



केन्द्रीय माध्यमिक शिक्षा बोर्ड



(मानव संसाधन विकास मंत्रालय, भारत सरकार, के अधीन एक स्वायत्त संगठन)

शिक्षा सदन, 17, इन्स्टिट्यूशनल क्षेत्र, राउज एवेन्यु, दिल्ली-110002.

CENTRAL BOARD OF SECONDARY EDUCATION

(An Autonomous Organization under the Union Ministry of Human Resource Development, Govt. of India)
"Shiksha Sadan", 17, Institutional Area, Rouse Avenue, Delhi-110002

CBSE/Sc.Exh/EO(KV)/2013

13.05.2013

Notification

Subject: Organisation of CBSE Science Exhibition-2013

Dear Principal

The Central Board of Secondary Education has been taking many initiatives to provide interactive, participatory, hands-on, innovative and creative learning experiences to students studying in its affiliated schools. One such initiative refers to the organisation of Science Exhibitions at Regional and National levels every year. The activity aims at providing a common platform to schools, teachers and students to give shape to their innovate ideas and learn from each other's experiences. These exhibitions also intend to provide a medium for popularising Science and increase awareness among the stakeholders about close relationship between Science, Technology and Society. The main objectives of organising Science exhibitions can be summarised as:

- promoting interest in Science and Technology among younger generation.
- encouraging scientific and technological creativity among students and inculcating a sense of pride in their talent.
- providing exploratory experiences, encouraging creative thinking and promoting psychomotor skills among school students through self designed models or simple apparatus.
- encouraging problem solving approach and developing appropriate technologies, especially for rural areas and integrating scientific ideas with daily life situations.
- popularising Science and technology among masses and creating an awareness regarding its impact on socio-economic and sustainable development of the country.

Taking into consideration the enthusiastic response from participating schools in the past, it has again been decided to organise Science exhibitions for the year 2013. These exhibitions are likely to be organised in different parts of the country at Regional level in the month of July/August and at National Level in the month of September/October, 2013.

The main theme and sub-themes for this year's exhibition are:

Main Theme: Science and Society

Sub-themes: The six sub-themes are:

- **Industry**
- **Natural resources and their Conservation**
- **Transport and Communication**
- **Information and Education Technology**
- **Community Health and Environment and**
- **Mathematical Modelling.**

Key aspects of the exhibition

How to register:

- (i) Every participating school will pay a participation fee of Rs.500/- in the form of a demand draft **in favour of Regional Officer, CBSE** payable at respective regional office city.
- (ii) The request for participation alongwith the enclosed registration form and fee is to be sent directly to the **Respective Regional Officer and not to Headquarters Delhi.**
- (iii) The schools in Delhi region may send it to the Regional officer, Central Board of Secondary Education, PS-1-2, Insitutional Area, I.P. Extension, Patparganj, Delhi-110 092
- (iv) The last date for registration for participation in the **event is June 15,2013.**

Rules for Participation:

- (v) The participating school can put up a maximum of two exhibits/projects/models.
- (vi) A school team may be represented by a maximum of two students per exhibit and one escort Science Teacher.
- (vii) School team participating at regional level and National level must remain the same.
- (viii) The exhibit/project displayed and selected at regional level should be based on theme and sub theme selected.
- (ix) Schools may rework on exhibit / project shortlisted at regional level for its display at national level. However they are not allowed to change the theme or sub theme of the selected / shortlisted exhibit.
- (x) The participating school/team will have to bear **all expenses** related to participation in the event.
- (xi) The participating teams will have to make **their own lodging/boarding arrangements** at the venue city of exhibition.

