

**Entrance Examinations – 2023**  
**Ph.D. Cognitive Science**

Duration : 2 hours

Max. Marks : 70

Hall Ticket No.
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**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 (16) pages including this page.

## PART-A

Read the passage given below and answer the questions that follow: (Q1 to Q 4)

While there is no denying that the world loves a winner, it is important that you recognize the signs, of stress in your behaviour and be healthy enough to enjoy your success. Stress can strike anytime, in a fashion that may leave you unaware of its presence in your life. While a certain amount of pressure is necessary for performance, it is important to be able to recognize your individual limit. For instance, there are some individuals who accept competition in a healthy fashion. There are others who collapse into weeping wrecks before an exam or on comparing marks sheets and finding that their friend has scored better.

Stress is a body reaction to any demands or changes in its internal and external environment. Whenever there is a change in the external environment such as temperature, pollutants, humidity and working conditions, it leads to stress. In these days of competition when a person makes up his mind to surpass what has been achieved by others, leading to an imbalance between demands and resources, it causes psychosocial stress. It is a part and parcel of everyday life. Stress has a different meaning, depending on the stage of life you are in. The loss of a toy or a reprimand from the parents might create a stress shock in a child. An adolescent who fails an examination may feel as if everything has been lost and life has no further meaning. In an adult the loss of his or her companion, job or professional failure may appear as if there is nothing more to be achieved.

Such signs appear in the attitude and behaviour of the individual, as muscle tension in various parts of the body, palpitation and high blood pressure, indigestion and hyperacidity. Ultimately the result is self-destructive behaviour such as eating and drinking too much, smoking excessively, relying on tranquilisers. There are other signs of stress such as trembling, shaking, nervous blinking, dryness of throat and mouth and difficulty in swallowing. The professional under stress behaves as if he is a perfectionist. It leads to depression, lethargy and weakness. Periodic mood shifts also indicate the stress status of the students, executives and professionals. In a study sponsored by World Health Organization and carried out by Harvard School of Public Health, the global burden of diseases and injury indicated that stress diseases and accidents are going to be the major killers in 2025. The heart disease and depression both stress diseases are going to rank first and second in 2025. Road traffic accidents are going to be the third-largest killers. These accidents are also an indicator of psychosocial stress in a fast-moving society. Other stress diseases like ulcers, hypertension and sleeplessness have assumed epidemic proportions in modern societies.

Q1. According to the passage, the main cause of stress is:

- A. The loss of a toy or a relative in the family
- B. Changes in the internal or external environment
- C. High blood pressure and dryness of throat or mouth
- D. Unhealthy competition in the modern society

Q2. Which word in the above passage mean the same as the "fall down"?

- A. Palpitation
- B. Reprimand

- C. Collapse
- D. Lethargy

Q3. What are the different diseases a person gets due to stress?

- A. Ulcers, high blood pressure and insomnia
- B. Indigestion, hyperacidity and fever
- C. Dry throat, cancer and depression
- D. Allergies, nervous blinking and road accidents

Q4. What is the literal meaning of "lethargy" in the passage?

- A. Stress
- B. Nausea
- C. Acidity
- D. Inactivity

Q5. Which measure of central tendency is the most appropriate measure for income data of an organization/company?

- A. Mean
- B. Median
- C. Mode
- D. All of these

Q6. The correlation coefficient ranges from:

- A. 0 to 1
- B. 0 to 100
- C. -1 to 1
- D. -0.05 to 0.05

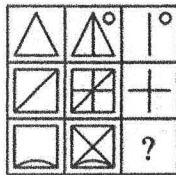
Q7. What is the value of  $\tan^2 45^\circ + \cos^2 90^\circ$ ?

- A. 0
- B. 1
- C. 2
- D. 0.5

Q8. A regular circular cylinder, made up of copper, was melted and converted into a solid sphere. If the radius of sphere as well as the radius of cylinder is 3 m, then what was the height of copper cylinder?

- A. 4 m
- B. 3 m
- C. 1 m
- D. 2 m

Q9. Select a suitable figure from the four alternatives that would complete the figure matrix.



- A.
- B.
- C.
- D.

Q10. What is the probability of getting three heads if you throw four fair coins?

