

COGJET (Cognitive Science Joint Entrance Test) – 2019

Introduction

COGJET is a joint entrance test for admission into post-graduate programs in cognitive science at IIT Kanpur (MS and Ph.D) and Centre for Behavioural and Cognitive Sciences (CBCS), University of Allahabad (M.Sc). Other cognitive science post-graduate programs in the country may use the test for admission into their programs.

COGJET is an enabling test and will be necessary for admission into the above mentioned programs at IIT Kanpur and CBCS. However, each institution may have other additional eligibility requirements for admission. The details of the full admission procedure and how COGJET will be used will be available on the websites of the respective institutions.

While no educational qualifications are laid down to appear for the COGJET admission test please see the other admission requirements of the respective institutions (see their websites) to determine whether you will be eligible for admission. Currently, admission at both institutions requires at least a Bachelor's degree.

Test Details

Test date: Sat. 16th February 2019, 10.00-13.00.

Test fee: Rs.500/- for SC/ST, OBC (Non-creamy layer), female, PwD; Rs.750/- for all others. The test fee is non-refundable.

Test venues (tentative): New Delhi, Mumbai, Kolkata, Chennai, Hyderabad, Bengaluru, Guwahati, Gandhinagar, Jaipur, Kanpur, Allahabad.

Test structure: The test will be a multiple choice test with a duration of 3 hours. The test will contain two parts. Part I will be a multiple choice aptitude test containing questions that test quantitative ability (approximately class 10 level), reasoning ability, data interpretation and reading comprehension. Part II will contain multiple choice questions based on a) elementary mathematics and basics of computation and b) elementary psychology and basics of hypothesis testing. Parts I and II will have equal number of questions and it is expected that a candidate will spend roughly equal time on parts I and II. Both parts will have negative marking. Syllabi and references for Part II are given below.

For each candidate separate scores will be reported for Part I, Part II a) and Part II b). The policies used by each institute for shortlisting or admitting candidates will be announced on the websites of each institution participating in COGJET-2019.

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.

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. Physical layout of the brain, names of important components and their functions, e.g. cortex, cerebellum, brainstem etc.

What is a neuron? Structure, components, action potentials, synapses etc.

What is the nervous system? Nerves, receptors, connectivity, speed, structure etc.

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

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

Memory: modal model of memory, working memory, phonological loop, visuo-spatial sketchpad, central executive), types of memory (explicit, implicit), memory inhibition effects, e.g. blocking, interference etc. Long-term memory: encoding, retrieval, forgetting.

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

Basics of hypothesis testing (e.g. t-test, chi-square, ANOVA), significance, p-value, error types, power and size effects.

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.