Санкт-Петербургский филиал Федерального государственного автономного образовательного учреждения высшего образования «Национальный исследовательский университет “Высшая школа экономики”»

Факультет Санкт-Петербургская школа экономики и менеджмента

Программа вступительного экзамена для направления 38.04.08 «Финансы и кредит» подготовки магистров Образовательная программа «Финансы» Язык проведения экзамена - английский

Авторы программы:
Рогова Е.М., д.э.н., профессор, департамент финансов, erogova@hse.ru
Леевик Ю.С., к.э.н., доцент, департамент финансов, yuleevik@hse.ru
Макарова В.А., к.э.н., доцент, департамент финансов, vmakarova@hse.ru

Утверждена Академическим советом магистерской программы «Финансы», протокол 2/201819 от 05.10.2019
Председатель
Рогова Е.М. _____ «___» _____ 2019 г.

Санкт-Петербург 2019

1. General information

1.1. The admission exam has the form of a written test with the duration of 90 minutes

1.2. This admission exam evaluates verbal, mathematical, logical and analytical skills and abilities that are necessary for applicants to complete successfully their master's studies in Master in Finance programme.

1.3. The structure of the exam: the exam consists of 2 parts: the Quantitative session (20 assignments) and the Verbal session (20 assignments). Each assignment has 5 choices, and the applicant should choose one correct answer. The Quantitative session estimates basic math and analysis skills, ability to solve quantitative problems and to work with graphical information. The Verbal Section evaluates the skills in comprehension of the text the applicant has read; evaluation of the reasoning quality; ability to see mistakes in a sentence that do not correspond to the accepted standards of the official register of written Business English.

1.4. Each correct assignment is graded with 2.5 points. Thus, the total number of points that an applicant can obtain, equals to 100.

2. Main topics

2.1. Quantitative section

2.1.1. Quantitative section contains 25 assignments of two types:

Data Sufficiency

Problem Solving

Problem solving assignments require to solve a problem and to choose one correct answer from five options.

Data sufficiency questions consist of assignment formulation and two statements marked (1) and (2). The applicant must decide if the given information is sufficient to answer the question. The applicant must choose between the following answers:

- if you can get the answer from (1) ALONE but not from (2) alone;
- if you can get the answer from (2) ALONE but not from (1) alone;
- if you can get the answer from BOTH(1) and (2) TOGETHER, but not from (1) alone or (2) alone;
- if EITHER statement (1) ALONE OR statement (2) ALONE suffices;
- if you CANNOT get the answer from statements (1) and (2) TOGETHER, but need even more data.

2.1.2. Basic terms

2.1.2.1. Natural numbers. Divisibility. Prime numbers and composite numbers. Greatest common divisor and lowest common multiple. Integer, rational and real numbers. Percent. Absolute value, power, root, arithmetical root, logarithm.

2.1.2.2. Numerical and algebraic expressions. Equalities and identities. Function, domain and codomain. Increase, decrease, periodicity, evenness, oddness of function. Max and min value of function. Function graph. Linear, quadratic, power, exponential and logarithmic function. equation, inequalities, combined equations. Solution of equation, inequality and combined equations. equivalence. Arithmetic and geometric series.

2.1.2.3. Line on plane. Segment, broken line, angle. Triangle. Median, bisector, altitude. Convex Polygon. Square, rectangle, parallelogram, rhomb, trapezium. Regular polygon. Diagonal. Circumference and circle. Radius, chord, diameter, tangent, secant. Arc of circle and circular sector . Central and inscribed angle.

2.1.2.4. Logic. Necessary and sufficient condition.

2.1.3. Theoretical part

2.1.3.1. Arithmetic and algebra

Sets – basic terms. Set operation. A Venn diagram.

Number axis. Positive, negative numbers. Absolute value and its geometric sense.

Natural numbers (N). Prime and composite number. Divisor, multiple. Greatest common divisor and lowest common multiple.

Criterion for divisibility for 2, 3, 5, 9, 10. Division with a remainder Integer numbers (Z). rational quantities (Q), addition, subtraction, multiplication and division.