- A. 1/4
- B. 3/8
- C. 1/16
- D. 7/16

Q11. Choose the most appropriate pair to fill in the blanks in the same order.

Getting a \_\_\_\_\_ does not \_\_\_\_\_ you of your responsibilities, it only means you have new and greater ones to fulfil.

- A. result, prevent
- B. promotion, absolve
- C. surprise, detach
- D. policy, accost

Q12. At first glance it might seem reasonable to do this with a photo-diode and a fast oscilloscope or some similar electronic transient recorder. However, the required temporal resolution is hard to achieve with ordinary electronic transient recorders. Moreover, the emitted light may be simply too weak to create an analog voltage representing the optical flux.

Which of the following is true?

- A. Photo-diode in combination with a fast oscilloscope cannot be used for measuring transients.
- B. Photo-diode does not work well with a fast oscilloscope to measure transients.

- C. Photo-diode in combination with a fast oscilloscope is not fast enough for the measurement under discussion here.
- D. Photo-diode in combination with a fast oscilloscope cannot be used for measuring properties of light.

Q13. Decimal system representation for the number 201 in base 3 system is:

- A. 20
- B. 19
- C. 201
- D. 57

Q14. Arrange to make a meaningful sentence in English:

- P business leaders must understand if they hope
- Q there are three very significant issues that
- R in particular,
- S to make informed decisions regarding investments in such products.

- A. PSRQ
- B. QPSR
- C. RQSP
- D. RQPS

Q15. What is  $x$  if  $y = (2x-3)/4$ ?

- A.  $4(y-2)+3$
- B.  $(4y-2)/3$
- C.  $(4y+3)/2$
- D.  $(8y-12)/3$

Q16. In statistics quite often one can assume the data to be normally distributed because?

- A. Gaussian distribution underlies the physics of systems
- B. Because of Binomial theorem
- C. Law of large numbers
- D. Because we use normal people as subjects most of the time

Q17. How many solutions may the equation  $(x+2)^4 = 6x^3 - 4$  have?

- A. One
- B. Two
- C. Three
- D. Four

Q18. Which are the coordinates of the x-axis where the following two functions intersect.

$$y=x+4 \quad y=(x+2)^2$$

- A. -4, -2
- B. 3, -2
- C. 2, 1
- D. 0, -3

Q19. What is the probability of getting a 3 when a single unbiased die is tossed?

- A.  $1/2$
- B.  $1/6$
- C.  $6/1$
- D.  $3/6$

Q20. Sumita is 32 years older than her son Divakar. In 4 years, her age will be twice the age of her son. What is the present age of her son?

- A. 26 years
- B. 28 years
- C. 22 years
- D. 24 years

Q21. How many words can be formed by using all letters of the word 'CABIN'?

- A. 720
- B. 24
- C. 120
- D. 60

Q22. A one-rupee unbiased coin is tossed twice. What is the probability of getting two consecutive heads?

- A.  $1/2$
- B.  $1/4$
- C.  $3/4$
- D.  $4/3$

Q23. As delicious is associated with taste, melodious is associated with

- A. Voice
- B. Highness
- C. Vision
- D. Touch

Q24. Fruit : Banana :: Mammal : ?

- A. Cow
- B. Snake
- C. Fish
- D. Sparrow

Q25. Ornithologist : Birds :: Anthropologist : ?

- A. Plants
- B. Animals
- C. Mankind
- D. Water

Q26. Bird : Chirp :: Horse : ?

- A. Bray
- B. Neigh
- C. Race
- D. Stable

Q27. Oxygen : Burn :: Carbon dioxide : ?

- A. Isolate
- B. Tray
- C. Extinguish
- D. Fall

Q28. Which word means the same as "discombobulated".

- A. confused
- B. disturbed
- C. discontented
- D. compromised

Q29. When the smaller angle of an isosceles triangle is  $45^\circ$ , what is the measure of its largest angle?

- A.  $90^\circ$
- B.  $45^\circ$
- C.  $60^\circ$
- D.  $30^\circ$

Q30. Which of the following is one word for a young person with exceptional qualities.