How to prepare Models/ Projects:

- (xii) The exhibit/model may be either
 - (a) A working model
 - (b) An investigation-based project
- (xiii) The exhibit/project may include
 - working model to explain a concept, principle or a process
 - an indigenous design of a machine/device

- an innovative/inexpensive design or technique
 - application of basic principles of Science/Technology
 - Scheme/design of a device or machine to reduce production cost
 - Investigation based study
- (xiv) Greater emphasis may be given to investigation-based innovative projects to kindle scientific method and scientific approach in the students.
- (xv) A brief write-up about the main-theme and sub-themes is enclosed for reference. The participating teams may prepare the exhibits/projects on any one of the sub-themes satisfying one or more of the stated parameters.
- (xvi) It is mandatory to submit a neatly typed brief write up (approximately 100 words) about the exhibit at regional as well as national level at the time of registration.
- (xvii) The exhibits/projects will be **assessed** by the experts as per the following **criteria**:
- | | |
|--|-----|
| a. Students' own creativity and imagination | 20% |
| b. Originality and innovativeness in design of the exhibit/project | 15% |
| c. Scientific thought/principle | 15% |
| d. Technical skill/workmanship/craftsmanship | 15% |
| e. Utility/educational value | 15% |
| f. Economic aspect, portability, durability | 10% |
| g. Presentation -Explanation and demonstration | 10% |

General Guidelines:

- (xviii) The first stage of exhibition will be held at two/three different venues in every region.
- (xix) The selected **best fifteen** exhibits/ schools at every regional level venue will be **eligible to participate** in the **National level exhibition**.
- (xx) The actual dates for the regional level exhibition will be communicated through the Regional officers to every school as well as through CBSE website www.cbse.nic.in by July 15,2013.
- (xxi) Attractive awards/cash prizes are given to exhibits/students who present the best twenty models at the national level.

The above information may be brought to the notice of all concerned, particularly the science faculty in the school and the students. The request for participation alongwith the enclosed registration form, registration fee and other details may be sent to **respective Regional Officer** before due date. For any other information in this regard, you may contact **Ms. Kshipra Verma, Education Officer, at 2013.scienceexhibition@gmail.com**.

You may also send any specific suggestions or observations in this regard to the undersigned at the above e-mail address.

Thanking you,

Yours sincerely,

Sd/-

(DR. SADHANA PARASHAR)
DIRECTOR (ART & I)

Copy to below mentioned respective Heads of Directorates/KVS/NVS/CTSA with a request to disseminate the information to all concerned schools under their jurisdiction:

1. The Commissioner, Kendriya Vidyalaya Sangathan, 18-Institutional Area, Shaheed Jeet Singh Marg, New Delhi-110 016.
2. The Commissioner, Navodaya Vidyalaya Samiti, A-28, Kailash Colony, New Delhi.
3. The Director of Education, Directorate of Education, Govt. of NCT of Delhi, Old Secretariat, Delhi-110 054.
4. The Director of Public Instructions (Schools), Union Territory Secretariat, Sector 9, Chandigarh-160 017.
5. The Director of Education, Govt. of Sikkim, Gangtok, Sikkim – 737 101.
6. The Director of School Education, Govt. of Arunachal Pradesh, Itanagar-791 111.
7. The Director of Education, Govt. of A&N Islands, Port Blair-744 101.
8. The Secretary, Central Tibetan School Administration, ESS ESS Plaza, Community Centre, Sector 3, Rohini, Delhi-110 085.
9. All the Regional Officers of CBSE with the request to send this circular to all the Heads of the affiliated schools of the Board in their respective regions.
10. The Education Officers/AEOs of the Academic Branch, CBSE.
11. The Joint Secretary (IT) with the request to put this circular on the CBSE website.
12. The Library and Information Officer, CBSE.
13. EO to Chairman, CBSE.
14. PA to Controller of Examinations, CBSE, Delhi.
15. PA to Secretary, CBSE.
16. PA to Director (Training) CBSE.
17. PA to Director (Acad.) CBSE.
18. PA to Director (Spl. Exams.), CBSE, Delhi.
19. PRO, CBSE

Sd/-

(DR. SADHANA PARASHAR)
DIRECTOR (ART & I)

CBSE SCIENCE EXHIBITION 2013

Guidelines for preparation of Exhibits and Models

Given below are number of ideas for designing the exhibits on different sub-themes in the context of the main theme. However, these ideas are only suggestive in nature. Participants are free to design exhibits based on other related ideas on the given sub-theme.

