

Exam questions on discipline: Introduction to the theory of supersymmetry
Part (Блок) № 1

1. Formulation of scattering theory in terms of representation theory
2. Type of scattering matrix
3. The discrete spectrum
4. The virial theorem
5. Same particles
6. Statistical physics
7. S-matrix
8. Continuous spectrum
9. The scattering operator in the continuous case
10. Representation theory
11. Analytic properties of the wave function
12. Spectral theory
13. The Green's function
14. Perturbation theory
15. Applications of spectral theory

Part (Блок) №2

1. Operator algebra.
2. The time Green's function
3. Translational representation for the solution of the wave equation in free space
4. The wave function in the semiclassical approximation
5. Translational representation for the solution of the wave equation in free space
6. Quantum oscillator under the influence of an external force
7. Parametric excitation of a quantum oscillator
8. The scattering matrix
9. Heisenberg representation
10. Canonical transformations
11. Generalization of the normalization
12. Quantum oscillator under the influence of an external force
13. Perturbation theory for quasistationary states
14. Wave function of a multichannel system
15. The motion of two particles in an external potential field

Part (Блок) №3

1. Section. Unitarity of the S matrix
2. Symmetry of the S matrix
3. S matrix and its relation to the R-matrix
4. Threshold phenomena.
5. Energy dependence of the scattering cross section near the threshold of reactions.
6. Generalization to the case of particles with spin
7. The Faddeev equations
8. General formulas for scattering cross sections
9. The motion of two particles in an external potential field
10. The formula for determining the amplitudes of various processes
11. Asymptotics of the wave function at large distances

12. Theory of weak interactions
13. Reactions with neutrino emission
14. Quasienergy of a system subjected to periodic action
15. Multiplication in the case of several channels