. What signifies inhibition of return (IOR) in a Posner cueing task?
- A. When response time on invalid trials is slower compared to valid trials
 - B. When response time on invalid trials is faster compared to valid trials
 - C. When response time is negative
 - D. When response time on invalid trials is equal to valid trials
55. The conduction of a nerve impulse down the axon is called a(n)
- A. ion potential.
 - B. action potential.
 - C. resting discharge.
 - D. synapse.
56. Who proposed the dual forms (reactive vs. Proactive) of cognitive control?
- A. Dodd
 - B. Braver
 - C. Dehaene
 - D. Tanenhaus

57. 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
58. When central colour cues are used to orient a participant's attention in a Posner cueing task, which form of attention is being measured?
- A. Endogenous
 - B. Exogenous
 - C. reward-based
 - D. None of the above
59. When is the performance on a 2AFC task considered to be perfectly at chance level?
- A. When $d' = 0$
 - B. When $d' < 0$
 - C. When $d' = 1$
 - D. When $d' = 1$
60. According to the dual stream model of visual processing proposed by Goodale and Milner, which stream(s) is/are responsible for identification and recognition of an object?
- A. Ventral stream
 - B. Dorsal stream
 - C. Both of the above
 - D. None of the above
61. On a stop-signal task, a shorter SSRT refers to:
- A. greater inhibitory control
 - B. lesser inhibitory control
 - C. SSD does not measure inhibitory control
 - D. loss of inhibitory controlled
62. 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

63. Which of the following would be categorized as a incongruent trial in a colour-word stroop task?
- A. The word "RED" written in green ink
 - B. The word "APPLE" written in blue ink
 - C. The word "RED" written in blue ink
 - D. Both a and c
64. The visual world paradigm has been used to measure which of the following?
- A. Spoken word recognition
 - B. Translation activation in bilinguals
 - C. Predictive processing
 - D. All of the above
65. What is the name of the bundle of fibres that connect left and right hemispheres of the brain?
- A. Glial cells
 - B. Corpus callosum
 - C. Arbor vitae
 - D. Purkinje fibres
66. 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.
67. How many levels does the perceptual awareness scale (PAS) proposed by Ramsøy & Overgaard to measure subjective awareness of unconscious stimuli have?
- A. 2
 - B. 3
 - C. 4
 - D. 7
68. Continuous flash suppression (CFS) is based on which of the following phenomenon:
- A. Binocular rivalry
 - B. Parallel activation
 - C. Feature integration
 - D. Common coding

69. Who proposed the adaptive control hypothesis in bilingualism?
- A. Hartsuiker and Olivers
 - B. Huettig and Meyer
 - C. Kroll and Bialystok
 - D. Green and Abutalebi
70. In psycholinguistics, what does RHM stand for:
- A. Revised Heirarchical model
 - B. Recurrent heirarchical model
 - C. Revised habituated model
 - D. Recurrent habituated model
71. In eye movement research, microsaccades refer to:
- A. A small jerky movement
 - B. A smooth continuous movement
 - C. Movement to an optimal viewing position
 - D. A more or less stationary period
72. Who proposed the feedforward and recurrent processing model of visual processing?
- A. Benjamin Libet
 - B. Victor Lamme
 - C. Patrick Cavanaugh
 - D. Daniel Wegner
73. 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.
74. A large T is made out of small sized 'S' characters. Such a figure is used in:
- A. Visual world paradigm
 - B. Joint simon task
 - C. Navon paradigm
 - D. Flanker task

75. The Attention network task (ANT) measures the following attention networks:
- A. Alerting
 - B. Orienting
 - C. Both
 - D. Neither
76. The conflict effect on a stroop with congruent and incongruent trials is measured as:
- A. Incongruent RT – Congruent RT
 - B. Incongruent RT/Congruent RT
 - C. Incongruent RT/(Incongruent RT + Congruent RT)
 - D. None of the above
77. “Attention is necessary and sufficient for eye movements”. This statement is
- A. True
 - B. False
 - C. It is debatable
 - D. There is no empirical research on this.
78. Who proposed the “Unity in Diversity” model of executive functions?
- A. Miyake
 - B. Braver
 - C. Haggard
 - D. Hommel
79. Sense of agency refers to:
- A. ability to understand others' intentions and actions
 - B. subjective awareness of initiating, executing, and controlling one's own volitional actions in the world.
 - C. the sensation and perceptions resulting out of others' actions
 - D. None of the above
80. Which region of the brain is specialized in facial recognition?
- A. Fusiform area
 - B. hippocampus
 - C. superior colliculus
 - D. ACC