Sub Theme-1

INDUSTRY

India has abundant natural resources and its economy depends largely on the proper utilisation of the resources. The industrial development of India over the past six decades of planned progress is indeed spectacular. The country is now, more or less, self-sufficient in the production of consumer goods and some basic items like iron, steel, and aluminium. Service industries like tourism and banking are also growing. Power generation has been substantially stepped-up to fuel a variety of industries and infrastructure adequately built-up for the future progress. The potential for generating hydroelectric power in north-eastern part of the country has not developed because the region falls within a major earthquake zone. Among India's major large scale industries are: Cotton and silk textile industry; iron and steel industry; jute; sugar; cement; aluminium; electronics; jewellery; heavy machines and electrical equipment; light engineering; glass; leather goods; paper, chemicals and fertilisers; pharmaceuticals; handicrafts etc. The knowledge based information technology industry is one of the most promising sectors in India.

The exhibits / models in this sub-theme may include:

- models of improved versions of various types of machines and manufacturing plants;
- scheme / designs to help reduce production cost and conservation of raw materials;
- design and development of an automatic weather recording device;
- use of innovations / improvements that may help in increasing production in various industries, such as textiles, engineering goods, machine tools, chemicals, drugs and pharmaceuticals including life-saving drugs, vaccines and devices and eco-friendly plastics etc. to improve the quality of life;
- improved/indigenous design / working models of devices which may be used on small scale for production / manufacture of utility items of daily life;
- schemes / designs to help reduce production cost and conservation of raw materials;
- improved / improvised / innovative technologies associated with weaving, pottery, metal work, dyeing, printing and other crafts practiced in cottage industry and suggestions for new designs;
- working models to demonstrate equipment / processes / devices / technologies / designs, which may help facilitate the domestic work;
- working models of devices / equipment to demonstrate the control and measurement of noise, air, water and soil pollution arising due to industrial development and suggestions for treatment of industrial wastes, specially toxic, so that we may live in a clean environment.
- working models to show efficient disposal of harmful effluents from industries. Also, suggestions for safe disposal of radioactive waste and ways and means to dispose off non-biodegradable waste from kitchens of hotels and restaurants and also disposal of wastes from hospitals etc.

Sub Theme-2

Natural Resources and their Conservations

Earth natural resources are finite. It means that if we use them continuously we will eventually exhaust them. Conservation of natural resources preserves the ecological diversity and out life supporting systems – water, air and soil.

India has abundant natural resources and its economy depends largely on the proper utilisation of these resources. Deforestation, overgrazing, indiscriminate mining and faulty tillage practices have led to severe soil erosion. Over irrigation and harvesting of agricultural lands have resulted into salinity of soil, water logging and land degradation. Overuse of tube-wells has substantially lowered down the underground water table. Industrial effluents, forest fire and unplanned growth have led to severe water and air pollution. Over 2.4 billion people lack access to proper sanitation facilities and 1.1 billion people lack access to safe drinking water. Shortage of natural resources cripples public health system also. All conventional sources of energy are exhaustible. Development of conventional forms of energy for meeting the growing needs is the main task. In this scenario, we need to design, develop and innovate new and economically viable technologies to harness and conserve natural resources. This sub-theme is expected to make the children think of various ways and means for making efficient use of available natural resources.

The exhibits / models in this sub-theme may pertain to:

- plans for proper management of natural resources and monitoring of the changes in wildlife population caused by human encroachment;
- ecological studies of plants and animals;
- efficient methods of harvesting and using plankton;
- recycling of water; materials, solid wastes;
- devices / methods that control air / water / land pollution;
- impact of pollution on living and non-living;
- preservation / conservation / management of soil / water;
- forest conservation / management;
- models of green building environment building which harvest energy, water and material;
- green roof technologies / roof mounted solar technologies such as solar water
- al / horizontal axis;
- wind mill / water mill for grinding grains / drawing water from the well and to generate electricity;
- water sensitive urban design to mitigate water shortage;
- sea water use along the coastal areas for raising mangrove and salicornia plantation together with agriculture;
- stabilisation of sand dunes by growing thorny bushes;
- models to control loss of natural resources due to disasters etc.
- impact of bio-energy on food security;
- models / designs of fuel-efficient automobiles/machines;
- study of air tides;