Proportions.

Decimal and ordinary fraction, its transformation one to the other. Round-up with prescribed accuracy.

Power with natural, integer and rational value. Arithmetical root. Operations with powers.

Percent calculation. Bank interest, compound interest.

Function. Function assignment (table, graph). Function increasing and decreasing.

Polynomial with one variable. Root of polynomial. Properties and graph of quadratic polynomial. Formula for quadratic polynomial roots. Vieta's theorem.

Numerical expression. Expression with variables. Algebraic manipulation, formulas for short multiplication.

Equation. The root of an equation. Equivalent equations.

Two combined linear equations with two variables and it properties. Inequalities. Properties of numerical inequalities. Solving inequality with a variable. Equivalent inequalities.

Arithmetic and geometric series.

The method of coordinates on a plane (foundations).

2.1.3.2. Combinatorial calculus, probability theory and statistics.

Permutations, arrangements, combinations.

Arithmetic mean, median, mode.

Standard deviation.

2.1.3.3. Geometry

Line, ray, segment, broken line; segment length. Angle, the measure of angle. Vertical and contiguous angles. Parallel lines, angles with parallel lines.

Triangle. Median, bisector, altitude. Criteria for equivalence of triangles. The interior angles of a triangle and it sum. Types of Triangles. Properties of isosceles and equilateral triangles.

Right-angled triangle. Pythagorean theorem, numerical right triangle. Quadrangle: parallelogram, rectangle, rhomb, square, trapezium. Circumference and circle. center of circle chord, diameter, radius. Tangent to circle.

Circuit.

Arc of circle, arc distance. Sector, segment. Central and inscribed angle, their properties. Regular polygon

Area of triangle, parallelogram, rectangle, trapezium.

Similarity. Criteria for similarity of triangles. Relations between linear elements and areas of similar triangles.

Formula for surface area and volume of prism.

Formula for surface area and volume of pyramid.

Formula for surface area and volume of cylinder.

Formula for surface area and volume of cone.

Formula for volume of sphere

2.1.3.4. Logic

Necessary and sufficient condition.

2.2. Verbal section

2.2.1. The verbal session contains 16 assignments of three types:

Reading comprehension (evaluates the understanding of the text the applicant has read)

Critical reasoning (evaluates the quality of reasoning provided by the applicant)

Sentence correction (evaluates the ability to correct mistakes according to the standards of written English).

2.2.2. Reading Comprehension questions

2.2.2.1. A reading comprehension assignment includes a text and questions concerning the right interpretation of the text.

2.2.2.2. Basic terms.

Types of questions: main idea question, supporting idea question, inference type question.

Reading strategies: detailed reading and skimming.

Text structure: paragraph structure.

2.2.3. Critical reasoning assignments

2.2.3.1. A critical reasoning assignment includes a judgment, a question and five answer choices.

2.2.3.2. Basic terms.

Reasoning logic analysis: proofs, conclusion, assumption.

The skill of making logical conclusion of what you have read and understanding what the statement is based on.

Methods of forward and backward reasoning. Induction. Comparison and analogy. Cause-and-effect relationship. Deduction.

Search for additional validation and contradiction.

2.2.4. Sentence correction questions

2.2.4.1. In a sentence correction assignment the applicant must choose one of the five suggested answers expressing the initial sentence idea best.

2.2.4.2. Basic terms

Tenses.
Subject/predicate coordination.
Adverbial phrases.
Pronoun.
Comparative structures.
Parallel structures.
Prepositions and idioms.

3. Recommended Literature

Main literature:

1. Graduate Management Admission Council (GMAC). The Official Guide for GMAT Review 2016. (2015). Hoboken, New Jersey: John Wiley & Sons, Inc.

2. GMAT Prep Plus 2020: 6 Practice Tests + Proven Strategies + Online + Mobile (Kaplan Test Prep) (2019). Kaplan Publishing, Inc.

3. Hasik J., Rudnick S., Hackney R. (2012). McGraw-Hill's GMAT 2013: 10 Practice Tests. McGraw-Hill.