

**CENTRAL BOARD OF SECONDARY EDUCATION
SHIKSHA SADAN, 17-ROUSE AVENUE, INSTITUTIONAL AREA,
NEW DELHI-110002**

CBSE/Sc.Exh./Cons./2010

Dated: 21.04.2010

Circular No. 19

**All Heads of Institutions
Affiliated to the Board**

Subject: Organisation of CBSE Science Exhibition 2010

Dear Principal

Besides creating scientific literacy, key expectations from teaching-learning of science at school stage include developing questioning and enquiring skills, acquiring process skills, developing problem-solving and decision-making skills and promoting scientific temper in the learners and helping them to understand and appreciate close inter-relationship between Science, Technology and society. This demands interactive, participatory, hands-on, innovative and creative learning experiences to be provided to them.

The Board has initiated many steps in the recent past to provide such experiences. One such step refers to organisation of Science Exhibitions at Regional and National levels. The event is aimed at providing a common platform to schools, teachers and students to give shape to their creative and innovative ideas. Based on the past experience of enthusiastic response from schools, it has again been decided to organize the Science exhibitions for the year 2010-2011. These exhibitions are likely to be organized at Regional level in the month of July/August and at National level in the month of September/October, 2010.

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

Main Theme: Science, Technology and Society

Sub-Themes:

- **Climate change-Causes and Consequences**
- **Green Energy**
- **Biology in Human welfare**
- **Information and Communication Technology**
- **Mathematics and Everyday life**
- **Science and Technology in Games and sports**

The following **key aspects** of the exhibition may be kept in mind for participation:

- (i) Any participating school can prepare a maximum of **two** exhibits/projects/models.
- (ii) The Participating school/team will have to **bear all expenses** related to participation in the exhibition.

- (iii) The exhibit/model may be either
- (i) a working model or
 - (ii) An investigation-based project
- (iv) The school team may be represented by a maximum of **two students per exhibit** and **one escort Science Teacher**.
- (v) The exhibit/project may include
- A 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 the production cost
 - Investigation-based study
- (vi) The request for participation alongwith the enclosed registration form and fee is to be sent directly to the **respective regional officer**.
- (vii) The schools in Delhi region may send it to **Regional Officer, Central Board of Secondary Education, PS 1-2, Institutional Area, I.P. Extension, Patparganj, Delhi-110 092**.
- (viii) Irrespective of the number of exhibits, every participating school will pay a participation fee of **Rs.400/-**. This payment should be made in the form of a demand draft in favour of **Regional Officer, CBSE** payable at respective regional office city.
- (ix) The last date for registration for participation in the event is **June 15, 2010**.
- (x) The first stage of exhibition will be held at two different venues in every region. However, if the number of participating schools from a particular region is very large, the number of venues may be increased to three.
- (xi) The selected **best fifteen** exhibits/ schools at every regional level venue will be eligible to participate in the National level exhibition.
- (xii) The exhibits/projects will be **evaluated** by the experts as per the following **criteria**:
- | | |
|--|-----|
| • Creativity and imagination | 20% |
| • Originality and innovativeness | 15% |
| • Scientific thought/principle/approach | 15% |
| • Technical skill/workmanship | 15% |
| • Utility/educational value | 15% |
| • Economic aspect, portability, durability | 10% |
| • Presentation-Explanation and demonstration | 10% |
- (xiii) The actual dates for the regional level exhibition will be communicated to every school **individually** as well as through CBSE website www.cbse.nic.in by **July 10, 2010**.
- (xiv) A brief **write-up** about the main theme and sub-theme is enclosed for reference. The participating schools may prepare the exhibits/projects on any one of the sub-themes satisfying one or more of the stated parameters.

- (xv) Greater emphasis may be given to **investigation based innovative projects** to kindle curiosity, originality and creativity in the students.
- (xvi) Attractive awards/cash prizes are given to exhibits/students who are among 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 enclosed registration form, registration fee and other details may be sent to **respective Regional Officers** before due date. For any other information in this regard, you may contact at science.cbse@gmail.com or eoscience@live.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 faithfully,

(R.P. Sharma)
Consultant, CBSE

Copy with a request to respective Heads of Directorates/KVS/NVS/CTSA as indicated below to also 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 CE, CBSE
15. PA to Secretary, CBSE
16. PA to Director (Acad.)
17. PA to HOD (AIEEE)
18. PA to HOD (Edusat)
19. PRO, CBSE

(R.P. SHARMA)
Consultant, CBSE

CBSE SCIECNE EXHIBTION 2010

Guidelines for preparation of Exhibits and Models

The importance of every sub-theme in the context of main theme and a number of suggestions for designing the exhibits/projects are give below. However, these ideas are only suggestive. Participants are free to develop exhibits based on other related ideas of their choice.