- A. Pearl
- B. Preposterous
- C. Prodigy
- D. Paramount

Q31. Researchers are making efforts to avoid WEIRD sampling of data. What does it stand for?

- A. Western, Eastern, Indians, Romanian, Dominican
- B. Woke, Eastern, Indigenous, Race, Dogmatic
- C. White, Educated, Industrialised, Rich, Democratic
- D. Working, Educated, Impoverished, Robust, Dependable

Q32. What are the odds of getting the same number if a die is rolled twice?

- A.  $3/36$
- B.  $1/26$



- C. 1/6
- D. 5/16

Q33. Which of the following is not a necessary declaration in a submitted research manuscript

- A. Competing interest
- B. Ethical approval
- C. Use of assistive technology
- D. Participant ethnicity

Q34. If  $\log(\log x) = y$ . Then  $\log x = ?$

- A.  $e^y$
- B.  $\log y$
- C.  $y/\log$
- D. 1

Q35. Complete the following correlation; frog:pond:: rabbit: \_\_\_\_

- A. House
- B. Grass
- C. Burrow
- D. Tree

#### PART-B

Q36. A technique which is used to identify and separate proteins:

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

Q37. The conversion of RNA into DNA is known as:

- A. Central dogma
- B. Transcription
- C. Reverse-transcription

D. Translation

Q38. The branch of biology which deals with the study of the alterations to the genome that do not involve mutation of the nucleotide sequence, is known as:

- A. Chronobiology
- B. Exobiology
- C. Biochemistry
- D. Epigenetics

Q39. Which one of the following is a biochemical technique to separate cellular components according to their size, density, and viscosity?

- A. Electrophoresis
- B. Centrifugation
- C. Chromatography
- D. Microscopy

Q40. The unreasonable and synchronized electrical discharge in the neurons is a characteristic symptom of:

- A. Alzheimer's disease
- B. Epilepsy
- C. Stroke
- D. Migraine

Q41. The UV-visible spectrophotometry is based on:

- A. Beer-Lambert law
- B. Second law of thermodynamics
- C. Lenz's law
- D. Faraday's law of induction

Q42. In Hodgkin-Huxley model it is assumed that when the channels open and the intracellular and extracellular compartments around the membrane moves towards the electrochemical equilibrium, the ionic concentration on the two sides

- A. Approaches near equal values.
- B. Tilt towards lower concentration inside with respect to outside.
- C. Tilt towards higher concentration inside with respect to outside.
- D. Will not change

Q43. What is the result of product of the vectors  $[1 \ -1 \ -1]$ ,  $[2 \ 1 \ 2]$ :

- A. 0
- B. -1
- C.  $[2 \ -2 \ -2 \ 1 \ -1 \ -1 \ 2 \ -2 \ -2]$
- D. 3

Q44. Given a linear function and a nonlinear function

- A. Linear function is always uniquely invertible but a nonlinear function is not necessarily uniquely invertible
- B. Linear function need not be always uniquely invertible but a nonlinear function is never invertible
- C. Linear function need not be always uniquely invertible and so is the case with a nonlinear function.
- D. Linear function is always uniquely invertible but a nonlinear function will have multiple inverses.

Q45. In a capacitor when we have stored charge

- A. Only the capacitance increases.
- B. Capacitance and the voltage across the plate increase.
- C. Current through the capacitance and the voltage across the plates increase.
- D. Only voltage across the plates increases.

Q46. Which of the following is not a characteristic of insects?

- A. three main body parts: head, thorax, and abdomen
- B. three pairs of legs
- C. two pairs of antennae
- D. excretion by Malpighian tubules

Q47. In mammals, circadian rhythm is controlled by

- A. pituitary gland
- B. medulla
- C. suprachiasmatic nucleus
- D. endoplasmic reticulum

Q48. Ames test is performed to determine

- A. carcinogenicity of chemicals
- B. pathogenicity of a bacterium
- C. viability of a bacterial culture
- D. sporulation of bacterium

Q49. The best test of the relatedness of two species is in the similarity of their

- A. anatomy
- B. DNA and protein sequences
- C. development
- D. courtship behaviours

Q50. Which is the simplest amino acid?

- A. Alanine
- B. Glycine
- C. Histidine
- D. Glutamine

Q51. Which of the following statements is correct?

