T- 17

ENTRANCE EXAMINATION – 2019

MSc (Neural and Cognitive Sciences)

Marks: 100
Time: 2.00 hrs.

Hall Ticket No.

1. Write vour 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 60 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.

T-17

Part A
General Aptitude

1. The sum of the deviations about the mean is always:

A) Zero
B) Positive
C) Negative
D) Variance

2. A test of statistical significance indicates how confident the researcher is about:

A) The inter-coder reliability of their structured interview schedule
B) Their experimental design
C) Understanding the difference between bivariate and multivariate analysis
D) Generalizing their findings from the sample to the population

3. An operational definition is:

A) One that bears no relation to the underlying concept
B) An abstract, theoretical definition of a concept
C) A definition of a concept in terms of specific, empirical measures
D) None of the above

4. What is an outlier?

A) A type of variable that cannot be quantified
B) A type of variable that can't be defined
C) A score that is left out of the analysis because of missing data
D) An extreme value at either end of a distribution

5. If there were a perfect positive correlation between two interval/ratio variables, the Pearson's *r* test would give a correlation coefficient of:

A) 0
B) -1
C) +1
D) +2

6. 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

7. In an equation, $\sqrt{96} \div \sqrt{k} = 2\sqrt{6}$; what value of k will satisfy the equation?

A) 2
B) 4
C) 6
D) 8

8. Marathon is to race as hibernation is to

A) Winter
B) Bear
C) Dream
D) Sleep

9. All mangoes are yellow in colour. No yellow-coloured things are cheap

Conclusions:
I. All mangoes are cheap
II. Yellow-coloured mangoes are not cheap

A) Only conclusion I follows
B) Only conclusion II follows
C) Both I and II follow
D) Neither I and II follow

10. A man said to a lady, "The son of your only brother is the brother of my wife". What is the lady to the man:

A) Mother
B) Sister
C) Sister of father-in-law

D) Maternal aunt

11. A chord of a circle of radius 2cm is 1cm away from the center. What is the length of the chord?

A) $\sqrt{3}$ cm
B) $2\sqrt{5}$ cm
C) $2\sqrt{3}$ cm
D) $\sqrt{5}$ cm

12. Which point lies to the left, bottom side of the line x+y=2?

A) (1,1)
B) (0.2,1.75)
C) (2,0.1)
D) None of the above

13. Decimal system representation for the number 201 in ternary number system is:

A) 57
B) 19
C) 7
D) None of the above

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

He was ordered to go up to the dias and sing a melodious song.

to go up to the dais	he was requested	a melodious song	and sing
P	Q	R	S

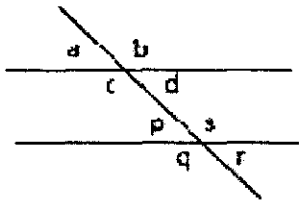
A) RQPS
B) RQSP
C) QRPS
D) QPSR

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

It is _____ that so many portrait paintings hang in the art museums, since the subject matter dictate a status closer to the family photograph albums than to high art. Perhaps it is the artistic skill with which the portraits are painted that _____ their presence in art museums.

A) understandable, justifies
B) understandable, challenges
C) surprising, justifies
D) surprising, challenges

16. 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+2c-q+r



A) 0
B) 270+a
C) 360-b
D) 180-a

17. $\sqrt{\frac{8^{10}+4^{10}}{8^4+4^{11}}} = ?$

A) 2^4
B) 2
C) 32
D) $\sqrt{8}$

18. The painter Peter Brandon never dated his works, and their chronology is only now beginning to take shape in the critical literature. A recent dating of a Brandon self-portrait to 1930 is surely wrong. Brandon was 63 years old in 1930, yet the painting shows a young, dark-haired

man—obviously Brandon, but clearly not a man of 63.

Which of the following, if justifiably assumed, allows the conclusion to be properly drawn?

A) There is no securely dated self-portrait of Brandon that he painted when he was significantly younger than 63.
B) Brandon at age 63 would not have portrayed himself in a painting as he had looked when he was a young man.
C) Brandon painted several self-portraits that showed him as a man past the age of 60.
D) In refraining from dating his works, Brandon intended to steer critical discussion of them away from considerations of chronology.

