



## CATEGORY LIST 2017

Categories with descriptions for all grades	
1	<p><b>Agricultural Sciences</b></p> <p>Agricultural Science concerns itself with the application of science to agriculture. It includes the practice of farming, cultivation of the soil for the growing of plants and crops, as well as the raising of animals to provide food, wool, and other products to supply human needs or for economic gain. It includes pest management and the mass rearing of insects for feed and food.</p>
2	<p><b>Animal and Veterinary Science, including Marine Animals</b></p> <p>Animal Sciences is the study of animals' morphology, physiology, anatomy, behaviour, origin, and distribution. <b>Veterinary Science</b> concerns itself with the health of animals and the treatment of injuries or diseases that affect them. <b>Marine animal sciences</b> involves the study of marine animals e.g. fishes, molluscs and marine mammals.</p>
3	<p><b>Chemistry and Biochemistry</b></p> <p><b>Chemistry</b> is the branch of science concerned with the substances of which matter is composed, the investigation of their properties and reactions which may form new substances. <b>Biochemistry</b> is the study of chemical processes relating to living organisms</p>
4	<p><b>Computer Science and Information Technology</b></p> <p><b>Computer Science</b> is the study of computers and computational systems. It does not deal with software and software systems but includes computer theory, design, development and application. <b>Information Technology (IT)</b> is the application of using computers to store, study, retrieve, transmit, and manipulate data, or information.</p>
5	<p><b>Earth Science (Geography, Geology, Oceanography) &amp; Housing &amp; Settlement Studies</b></p> <p><b>Geography</b> is the study of the physical features of the earth and its atmosphere, and the relation to human activity. <b>Geology</b> is the study of the Earth e.g. the composition of earth materials, structures, and processes. It is also concerned with how the planet has changed over time. <b>Oceanography</b> deals with the physical and biological properties of the sea and related phenomena. <b>Housing</b> generally refers to the social problem of ensuring that members of society have a home in which to live. This may be a house, a type of dwelling, lodging, or shelter. <b>Settlements</b> can be as small as one house or large as a megacity.</p>
6	<p><b>Energy: Non-renewable - fossil fuels and use of electricity</b></p> <p><b>Fossil fuels</b>, such as oil, natural gas and coal, as well as uranium (for nuclear energy), are <b>non-renewable resources</b> because their use is not sustainable. This is because their formation takes billions of years and cannot be easily renewed. Electric energy consumption is the actual energy demand made on existing electricity supply.</p>
7	<p><b>Energy: Renewable - solar, wind, wave, hydro</b></p> <p><b>Renewable energy</b> is energy collected from renewable resources, which are naturally replenished on a human timescale. Examples in this category includes sunlight, wind, water, ocean tides and waves.</p>
8	<p><b>Energy: Renewable - biofuels, geothermal, bio digesters</b></p> <p><b>Biofuels</b> are fuels produced directly or indirectly from organic material (biomass), including plant materials and animal waste. <b>Geothermal energy</b> is heat energy generated and stored in the Earth. A <b>bio-digester</b> is a device or structure in which the digestion of organic waste matter by bacteria takes place with the production of a burnable biogas (methane and carbon dioxide).</p>
9	<p><b>Energy efficiency and conservation: efficient use of energy and ways of using less energy</b></p> <p>In <b>energy efficiency</b>, the goal is to reduce the amount of energy required to provide products and services. <b>Energy conservation</b> refers to reducing energy consumption.</p>
10	<p><b>Engineering: Electrical and Electronics</b></p> <p><b>Electrical engineering</b> is the study and application of electricity, electronics, and electromagnetism. <b>Electronic engineering</b> is an electrical engineering discipline which utilizes electronic components to design electronic circuits, devices, microcontrollers and other systems.</p>
11	<p><b>Engineering: Chemical, Metallurgical, Civil and Mining</b></p> <p><b>Chemical engineering</b> is a branch of engineering concerned with the design of large-scale processes which convert chemicals, raw materials, living cells, microorganisms and energy into useful forms and products. <b>Metallurgical engineering</b> deals with the procedures used in extracting metals from their ores, purifying and alloying metals, and creating useful objects from metals. <b>Civil engineering</b> deals with the design, construction and maintenance of the physical and naturally built environment, including roads, bridges, canals, dams, and buildings. <b>Mining engineering</b> applies science and technology to the extraction of minerals from the earth.</p>