Sub theme-3

Transport and Communication

The scientific and technological information available today has revolutionised worldwide means of communication, which plays a key-role in the growth and development in all walks of life. Tremendous developments in the field of transport and communication have been made to meet the growing demands due to increasing number of users. The communication network in the world has under gone a sea change with the use of satellite and other communication systems. These global changes have influenced the quality of life in our country. There has been a global expansion of electronic information in recent times. Use of Internet, fax, mobile phone, e-mail, have become a common day affair in all walks of life. The convergence of multiple communication systems have revolutionised learning and knowledge sharing.

The objective of this sub-theme is promoting innovations in knowledge networks involving transport and communication technology in all segments of the society. Children need to reason and communicate to solve problems and to understand effective use of information and communication technology for a variety of purposes.

The exhibits and models in this sub-theme may pertain to:

- indigenous / improvised / Improved devices for world-wide communication of verbal / printed / pictorial information;
- improvised / indigenous models for efficient transport and fast communication especially Internet for communication in rural areas;
- working models of fuel efficient / pollution-free designs for automobiles / other vehicles;
- models showing use of innovative inexpensive / locally available materials designs for construction / maintenance of roads / railway tracks of vehicles;
- models showing preparedness for disaster-both natural and man-made management;
- working model of efficient transport system in metropolitan / urban and rural areas;
- showing the use of information technology for preservation and conservation of soil/water management and mapping of water resources;
- developing innovative designs / models of multimedia equipments / materials and packages for the children with special needs, especially with visual and audio impairment.
- exploring uses / applications of transport and communication technology in generating employment / eradicating illiteracy;

Subtheme-4

Information and Education Technology

We live in a highly globalised and interconnected world. There has been a global expansion of electronic information in recent times. This has greatly helped in improving upon the quality of life. Today, computers and other electronic gadgets are being increasingly connected with each other through local area as well as global networks. Millions of computers in this world are connected to the Internet, facilitating the accessibility to information within a very short time. The task of management of information and its processing for development oriented information and inclusive society requires a fairly good amount of skill. With the use of information technology, education has become global.

The objective of this sub-theme is promoting innovations in knowledge networks involving information and education technology in all segments of the society. Children need to reason and communicate to solve problems and to understand effective use of information and education technology for a variety of purposes.

The exhibits and models in this sub-theme may pertain to:

- demonstrating how the information in any of the areas mentioned above can be accessed;
- demonstrating the principle and functioning of modern advices of communication. Such as television and radio (AM/FM) mobile phone, fax, e-mail, internet etc. and accessing and downloading information from them;
- designs for making existing operation of communication more efficient;
- showing the use of information technology for preservation and conservation of soil / water management and mapping of water resources;
- showing the use of information technology for developing improved designs of machineries for textiles, engineering goods, machines, tools, chemicals, drugs and pharmaceuticals, plastics and eco friendly materials;
- applications of information and communication technology in making innovative designs of weaving, pottery, metal and leather wares, dyeing, printing and other crafts practiced in cottage industry;
- use of information technology for developing devices to demonstrate the control and measurement of noise, air, water and soil pollution due to rampant industrial development;
- innovative and inexpensive models of audio-visual equipment (specially multimedia);
- low-cost educational toys, games, puppetry etc.
- use of internet;
- applications in education using the computer as an education tool; simulations in science and non-science areas etc.