19. What is the probability of getting two heads if you throw two coins?

A) 0.25
B) 0.4
C) 0.5
D) 0.2

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

Rock music has often been credited with (or decried for) containing ____ messages, purportedly to influence the minds of ____ listeners.

A) subliminal, unsuspecting
B) subliminal, covert
C) criminal, preordained
D) criminal, covert

21. An airplane when 900 m high passes vertically above another airplane at an instant when their angles of elevation at same observing point are 60° and 45° respectively. Approximately, how many meters higher is the one than the other? (Use $\sqrt{2}$= 1.414, $\sqrt{3}$= 1.732, $\sqrt{5}$= 2.236)

A) 381 m
B) 169 m
C) 211 m
D) 269 m

22. One card is randomly drawn from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen or King)?

A)1/13
B) 2/13
C) 3/13
D) 4/13

23. The captain of a cricket team of 11 members is 26 years old and the wicket keeper is 3 years older. If the ages of these two are excluded, the average age of the remaining players is one year less than the average age of the whole team. Find out the average age of the team.

A) 20 years
B) 21 years
C) 23 years
D) 24 years

24. Synonym of EMBEZZLE is:

A) Clear
B) Misappropriate
C) Remunerate
D) Balance

25. Synonym of STRINGENT is:

A) Rigorous
B) Dry
C) Strained
D) Shrill

26. Choose the one word which can be substituted for "That which cannot be corrected":

A) Unintelligible
B) Indelible
C) Illegible

D) Incorrigible

Refer to the data below and answer the questions that follow (27-30).

P, Q, R, S, T, U and V are the seven members of a family. There are two married couple and two children in the 3rd generation.

V is Q's mother.
S is T's mother.
U is R's son
Q is T's Aunt.

27. If R is Q's husband, how is U related to T?

A) Brother
B) Sister
C) Cousin
D) Cannot be determined

28. If P is V's son, how is P related to U?

A) Uncle
B) Father
C) Cousin
D) Brother

29. Who is T's father?

A) Q
B) P
C) R
D) V

30. How is S related to Q?

A) Sister
B) Sister-in-law

C) Mother
D) Aunt

31. Some trees are branches
Some branches are seeds

Statement I: Some trees are not seeds
Statement II: Some seeds are not branches

A) Only I follows
B) Only II follows
C) Both I and II follows
D) Neither I nor II follows

32. Find the missing one: ED : HG :: RQ : ?

A) UT
B) VM
C) UQ
D) UP

33. A family consists of six members P, Q, R, X, Y and Z. P and R are married couple. Q is the son of R but R is not the mother of Q. Y is the brother of R. X is the daughter of P. Z is the brother of P.
How many female members are there in the family?

A) One
B) Two
C) Three
D) Four

34. Find out the alternative that will replace the question mark.

Ulterior : Expressed :: Radiant : ?

A) Dull

B) Warlike
C) Jovial
D) Revengeful

35. If CONTRIBUTE is written as ETBUIRNTOC, which letter will be in the sixth place when counted from the left if POPULARISE is written in that code?

A) L
B) A
C) I
D) R

36. Find out the alternative that will replace the question mark.

Whale : calf :: Toad : ?

A) Foal
B) Tadpole
C) Fawn
D) Peachick

37. Find out the alternative which will replace the question mark.

Cruelty : Tyranny :: Absurd : ?

A) Ridiculous
B) Compassionate
C) Avoidable
D) Affluent

38. Find the odd one out.

A) Hypothesis
B) Assumption
C) Observation
D) Experiment

39. Statement: Large number of people have become critically ill after consuming spurious liquor from a local shop.

Courses of Action:
I. The Government should immediately close down all the shops selling liquor till the stocks are tested for presence of toxicity.
II. The owner of the liquor shop should be asked to leave the town and open a shop elsewhere.
III. The owner of the liquor shop should immediately be arrested and tried for criminal negligence.