Sub-Theme 1 Climate change-causes and consequences

Climate change is emerging as perhaps the greatest environmental challenge of the 21st century. Scientists are concerned that global warming caused by human activities has overtaken natural fluctuations in climate and that this is having serious consequences for people and the planet earth. It can upset the delicate ecological balance of the earth and its living organisms. Data of tree growth, tropical air temperature and carbon dioxide emission collected over 16 years indicate that a warming climate may cause the tropical forests to give off more carbon dioxide than they take up.

The main objective of this sub-theme is to foster awareness about the causes and consequences of climate change and to help children become environmentally and socially responsible global citizens. The exhibits/models in this sub-theme may pertain to:

- studies of impact of climate change on agriculture
- energy foot-print and methods to reduce greenhouse gases.
- conditions of drought, flood, famine and effective measures required to combat them
- activities that add/reduce carbon dioxide in atmosphere/demonstrate balancing of carbon cycle.
- estimating one's carbon footprint on the globe
- measure to control air/water pollution/various methods of air/water purification/effect of pollution on living beings.
- designs and development of automatic weather-recording devices.
- use of eco-friendly and innovative devices that may help in combating climate change.

Sub-theme 2 Green Energy

The term 'green energy' is used for those energy sources which are considered to be environment friendly. The term is synonymous with widely accepted term 'renewable energy'. These energy sources are perceived to produce fewer pollutants and result in lower environmental pollution and carbon emission. Some of the renewable sources of energy in India are solar energy, wind energy hydroelectric energy, Biomass energy etc.

The main objective of this sub-theme is to make children feel the need to study and analyse various aspects of green energy-its generation, transmission, distribution and effective management. The exhibits/models in this sub-theme may pertain to

- green-roof technologies/roof mounted solar technologies such as solar water heater, solar lighting system, heating system of a building etc.
- green bricks using waste material/different innovative materials for furniture/construction/road laying.
- innovative designs of solar cooker/solar distiller/solar dryer for food processing/solar heated houses.
- solar thermal electricity/community solar project
- wind turbines for domestic use.
- various ways of harnessing geothermal energy.
- use of tidal waves/ocean currents/salinity gradient for generating electricity
- production of electrical energy from mechanical energy/nuclear resources.
- energy from biomass
- improved designs of biogas/biomass plant
- designs/models of fuel efficient automobiles/machines
- innovations in mechanism of extraction storage and processing of fossil fuels.

Sub-theme-3

Biology in Human welfare

The understanding of biological phenomenon and principles have led to the innovations and development of a number of technologies for the benefit of mankind. The fields of agriculture, medical sciences, genetic manipulations, study of microorganisms, all have immensely benefited from these developments leading to the benefit of everyone.

The main objective of this sub-theme is to sensitive children about the overall implications and contributions of the biological phenomenon and living organisms for the benefit and welfare of mankind. The exhibits/models in this sub-theme may pertain to:

- ecological study of plants and animals.
- restoration of degraded areas and habitat of natural biodiversity.
- conventional biotechnological practices e.g. breeding techniques, tissue culture, applications of biotechnology, microbiology, genetic engineering and genomics to agriculture.
- organic farming/organic fertilizers.
- environment friendly measures of pest control.
- innovative/inexpensive/improved/indigenous/methods of irrigation/harvesting/storage/processing/preservation/conservation/transport of agricultural products..
- sustainable land use practices/ecologically sustainable farming methods.
- development of low cost technologies for producing potable water.

Sub-Theme 4 Information and Communication Technology

There has been a global expansion of electronic information in recent times. Computers are being increasingly connected through local areas as well as global networks. Information of every conceivable topic of human interest is being put up on the internet by individuals and institutions. Use of fax, mobile phone, email, have become a common day affair in all walks of life. To live and work in information rich technological society, children should be exposed to experiences that encourage them to value the ever increasing capacity of information and communication technology and to appreciate its role in human affairs.