Sub-theme-5

Community Health & Environment

Health is an overall state of body, mind and social well being that implies to an individual and people. Out health is continuously under the influence of both endogenous (within) and exogenous (around) environment and therefore a matter of great concern especially in the rapidly growing society to cope up with newer scientific and technological inventions. When people are healthy, they are more efficient at work. The health is broadly affected by genetic disorders, infections and lifestyle but multi-factorial causes are more prevalent in case of many diseases

The present sub-theme is proposed with the objectives to bring awareness among the youth about health and factors affecting our health, to explore new scientific, technological and bio-medical interventions in prevention and cure, to analyse the role of self and society in keeping our environment healthy in order to maintain good health and promote innovative ideas for better management.

The exhibits and models in this sub-theme may pertain to:

- demonstration of health and differentiation from the state of ill health. Health and disease;
- demonstration of factors affecting the health, different ailments in the body;
- showing and designing activities on infectious and non-infectious diseases, relationship with causative factors and their sources;
- innovation to develop control measures at different levels, role various agencies;
- presenting medical assistance and facilities, rural/urban and gender aspects;
- sensitising people to be careful in health matters, explore the possibilities and make use of the facilities available;

- development of knowledge-base and understand new scientific technological aids in bio-medical area;
- demonstration of lifestyle and relationship with good and bad health based on known facts and researches;
- demonstration of the role of traditional knowledge of herbal products for community health etc;

Subtheme-6

Mathematical Modelling

Mathematical modelling is the process of transformation of a physical situation into mathematical analogies with appropriate conditions. Physical situation need some physical insight into the problem. It is a multi-step process involving identifying the problem, constructing or selecting appropriate models lighting out what data need to be collected, deciding number of variables and predictors to be chosen for greater accuracy, testing validity of models, calculating solution and implementing the models. It is an art, as there can be a variety of distinct approaches to the modelling, as well as science, for being tentative in nature.

The objective of this sub-theme is to help children to analyse how mathematical modelling can be used to investigate objects, events, systems and processes.

The exhibits and models in this sub-theme may pertain to:

- mathematical modelling to solve various problems of our everyday life / environment related problems;
- mathematical modelling and computer simulation of climate dynamics / production of weather phenomena based on a number of predictors;
- mathematical modelling n physical geography such as rotation and revolution of earth, precession and equinoes etc;
- mathematical modelling to predict orbital path of comets, meteors and other minor planets;
- mathematical modelling to show how disease might spread in human in the event of epidemics / bioterrorism;
- mathematical modelling to predict the devastating effects of wars / nuclear explosions;
- mathematical modelling to show spread of forest fire depending on the types of trees weather and nature of ground surface;
- mathematical modelling to demonstrate the action of medicines in human system;
- mathematical modelling of the working of heart, brain, lungs, kidneys, bones and endocrine system;
- computer diagnosis of human diseases;
- mathematical modelling to describe traffic flow/ stock market options;
- mathematical modelling for increasing production of crops;
- mathematical modelling on balance of carbon cycle;
- mathematical modelling on social insects such as honeybees, termites, etc. to know how they use local information to generate complex and functional patterns of communication;
- mathematical modelling of maximum speed in fibre optic links;
- mathematical modelling to prevent an unwanted future/ to understand various natural and unnatural phenomena;
- mathematical modelling to show the effect of climate changes / global warming;

REGISTRATION FORM

1. Name of the School -----

2. Complete address (including state)with Tel.no./ Fax/ e-mail -----

3. Region -----

4. Title of the Exhibits/ Projects -----

5. Sub-theme of the exhibit (i) -----
(see enclosed information) (ii) (If applicable)-----

6. Details of registration fee/ draft
Draft Number and dated -----
Amount and Bank -----

7. Brief write up of the Exhibit/ Project including

- (a) Scientific Principle
- (b) Method/ Procedure followed
- (c) Unique features of the exhibit
- (d) Applications in different domains of life
- (e) Further scope of the exhibit/ project

(The complete write-up of the exhibit not to exceed 200 words. It is mandatory to submit the same at the time of registration)

8. Name of the participant students

- a. -----
- b. -----

9. Name of the escort teacher (with mobile no.)-----

Principal's Signature _____

Full Name-----
Mobile Number _____