

Exam questions on discipline: Introduction to the theory of supersymmetry

Part № 1

1. Continuous integrals and point particles.
2. Historical review of the gauge theory
3. Secondary quantization
4. Harmonic oscillators
5. Nambu-Goto Strings
6. Boson strings
7. From the path integral to the operators
8. Superstrings
9. Two-dimensional supersymmetry
10. Trees
11. Local two-dimensional supersymmetry
12. Quantization of the Green-Schwarz action in cone variables
13. Conformal field theory and the Kac-Moody algebra
14. Conformal field theory
15. Superconforming perfumes

Part №2

16. Spinors and trees.
17. Multi-loop amplitudes and Teichmüller spaces.
18. Harmonic oscillators
19. Multiple loop amplitudes
20. Field theory in the calibration of the light cone.
21. Derivation of the field theory of point particles.
22. The use of biofuels for energy purposes.
23. Thermochemical processes.
24. Reflection and refraction of light at the interface between air and the conductive medium.
25. Photovoltaic effects in thin and thick p-n junction.
26. Physical features of the contacts metal - semiconductor and heterojunction.
27. Direct conversion of heat energy.
28. Using the energy of ocean currents.
29. Types of power plants based on the use of ocean currents.
30. Power of the tidal currents and tidal water rise.
31. The first law of thermodynamics (the law of conservation of energy for thermal processes)
32. Isobaric process: the internal energy and the work of the commission.

Part №3

33. Surface wave energy converters .
34. Tidal energy converters upgrades of water.
35. Heat high thermal water.
36. Features of use of highly mineralized water sources.
37. Thermal regime of the Earth's crust.
38. Energy use of air masses , map and strength of the winds in different regions of the globe
39. Loss of wind turbines . The theory of the real wind turbine .
40. The classical theory of an ideal wind turbine .
41. Classification of wind turbines on the principle of operation.
42. Classification of heat accumulators . Pumping and heat exchange environment.

43. Solar collectors.
44. Concentrating solar collector.
45. Structures and materials of solar cells.
46. The problem of the interaction energy and the environment.
47. Environmental Effects of Tidal Energy.
48. Adiabatic process in gases.
49. Efficiency of the heat engine.

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