## Categories with descriptions for all grades contd.

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<b>12</b>	<p><b>Engineering: Mechanical, Aeronautical and Industrial</b></p> <p><b>Mechanical engineering</b> deals with the design, construction, and use of machines. It applies the principles of engineering, physics, and materials science for the design, analysis, manufacturing, and maintenance of mechanical systems. <b>Aeronautical/ astronautical engineering</b> deals with the design, development, testing and production of aircraft and related systems, and of spacecraft, missiles, rocket propulsion systems and other equipment operating beyond the earth's atmosphere. <b>Industrial engineering</b> is about the optimization and streamlining of complex processes, systems or organizations to reduce wastage of time, money, materials, person-hours, machine time, energy and other resources.</p>
<b>13</b>	<p><b>Environmental Management: study of human interaction with the environment (e.g. waste management, recycling, deforestation, land management and bioremediation)</b></p> <p><b>Environmental management</b> includes controlling human impact on and interaction with the environment in order to preserve natural resources.</p>
<b>14</b>	<p><b>Environmental Science: changes to the environment (e.g. pollution, climate change, carbon emissions and ecology)</b></p> <p><b>Environmental science</b> focuses on the study of the relationships in the natural world e.g. the relationships between organisms and their environments. <b>Environmental change</b> is a change or disturbance of the environment caused by natural disasters, natural ecological processes, human interference or animal interaction.</p>
<b>15</b>	<p><b>Food Science, Food Technology and Healthy Eating</b></p> <p><b>Food Science</b> studies the chemical and physical properties of foods and the changes that may occur during processing, storage, etc. <b>Food technology</b> includes production, processing and distribution of food to improve manufacturing methods through preservation, storage and new product development. <b>Healthy eating</b> entails eating a variety of foods for the nutrients needed to maintain health and improve energy levels. Nutrients include protein, carbohydrates, fat, water, vitamins &amp; minerals.</p>
<b>16</b>	<p><b>Sports Science</b></p> <p>This discipline studies how the human body works during exercise, and how sport and physical activity promote health from cellular to whole body perspectives.</p>
<b>17</b>	<p><b>Innovation and Technology</b></p> <p>To be called an <b>innovation</b>, an idea must be replicable at an economical cost and must satisfy a specific need. Innovation involves thoughtful application of information, imagination and initiative in growing greater or different values from resources. It includes all processes by which new ideas are generated and converted into useful products. <b>Technology</b> is the purposeful application of information and scientific knowledge for practical purposes, especially in industry.</p>
<b>18</b>	<p><b>Mathematics and Statistics</b></p> <p><b>Mathematics</b> is the abstract science of number, quantity, and space, either as abstract concepts (<i>pure mathematics</i>), or as applied to other disciplines (<i>applied mathematics</i>). <b>Statistics</b> as a branch of mathematics deals with the collection, analysis, interpretation, and presentation of masses of numerical data.</p>
<b>19</b>	<p><b>Medical Science (anatomy, genetics, physiology) and Health Care (hygiene &amp; life style)</b></p> <p><b>Anatomy</b> is the branch of science concerned with the physical structure of the human body on macro and micro levels. <b>Genetics</b> is the study of heredity and the variation of inherited characteristics. <b>Physiology</b> deals with the normal functions of the different systems of the human as a living organism. <b>Health Care</b> is the act of taking preventative or necessary medical measures/procedures to improve a person's well-being.</p>
<b>20</b>	<p><b>Microbiology and Diseases</b></p> <p><b>Microbiology</b> is the study of microorganisms such as eukaryotes (e.g. fungi and protists); prokaryotes (e.g. bacteria and certain algae) and viruses. Medical microbiology concerns itself with the prevention, diagnosis and treatment of <b>infectious diseases</b>. This field of study also includes clinical applications of microbes for the improvement of health and the study microbiomes.</p>
<b>21</b>	<p><b>Physics, Astronomy and Space Science</b></p> <p><b>Physics</b> is the study of matter and energy, and their interactions in the fields of mechanics, acoustics, optics, heat, electricity, magnetism, radiation, atomic structure, and nuclear phenomena. (Expo projects where physics concepts such as heat, solar rays, wind or electricity is applied, should be entered in an Energy category). <b>Astronomy</b> deals with celestial objects, space, and the physical universe as a whole, whereas <b>Space science</b> encompasses all the scientific disciplines involved in space exploration and the studying of phenomena occurring in outer space, such as space medicine and astrobiology.</p>
<b>22</b>	<p><b>Plant Sciences including Marine Plants</b></p> <p>Plant science studies plant life, including mosses, ferns, conifers and flowering plants. Researching plants may lead to an increase supply of medicines, foods, fibres, building materials, and may help to manage parks and wilderness areas. <b>Aquatic plants</b> are plants that have adapted to living in aquatic environments (saltwater or freshwater). These plants require special adaptations for living submerged in water, or at the water's surface. <b>Marine plants</b> include algae and phytoplankton.</p>
<b>23</b>	<p><b>Social and Psychological Sciences</b></p> <p><b>Social science</b> is the scientific study of the human society, including interpersonal relationships between individuals. <b>Psychology</b> is the science dealing with the mind and mental processes, especially regarding human behavior.</p>
<b>24</b>	<p><b>Sustainable Development (social, environmental and economic)</b></p> <p><b>Sustainable development</b> is defined as a process of meeting human development goals while sustaining the ability of systems to continue to provide the natural resources and ecosystem services upon which the economy and society depends.</p>