# Digital University Kerala Admission Test (DUAT) -2022

**Date**:5th June 2022, 10.00 AM

Section A is mandatory for all the candidates. For Section B, the candidates need to choose one of the program specific specialization tests that is of their first choice.

| Section A (60 minutes) | | |
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| **DUAT Common** | **Marks** | **Syllabus** |
| General Aptitude (15-20 questions)<br><br>- 20 minutes | 20 | **Verbal Aptitude** – Basic English grammar: tenses, articles, adjectives, prepositions, conjunctions, verb-noun agreement, and other parts of speech Basic vocabulary: words, idioms, and phrases in context. Narrative sequencing.<br><br>**Quantitative Aptitude –** Data interpretation: data graphs (bar graphs, pie charts, and other graphs representing data), 2- and 3-dimensional plots, maps, and tables Numerical computation and estimation: ratios, percentages, powers, exponents and logarithms, permutations and combinations, summations and series, Mensuration and geometry Elementary statistics and probability.<br><br>**Analytical Aptitude** – Logic: deduction and induction, Analogy, Numerical relations, and reasoning.<br><br>**Spatial Aptitude –** Transformation of shapes: translation, rotation, scaling, mirroring, assembling, and grouping. Paper folding, cutting, and patterns in 2 and 3 dimensions |

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| Mathematics (10-20 questions)<br>- 20 minutes<br>**(Level of questions will be of BSc/B.Tech/BE degree)** | 20 | Probability, Statistics, Calculus (Derivatives, Integrals, Application of derivatives and integrals, Partial derivatives), Discrete Mathematics, basic number theory, Algebra |
| English Reading comprehension (10-20 questions)<br><br>- 20 minutes | 20 | Two paragraphs each having 5-10 questions. |

| **Section B (60 minutes)** | | |
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| **Program specific test** | **Marks** | **Syllabus** |
| DUAT **MSc Computer Science**<br>(20 questions)<br>**(Level of questions - BSc Computer Science degree)** | 40 | Computer Fundamentals, Computer Organization and Architecture, Computer Networks, Operating System, Design and Analysis of Algorithms, Introduction to Programming (Data Types, Expressions and Assignment Statements, Control Structures, Sub programs, Basic concepts in Object Oriented Programming), Cyber Security, Artificial Intelligence, Graph Theory |

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| DUAT **MSc Ecology**<br>(20 questions)<br><br>**Level of questions - B.Sc degree.** | 40 | **Plant Science**–Taxonomy, systematics, Origin and evolution of life, microbiology, mycology, lichenology, plant pathology, phycology, bryology, pteridology, gymnosperms, palaeobotany, anatomy, morphology, reproductive botany, economic botany, phytogeography, micro technique, plant tissue culture, palynology, genetics, cell and molecular biology<br><br>**Environmental Chemistry** – Green chemistry – fundamentals, Atmospheric chemistry, ozone depletion, Greenhouse effect, Air, water and soil pollution, effects of pollutants, water treatment, Treatment of Pollutants and Wastes, Biogeochemical cycles, aliphatic and aromatic compounds, synthesis of xenobiotic compounds like pesticides and dyes, synthetic polymers, ecotoxicology, pesticides etc., interaction of toxicants with environment, environmental policy & agreements.<br><br>**Zoology** – Chordata & Non- Chordata, taxonomy, systematics, cell biology, genetics, molecular biology, biotechnology, environmental biology, ethology, evolution, zoogeography, physiology, developmental biology, embryology, endocrinology, biochemistry, biophysics, biometry.<br><br>**Physics** – Matrices, vector calculus, Newton's laws, conservation of energy and momentum, central force problem, fluid dynamics, special relativity, electrostatics and magnetostatics, Faraday's law, Maxwell's equations, e-m waves, reflection, refraction, diffraction, interference, uncertainty principle, Hermitian operators, |

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| | | Fundamentals of thermodynamics, black body radiation, electronics - fundamentals, computational physics- fundamentals, atmospheric physics - fundamentals. | |
| DUAT **MSc Electronics** (20 questions) **Level of questions- BSc electronics)** | 40 | Analog circuits, digital circuits, digital signal processing, circuit theory, signal processing, semiconductors | |
| DUAT **MSc Data Analytics**<br><br>(10 questions) Computer Science of +2 level and (30 questions) from **chosen specialization** | 40 | **Computer Science**- Common to all three specializations (Bio AI, Computational Science, Geo-informatics)- 10 marks | Data Structures: Stack & Queue, Introduction to computer networks, Database Management Systems – Basics, Overview of Operating Systems, functionalities and characteristics of OS. Hardware concepts related to OS, CPU states, I/O channels, Algorithm analysis - Fundamentals |
| | | **Bio AI** - BSc level- 30 marks | Molecular Biology, Cell Biology, Genetics, Biotechnology, Biochemistry |
| | | **Computational Science**- 30 marks | Thermodynamics, Classical and quantum mechanics, Electricity, magnetism and EM theory, Nuclear Physics, Fluid Mechanics, Ordinary Differential Equations, Partial derivatives, Numerical solutions to differential equations |

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| | | **Geoinformatics**- BSc level- 30 marks | Statistical Methods in Earth Science, Cartographic Techniques, Components of GIS, Map projections, Spatial and non-spatial data, Data model and input, data analysis and output, Introduction to Remote Sensing, Basics of Global Navigation Satellite Systems, and Quantitative Methods |
| DUAT **MTech CSE** (40 questions) **(Level of questions: GATE CS & IT)** | 60 | Digital Logic, Computer Organization and Architecture, Programming Languages, Data Structures and Algorithms, System Software, Databases, Computer Networks, Cybersecurity, Artificial Intelligence | |
| DUAT **MTech EE** (40 questions) **Level of questions- GATE)** | 60 | Analog circuits, digital circuits, digital signal processing, circuit theory, signal processing | |