A) Only I and II follow
B) Only II and III follow
C) Only III follows
D) Only I and III follow

40. When Anuj saw Manish, he recalled, "He is the son of the father of my daughter's mother." Who is Manish to Anuj?

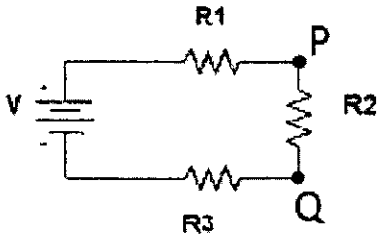
A) Brother-in-law
B) Brother
C) Cousin
D) Uncle

Part B

41. What are the possible harmonics of a sound whose wavelength is 10m in a medium in which the velocity of sound is 300m/s:

A) 60 and 90 Hz
B) 15 and 30 Hz
C) 3 and 6Hz
D) None of the above

42. Find the potential difference between P and Q, if R1=R3=100ohm, R2=200ohm and V=10V ?



A) 1V
B) 2V
C) 4V
D) 5V

43. Mirage in a dessert is caused by

A) Diffraction
B) Reflection
C) Refraction
D) Hallucination

44. A 'green colored' cloth appears green when white light falls on it because

A) It absorbs all other wavelengths than green
B) It absorbs green wavelengths
C) It refracts green wavelengths
D) It reflects all other wavelengths than green

45. What is the maximum amplitude possible for the following function of t, $2\sin(200t)-2\cos(100t)$:

A) 2
B) 1
C) 4
D) 0

46. If a vehicle is travelling at 30km/hr north in a straight line for 1hr and then east at 20km/hr for 2hrs what is the straight line distance from the starting point to the finish:

A) 50km
B) 60km
C) 40km
D) 70km

47. 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

48. A bat that uses echolocation should emit a pulse of frequency 66kHz to detect an insect 3.3m away. It shuts its ear during the duration it emits sound. If the velocity of the sound is 330m/sec, what can be the maximum duration of the pulse if the entire echo from the insect is to be heard by the bat?

A) $2*10^{-2}$sec
B) $1*10^{-2}$sec
C) $5*10^{-5}$sec

D)$1*10^{-5}$sec

49. If a sound travels from air to glass which quantity will remain unchanged?

A) velocity
B) frequency
C) wavelength
D) amplitude

50. The minimum number of non-zero non collinear vectors required to produce a zero vector is:

A) 4
B) 3
C) 2
D) 1

51. The weakest chemical bonding is found in:

A) Hydrogen bonds
B) Van der Waals interaction
C) Covalent bonds
D) Ionic bonds

52. Which of the following is a p-block element?

A) Neon
B) Hydrogen
C) Zinc
D) Uranium

53. Endoplasmic reticulum (ER) in a cell is NOT involved in:

A) Synthesis of proteins
B) Modifications of proteins
C) Transport of proteins
D) Degradation of proteins

54. Out of the following neurodegenerative disorders, which is NOT a genetic disorder?

A) Neurofibromatosis
B) Alzheimer's disease
C) Huntington disease
D) Encephalopathy

55. The functional unit of our nervous system is:

A) Axon
B) Cell body
C) Neuron
D) Dendrite

56. During competitive inhibition of an enzyme, K_M (Michaelis constant) will:

A) Increase
B) Remain same
C) Decrease
D) Be infinity

57. Which neurotransmitter is associated with "reward system" in the brain?

A) Serotonin
B) Acetylcholine
C) Dopamine
D) Epinephrine

58. Cyclin-dependent protein kinases (Cdks) play an important role in:

A) Cell apoptosis
B) Cell division
C) Cell migration
D) All of these

59. CRISPR-Cas9 technology has been adapted from the:

A) Bacteria
B) Viruses
C) Plants
D) Mammals

60. Genes P, Q, R, and S are located on the same chromosome. The recombination frequencies (RF) are as follows:

Relationship	RF
P - Q	10%
P - R	25%
P - S	23%
Q - R	15%
R - S	48%

What is the most likely order of the genes on the chromosome?