- A. Down's syndrome is due to an extra chromosome 21
- B. Down's syndrome is due to a mutation within chromosome 1
- C. Down's syndrome is due to deficiency of niacin
- D. Down's syndrome is due to the loss of chromosome 11

Q52. The following ion channel is involved in the generation of an action potential

- A. voltage-gated lithium channel
- B. voltage-gated cadmium channel
- C. voltage-gated copper channel
- D. voltage-gated sodium channel

Q53. Which organelle is called "suicidal bag of the cell"?

- A. Mitochondria
- B. Lysosome
- C. Ribosome
- D. Endoplasmic reticulum

Q54. The visual world paradigm is used in psycholinguistics to study \_\_\_\_\_.

- A. Language-vision interaction
- B. Attention
- C. Working memory
- D. Executive control

Q55. Who is credited for popularizing the behaviourist view of the mind?

- A. S Sterling
- B. B. K. Watson
- C. B. F. Skinner
- D. W. James

Q56. All the following philosophers are the founding members of the Gestalt School of Thought, except \_\_\_\_\_.

- A. Kurt Koffka
- B. Wolfgang Kohler
- C. Charles Darwin
- D. Max Wertheimer

Q57. The Feature Integration Theory was proposed by \_\_\_\_\_.

- A. Anne Treisman
- B. Martin Seligman
- C. Ned Block
- D. Michael Posner

Q58. When information that is learned earlier interferes with information learned later, it is called \_\_\_\_\_.

- A. Reactive interference
- B. Retroactive interference
- C. Proactive interference
- D. Cognitive Dissonance

Q59. The Attention Network Task measures which properties of attention?

- A. Inhibition, Enhancement and Shifting
- B. Dispersion, Focus and Agility
- C. Focusing, Shifting and Monitoring
- D. Alerting, Orienting and Executive

Q60. The \_\_\_\_\_ test was designed to prove intelligent behaviour.

- A. AI
- B. Turing
- C. Chinese room
- D. ANT

Q61. Mental Representations are the \_\_\_\_\_.

- A. Mental object with semantic properties
- B. Memories of the mind
- C. Pictures and names of worldly objects
- D. Stored only in long-term memory

Q62. Who amongst these is one of the founders of AI?

- A. Herbert Simon
- B. John Grisham
- C. Marvin Newell
- D. Alan Kingstone

Q63. Which of the following terms does not imply "rejection of task-irrelevant stimuli"

- A. Distractor suppression
- B. Distractor capture
- C. Distractor ignoring
- D. Distractor avoidance

Q64. Cherry explained the phenomenon of selective attention, using the \_\_\_\_\_.

- A. Multimodal shadowing
- B. A telephone
- C. Cocktail Party Effect
- D. Tachistoscope

Q65. Which of the following techniques has the best spatial and temporal resolution

- A. EEG
- B. MEG
- C. fMRI
- D. Eye tracking

Q66. The theory of direct perception was proposed by \_\_\_\_\_.

- A. James Gibson
- B. Gestalt
- C. Bernhard Hummel
- D. Jeremy Wolfe

Q67. The technique used to suppress visual information is called \_\_\_\_\_.

- A. Conical Field Suppression
- B. Common Function Suppression
- C. Conjunction Focal Suppression
- D. Continuous Flash Suppression

Q68. Which of the following processes never involves a lapse in attention?

- A. Attentional blink
- B. Hemispatial Neglect
- C. Inattentional Blindness
- D. Synaesthesia

Q69. Having a clear cornea gives Homo sapiens an advantage in \_\_\_\_\_ over their primate ancestors.

- A. UV protection
- B. Emotional inhibition
- C. Social cognition
- D. Tribe politics

Q70. Who wrote the first book on Cognitive Psychology?

- A. Ulric Neisser
- B. Orlich Neisser
- C. William James
- D. William Wordsworth



**University of Hyderabad**  
**Ph.D. Entrance Examinations - 2023**

School/Department/Centre : Centre for Neural and Cognitive Sciences  
Course : Ph.D. Subject : Cognitive Sciences

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

Note/Remarks :

Signature

School/Department/Centre