# COGJET (Cognitive Science Joint Entrance Test) – 2022

## Syllabi, references

Part I questions will be approximately at the same level as the CAT (Common Admission Test) for admission to management programs.

The syllabus and some references for items a) and b) in Part II are given below. The resources in the references are indicative. They typically contain much more material than required by the syllabus. Other equally good resources are available in print and digital form and you can use those as well.

a) Elementary mathematics and basics of computation:
Basics of sets, relations, recurrences, simple combinatorial problems.

Matrices and basic matrix algebra; basic geometry.

Calculus: limits, extrema, simple differentiation and integration, integration as area under the curve.

Elementary probability theory, conditional probability, Bayes theorem, random variables, simple discrete and continuous distributions, expectation, mean, variance, median, percentiles.

Elementary Boolean algebra, number representation and conversion.

Programming: variables, types, declarations, assignment, conditionals, iteration, recursion, functions. (Familiarity with programming and pseudo code is needed but specific programming language questions will not be asked.)

Elementary data structures (arrays).

Basic algorithms like searching, sorting, HCF, LCM, prime finding and similar number based algorithms.

b) Elementary psychology and basics of hypothesis testing:
Basic neuroanatomy: Major divisions of the brain: cortical and subcortical structures, orientation and planes of section, peripheral nervous system

Basic neurophysiology: Structure of a neuron and types of glial cells, action potentials, synapses, synaptic transmission

Basic neuroscience: Function of different regions of the brain, reflex arc, receptors

Psychophysics: absolute and difference thresholds, Weber's law, Fechner's Law.

Reaction time measurement

Learning: Associative and non-associative learning, Pavlovian conditioning, Hebbian learning.

Memory: modal model of memory, working memory, types of memory (explicit, implicit), memory

Visual perception: basics of colour, depth and motion perception, principles of perceptual organization.

Basics of hypothesis testing (e.g. t-test, chi-square, ANOVA), significance, p-value, error types, power and size effects; normal probability curve.
Data interpretation, Reading and interpreting basic graphs

References:

*For mathematics, any class 12 mathematics book used by CBSE.*
*For basics of computation, any class 11 and 12 book used by CBSE. No specific programming language is needed.*
*Clifford Morgan, Richard King, (2017) Introduction to Psychology. 7th Edition. McGraw Hill.*
*Charles Stangor, (2010). MIT – Introduction to Psychology (Open Source – free to download on the internet)*
*David G. Myers, 2017. Psychology. Macmillan Indian Edition.*
*B H Cohen, (2014) Explaining Psychological Statistics. 4th Ed. John Wiley & Sons.*
*S K Mangal, (2004) Statistics in Psychology and Education. 2nd Ed. Prentice Hall India.*
Solso, R. L., Maclin, K. M., & Maclin, O. H. (2005). Cognitive Psychology. NY: Pearson
Longstaff, A. (2002). Neuroscience. New Delhi: Viva Books Private Limited.