A) QRPS
B) PRQS
C) RQPS
D) SQPR

61. Which of the following is a blood vessel that carries blood away from the heart?

A) Vein
B) Artery
C) Capillary
D) Nerve

62. Antibiotic resistance in bacteria occurs:

A) Due to mutations induced by antibiotic
B) Due to spontaneous random mutations irrespective of antibiotic exposure
C) Due to hydrolysis of antibiotic molecules by immune system of the host organism
D) Due to A or C

63. Fungi are plants that lack:

A) Oxygen
B) Carbon dioxide
C) Chlorophyll
D) None of these

64. Which organ of the human body produces the fluid known as bile?

A) Liver
B) Pancreas
C) Gall bladder
D) Kidney

65. What is detergent?

A) A liquid surfactant
B) A liquid soluble
C) A liquid sovent
D) A liquid solution

66. Which acid is present in lemon?

A) Malic acid
B) Citric acid
C) Lactic acid
D) Tartaric acid

67. Which of the following is not a type of elements?

A) Metals
B) Non Metals
C) Metalloids
D) Gases

68. Which of the following gas in the atmosphere is directly responsible for acid rain?

A) Chlorofluorocarbons

B) Methane
C) Ozone
D) Sulphur dioxide

69. The gas utilized to fill up tyres of the aircraft is:

A) Hydrogen
B) Helium
C) Nitrogen
D) Neon

70. *Bombyx mori*, that produces fine filaments of silk inside the cocoon, is a:

A) Butterfly
B) Fruitfly
C) Moth
D) Dragonfly

71. What is NOT an assumption commonly made by the cognitive approach to psychology

A)Answers to basic empirical questions can be given in terms of information processing models
B) That cognitive capacities can be regarded as relatively isolated
C) That cognition can only be understood with reference to stimuli and responses
D) Cognitive psychology tends to focus on the individual rather than on cultural or societal factors

72. Which of the following features of introspective psychology did behaviorism object to?

A) Introspective psychology claimed to be studying behavior.
B) Introspective psychology claimed to be studying "inner" psychological states.
C) Introspective psychology claimed to be able to give a full account of human psychology using only non-psychological terms.
D) Introspective psychology placed great emphasis on evidence and data.

73. What is one major theme in the work of Chomsky, Miller, and Broadbent?

A) Chunking
B) Syntax
C) Information
D) Intelligence

74. What is one crucial idea that came out of applying the Turing machine to human minds?

A) Information processing is algorithmic
B) Mental maps are algorithmic
C) Parallel processing
D) Serial processing

75. What was the model for early cognitive accounts of how information is transformed and transmitted in the human brain?

A) Rats
B) Computers
C) Insects
D) Primates

76. What is anosognosia?

A) An impairment in recognizing object
B) An impairment in recognizing faces
C) An impairment in recognizing other impairments
D) An impairment in learning and remembering new information

77. A double dissociation occurs where:

A) Patient A shows a selective impairment in task A, but preserved performance in task B
B) Patient A shows a selective impairment in task A and a selective impairment in task B
C) Patient A shows a selective impairment in task A and preserved performance in task B, while Patient B shows a selective impairment in task B but preserved performance in task A
D) Patient A and Patient B both show impaired performance on tasks A and B. However, Patient A shows greater difficulty with task A than task B, and Patient B shows greater difficulty with task B than task A.

78. Which of the following is regarded as a well know Gestalt psychologist?

A) Wertheimer
B) Chomsky
C) Skinner
D) Watson

79. What part of the brain has been operated on to produce split-brain syndrome?

A) Corpus callosum
B) The frontal lobes
C) Right temporal pole
D) Parietal cortex

80. According to Coltheart, which of the characteristics of modularity proposed by Fodor is the most crucial?

A) Innate and genetically determined
B) Informational encapsulation
C) Domain specificity
D) Modular processing is fast

81. Which of the following describes a condition known as unilateral neglect?

A) Reporting of blindness in the visual field, despite some spared ability to process information in that part of the visual field.
B) Where an individual cannot distinguish between line drawings of different objects, however they are displayed.
C) Loss of knowledge of certain categories.
D) Patients suffering from unilateral neglect tend to ignore stimuli located on the contralesional side (i.e. the opposite side to the lesion, usually the left).

82. What are participants asked to do in an attentional shadowing task?

A) Listen to two messages simultaneously.
B) Attend to two messages presented in different modalities.
C) Repeat everything that is heard in one ear, following like a shadow close behind a spoken message.
D) Listen to a spoken list of random digits responding only when a particular digit is heard.