The main objective of this sub-theme is promoting innovations in knowledge networks involving information and communication technology in all segments of 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/model 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 devices of communication, such as television and radio, mobile phone, fax, email, internet etc. and accessing and downloading information from them.
- efficient use of multimedia in making the teaching-learning process more interesting and effective/in enhancing creativity of children and teachers.
- 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.
- developing innovative designs/models of multimedia equipments/materials and packages for children with special needs.
- technologies in forecasting and warning of cyclones, floods and storms.
- use of geo-stationary satellites in providing information pertaining to meteorological processes.

Sub-theme 5 Mathematics and Everyday Life

The world of Mathematics provides us with an unlimited scope to perceive problems pertaining to three situations visualized in the form of concrete, abstraction and intuition. It also deals with data, measurements and observations from Science, mathematical models of natural phenomenon including human behaviour and social systems. As a science of abstract objects, mathematics relies on logic rather than on observation as its standard of truth, yet employs observation, simulation and even experimentation as means of discovering truth. The subject offers distinctive model of thoughts which are versatile and powerful, including mathematical modeling, optimization, logical analysis, inference from data and use of symbols. It also gives an exactness in thinking and provides a quantitative approach.

To encourage and stimulate students' interest in Mathematics, some of the mathematical principles being transacted at school stage with their applications in every day life need to form the basis of projects/exhibits under this sub-theme.

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

- principles of sequence and series in several spheres of human activities viz, calculating the amount of money over certain period of time under given rate of simple interest or compound interest/finding depreciated or increased value of a certain commodity over a period of time
- determining expenditures needed for manufacturing water tank/rectangular box/cylindrical/cone shaped objects of a certain material provided cost of material per square/cube/unit are given
- determining perimeter, area of a region bounded by polygons/the circumference and area of circular region/surface area and volume of cube/cuboid/cylinder/cone/sphere/hemisphere of solid when two basic solids are joined together.
- analytical tools such as conics used in designing parabolic reflectors in automobile head lights/suspension of cable bridges/loud speakers in radio.
- estimating/calculating size of windows/doors/rooms in schools and homes/estimating number of plants lying in a particular flower bed/ calculating height of a building/tree
- applications of linear programming in solving problems pertaining to manufacturing of goods/transport/diet issues
- use of triangles/making geometrical designs on a table cover (for example, in a circular table of certain radius, a design is formed leaving an equilateral triangle in the middle and finding the area of the design);
- establishing a mathematical relation by considering all possible parameters to have maximum profit in producing certain items by a factory.

Sub-theme 6

Science and technology in games and sports

Games and sports too have benefited from the advancements in the field of Science and technology. The form and format of practically all games and sporting events have undergone a variety of changes due to application of technology. These changes pertain to production/fabrication of play materials, safety of sports personnel, playing grounds, rules and regulations for umpiring, coaching and training, recording data, maintaining records and many other related activities. The knowledge of nutritional values of various food items and also evolution of techniques to estimate nutritional requirement of a sports person have facilitated in taking care of health requirements as well as enhancement of level of competitions. There are specialized branches of study in medicine for sports nutrition, physio therapy and injuries.

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

- demonstrating how athletes/players take advantage of streamlining/conservation of momentum(linear as well as angular)/laws of motion in enhancing their performance during sprint/hurdle race/swimming/high jump/long jump/diving etc.
- demonstrating function of time measuring devices that can correctly measure fractions of seconds and how these are synchronized with camera too decide position of competitors at finishing line

- innovative devices/machines for physical exercise /reducing or enhancing weight/facilitating proper distribution of body weight
- testing to detect use/misuse of drugs/study of anabolic steroids (used for stamina building) and their physiological and side effects.
- demonstrating how live telecast of sports and games events is done
- innovative designs of bicycle to overcome air resistance
- mathematical modeling for (i) indoor(say carom, billiards, chess or any other) and outdoor games to work out correct moves and/or predict winning combinations (ii) to show the trajectory of a football/volleyball/basket ball taking contingence of as many factors (such as ground conditions, speed of air, size and mass of ball, impulse of force, height and distance of net/basket/goalpost) as are possible to handle:
- computer simulations/programmes to play field games like tennis, cricket, hockey, football or to show how the ranking in a racing event (athletics/swimming/boat race/cycling/car race/horse race/ is done in the case of a close finish etc.

CBSE REGIONAL LEVEL SCIENCE EXHIBITION, 2010
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 (see enclosed information) (i) -----
(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)

8. Name of the participant students

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

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

Principal's Signature_____

Full Name-----