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तमसो मा ज्योतिर्गमय

DAV College Trust & Management Society, New Delhi's  
**D.B.F. DAYANAND COLLEGE OF ARTS & SCIENCE,  
SOLAPUR**



Raviwar Peth, Solapur - 413 002. Tel. 0217-2323193 [www.dayanandsolapur.org](http://www.dayanandsolapur.org)

- ◆ NAAC reaccredited 'A' grade ◆ UGC awarded College with Potential for Excellence (CPE 2<sup>nd</sup> Phase)
- ◆ ISO 9001 : 2015 ◆ Best College Award -2016-17 by Solapur University, Solapur.

# Dayanand Science Olympiad

## DSO-2019

(वर्ष २ रे)

### Objectives of Dayanand Science Olympiad

- ▼ To create awareness of IIT-JAM, IISER, M.Sc., SET /NET, TIFR, IISc, Gate etc. entrance/competitive examinations.
- ▼ To help students in preparation for such entrance/competitive examinations.

**Subjects :** Physics, Chemistry, Mathematics & Life Sciences

**Eligibility :** XII Science, B.Sc. I / II / III & M.Sc. I / II students

**Syllabus :** For syllabus of each subject visit [www.dayanandsolapur.org](http://www.dayanandsolapur.org)

**Nature of Examination :**

- For Physics, Chemistry & Life Sciences - 100 Multiple choice questions of 100 marks & 2 hrs. duration.
- For Mathematics - 50 Multiple choice questions of 100 marks & 2 hrs. duration.

#### Examination date & time :

**Date - 20/01/2019 (Sunday)**

Physics (10.30 am to 12.30 pm)

Life Sciences (1.30 pm to 3.30 pm)

**Date - 27/01/2019 (Sunday)**

Chemistry (10.30 am to 12.30 pm)

Mathematics (1.30 pm to 3.30 pm)

**Examination Center :** D.B.F. Dayanand College of Arts & Science, Solapur.

**Examination fees :** Rs. 100/- per subject

(Student may appear for more than one subject by paying fees per subject)

**Application From & Payment of fees :** For Online : Visit [www.dayanandsolapur.org](http://www.dayanandsolapur.org)  
For Offline : Visit respective Departments,  
For Payment : Account office, Dayanand College

**Last date of submission of application form :** 15<sup>th</sup> Jan. 2019 (Tuesday)

**Awards & Certificates :** For 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> in each subject **Book prizes & Certificates**

For more details visit [www.dayanandsolapur.org](http://www.dayanandsolapur.org)

### Contact

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## Syllabus of DSO 2019

### Physics

- Kinematics, Laws of Motion, Work, Energy and Power, Motion of System of Particles, Gravitation, Properties of Bulk Matter
- Oscillation & Waves
- Electrostatics, Current Electricity, Magnetic Effect of Current & Magnetism, Electromagnetic Induction & Alternating Current, Electromagnetic Waves
- Optics
- Thermodynamics, Kinetic Theory of Gases
- Modern Physics
- Nuclear Physics
- Electronic Devices & its applications

## Chemistry

- Solid State
- Solutions
- Electrochemistry
- Chemical Kinetics
- Surface Chemistry
- Isolation of Elements
- p-Block Elements
- d- and f-Block Elements
- Coordination Compounds
- Haloalkanes and Haloarenes
- Alcohols, Phenols and Ethers
- Aldehydes, Ketones and Carboxylic Acids
- Organic Compounds containing Nitrogen
- Biomolecules
- Polymers
- Chemistry in Everyday Life
- Thermodynamics
- IUPAC Nomenclature

## Mathematics

1. Sets and functions
  - Representation of sets
  - Set-builder form, ruled form
  - Functions and their sets
2. Relations and Functions
  - Definition, type of relation
  - Algebraic Operations on Functions
  - Image of sets under functions
3. Algebra: Matrices, Determinants
  - Types of Matrices
  - Determinants and their properties
  - Rank of the Matrix
  - Homogenous and non-homogenous system of linear equation
4. Calculus
  - Continuity and Differentiability,
  - Applications of Derivatives,
  - Integrals and their Applications
  - Area under the curve and area between two curves
5. Differential Equations
  - Types, Solutions and applications
6. Vectors
  - Definition, Scalar and Vector Products, Scalar triple Products
  - Applications, co-planar vectors
7. Probability
  - Introduction
  - Permutation and combination
  - Examples
8. 3-Dimensional Geometry
  - Equation of line, sphere and plane

Different forms of equations for plane and sphere

## Life Sciences

1. **Biochemistry:** Structure of atoms, molecules and chemical bonds, nucleic acids, Amino acids, proteins, carbohydrates, lipids, vitamins and their biosynthesis, enzymes and co-enzymes.
2. **Cell Biology:** Cell Cycle and Cell division, cell organelles

3. **Molecular Biology:** Replication, transcription, translation, genetic code, molecular markers and reporters, mutation
4. **Plant physiology:** Phytohormonas, respiration, photosynthesis, photoperiodism, ABC model, Vernalization, Stress Pschylogy, Nitrogen Metabolism, Transpiration, Water relation.
5. **Animal physiology:** Circulatory System, Digestive system, Endocrine system, reproductive system, Nervous system.
6. **Genetics and Evolution:** Principles of Inheritance and Variation, Molecular Basis of Inheritance, Evolution
7. **Ecology and Environment :** Organisms and Populations, Ecosystem, Biodiversity and its Conservation, Environmental Issues
8. **Immunology:** Antigen, Antibody, Immunoglobulins, Primary & Secondary Immune respond, Humoral and cell mediated immunity.
9. **Development Biology**
10. **Reproduction:** Reproduction in Organisms, Sexual Reproduction in Flowering Plants, Human Reproduction, Reproductive Health
11. **Cell Signaling:**
12. **Biology and Human Welfare:** Human Health and Diseases, Strategies for Enhancement in Food Production, Microbes in Human Welfare
13. **Biosystematics**
14. **Biotechnology and its Applications:** Biotechnology - Principles and Processes, Biotechnology and its Application
15. **Bioinformatics:** BLAST, PDB, Gene Banking
16. **Applied Biology:** Chromatography (paper, TCL, HPLC & gas chroma), PCR, Electrophoresis, Blotting technique, DNA finger printing, ELISA.