83. Damage to one of the parietal lobes can cause …

A) Sensory neglect
B) Blindsight
C) Balint's syndrome
D) Attentional blink

84. Which of the following is NOT a Gestalt law?

A) The law of similarity
B) The law of Pragnanz
C) The law of openness
D) The law of proximity

85. _____scan measures brain activity through injecting a radioactive glucose that allows to observe the brain's functioning.

A) EEG
B) TMS
C) PET
D) CAT

86. At what stage does filtering occur in early selection models of attention?

A) Before perceptual processing
B) After semantic processing
C) Before semantic processing
D) At every stage

87. The dorsal stream in visual processing …

A) Projects to parts of the brain primarily involved in face recognition
B) Projects to parts of the brain involved in line and edge detection
C) Projects to regions of the brain that appear to be involved in the analysis of information involved in the position and movement of objects
D) Projects to regions of the brain that appear to be involved in pattern discrimination and object recognition

88. Who proposed the global workspace theory of consciousness?

A) Baars
B) Dennett
C) Chalmers
D) Churchland

89. Which ERP effect is traditionally linked with expectation violation?

A) N400
B) P300
C) LRP
D) Both a and b.

90. Blindsight is a disorder where:

A) There is an inability to recognize emotional facial expressions
B) There is ability to provide semantic information about an object without being able to name it
C) There is an inability to provide semantic information about an object or to name it
D) There is a somewhat preserved ability to respond appropriately to visual stimuli in the blind region of the visual field despite the patient having no sense of seeing them

91. According to Chalmers the 'hard' problem for consciousness is:

A) Understanding which regions of the brain are associated with consciousness
B) Understanding how information is shared between modular neural and cognitive systems
C) Understanding the interactions between different cognitive systems
D) Understanding how neural or cognitive processes give rise to phenomenal conscious experience

92. Main symptom of Wernicke's aphasia is

A) fluent but meaningless speech
B) Visual deficits
C) Slow memory
D) All of the above

93. Qualia is a term related to

A) consciousness
B) attention
C) memory
D) perception

94. 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

95. What does SOA stand for?

A) Stimulus onset asynchrony
B) Stimulus offset asynchrony
C) Stimulus on acquisition
D) None of the above

96. 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

97. Which of the following techniques has the best temporal resolution in brain imaging?

A) Functional magnetic resonance imaging (fMRI)
B) Single-photon emission computing tomography (SPECT)
C) Positron emission tomography (PET)
D) Electroencephalography (EEG)

98. 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

99. Why is transcranial magnetic stimulation (TMS) not used regularly to study function in the temporal lobe?

A) Because TMS can only penetrate the cortex.
B) Because the temporal lobes are too deep in the brain.
C) Because it is painful.
D) Because TMS causes long-lasting damage to the temporal lobes.

100. In the interpretation of electroencephalography (EEG) or magnetoencephalography (MEG) the inverse problem is also known as:

A) the baseline correction problem.
B) the correspondence problem.
C) the Helmholtz principle.
D) the mapping problem.

University of Hyderabad
Entrance Examinations - 2019

School/Department/Centre: Centre for Neural and Cognitive Sciences, School of Medical Sciences
Course/Subject: MSc Neural and Cognitive Science

Q. No.	Answer	Q. No.	Answer	Q. No.	Answer	Q. No.	Answer
1	A	26	D	51	B	76	C
2	D	27	C	52	A	77	C
3	C	28	A	53	D	78	A
4	D	29	B	54	D	79	A
5	C	30	B	55	C	80	C
6	D	31	D	56	A	81	D
7	B	32	A	57	C	82	C
8	D	33	B	58	B	83	A
9	B	34	A	59	A	84	C
10	C	35	A	60	C	85	C
11	C	36	B	61	B	86	C
12	B	37	A	62	B	87	C
13	B	38	D	63	C	88	A
14	D	39	D	64	A	89	A
15	C	40	A	65	A	90	D
16	C	41	A	66	B	91	D
17	A	42	D	67	D	92	A
18	B	43	C	68	D	93	A
19	A	44	A	69	C	94	D
20	A	45	C	70	C	95	A
21	A	46	A	71	C	96	A
22	C	47	C	72	B	97	D
23	C	48	A	73	C	98	D
24	B	49	B	74	A	99	C
25	A	50	B	75	B	100	C

Signature: