-: PHYSICS ASSIGNMENT 0 :-

SOLUTIONS

(For you😉 From Engineering Samadhan💪)

Question 1: What is Science ?

Answer: Science is a systematic enterprise that builds and organizes knowledge in the form of testable explanations and predictions about the universe. It is both a body of knowledge and a process. In school, science may sometimes seem like a collection of isolated and static facts listed in a textbook, but that's only a small part of the story. Just as importantly, science is also a process of discovery that allows us to link isolated facts into coherent and comprehensive understandings of the natural world. Science is a way of discovering what's in the universe and how those things work today, how they worked in the past, and how they are likely to work in the future. Scientists are motivated by the thrill of seeing or figuring out something that no one has before. The knowledge generated by science is powerful and reliable. It can be used to develop new technologies, treat diseases, and deal with many other sorts of problems. Science is continually refining and expanding our knowledge of the universe, and as it does, it leads to new questions for future investigation. Science will never be "finished."

Question 2: What are the different Branches of Science ?

Answer: The branches of science, also referred to as sciences, "scientific fields", or "scientific disciplines," are commonly divided into three major groups:-

Formal sciences :- The study of formal systems, such as those under the branches of logic and mathematics, which use an a priori, as opposed to empirical, methodology.

Natural sciences :- The study of natural phenomena (including cosmological, geological, physical, chemical, and biological factors of the universe). Natural science can be divided into two main branches : Physical science and Life science (or biology).

Social sciences :- The study of human behavior in its social and cultural aspects.

FORMAL SCIENCES:

The formal sciences are the branches of science that are concerned with formal systems, such as logic, mathematics, theoretical computer science, information theory, systems theory, decision theory, statistics.

NATURAL SCIENCES:

Natural science can be divided into two main branches: life science and physical science. Life science is alternatively

known as biology, and physical science is subdivided into branches: physics, chemistry, astronomy and Earth science.

SOCIAL SCIENCES:

Social science is the branch of science devoted to the study of societies and the relationships among individuals within those societies. The term was formerly used to refer to the field of sociology, the original "science of society", established in the 19th century. In addition to sociology, it now encompasses a wide array of academic disciplines, including anthropology, archaeology, economics, human geography, linguistics, political science, and psychology.

Question 3 : What is Physics ?

Answer : Physics is the natural science that studies matter, its fundamental constituents, its motion and behavior through space and time, and the related entities of energy and force. Physics is one of the most fundamental scientific disciplines, and its main goal is to understand how the universe behaves. Physics intersects with many interdisciplinary areas of research, such as biophysics and quantum chemistry, and the boundaries of physics are not rigidly defined. New ideas in physics often explain the fundamental mechanisms studied by other sciences and suggest new avenues of research in these

and other academic disciplines such as mathematics and philosophy. Advances in physics often enable advances in new technologies. For example, advances in the understanding of electromagnetism, solid-state physics, and nuclear physics led directly to the development of new products that have dramatically transformed modern-day society, such as television, computers, domestic appliances, and nuclear weapons; advances in thermodynamics led to the development of industrialization; and advances in mechanics inspired the development of calculus.

Question 4 : Write note on Different Branches of Physics.

Answer : Physics can be classified into various branches but classical physics is mainly concerned with energy and matter. The traditional branches of classical physics are Optics, Acoustics, Electromagnetics, and Classical mechanics. With the rapid development of physics, the scope of the subject is growing so large that it is not possible to cover physics under the above branches. A number of main branches of physics are discussed below.

MECHANICS : Mechanics is the branch of physics which deals with the motion of an object without or with the reference of force. Mechanics can be further divided into two branches namely quantum mechanics and classical mechanics. Quantum mechanics deals with the behavior of smallest

particles like neutrons, protons, and electrons, while classical mechanics is the branch that deals with laws of motion of forces and physical objects.

OPTICS : This branch of physics deals with the behavior, propagation, and properties of light. Optics can be simply described as the study of the behavior of infrared light, visible light, and ultraviolet.

THERMODYNAMICS : Thermodynamics deals with the study of heat and its relation with work and energy. Thermodynamics also deals with the transmission of heat energy by means of convection, conduction, and radiation.

ELECTROMAGNETISM : Electromagnetism deals with the study of electromagnetic force like electric fields, light, magnetic fields, etc. there are two aspects of electromagnetism which are "electricity" and "magnetism".

RELATIVITY : This branch of physics deals with the theorem that was formulated by Albert Einstein. The theory of relativity states that space and time are relative and all the motion must be relative to a frame of reference.

ACOUSTIC : Acoustic deals with the study of sound and its transmission, production, and effects. Acoustics mainly involves the mechanical waves in gases, liquids, and solids which includes vibration, sound, ultrasound, and infrasound.

QUESTION 5: What is Engineering ?

Answer : Engineering is the application of science and mathematics to solve problems. Engineers figure out how things work and find practical uses for scientific discoveries. Scientists and inventors often get the credit for innovations that advance the human condition, but it is engineers who are instrumental in making those innovations available to the world. In other words, The creative application of scientific principles to design or develop structures, machines, apparatus, or manufacturing processes, or works utilizing them singly or in combination; or to construct or operate the same with full cognizance of their design; or to forecast their behavior under specific operating conditions; all as respects an intended function, economics of operation and safety to life and property. Engineering has existed since ancient times, when humans devised inventions such as the wedge, lever, wheel and pulley, etc. Engineering is a broad discipline that is often broken down into several sub-disciplines. Although an engineer will usually be trained in a specific discipline, he or she may become multi-disciplined through experience. Engineering is often characterized as having four main branches :- Chemical Engineering, Civil Engineering, Electrical Engineering, and Mechanical Engineering.

Question 6 : What is Technology ?

Answer : Technology is the continually developing result of accumulated knowledge and application in all techniques, skills, methods, and processes used in industrial production and scientific research. Technology is embedded in the operation of all machines, with or without detailed knowledge of their function, for the intended purpose of an organization. The technologies of society consist of what is known as systems. Systems apply the intended application of a technology's accumulated knowledge by obtaining an input, altering this input for the system's intended purpose through what is known as a process, and then producing an outcome that alters the ultimate intended purpose of the system. This is also known as a technology system or technological system. While Innovations have always influenced the values of a society and have raised new questions in the ethics of technology, the advancement of technology itself has also led to the pursuit of new solutions for the previously discussed concerns of technological advancement. For example, upcoming technology involves renewable resources being used in transportation, allowing humans to travel in space, for technology itself to become more affordable and reliable, and for automation to help the lives of billions of people.

Question 7 : Write Note on Different Branches of Engineering.

Answer : Engineering is the discipline and profession that applies scientific theories, mathematical methods, and empirical evidence to design, create, and analyze technological solutions cognizant of safety, human factors, physical laws, regulations, practicality, and cost. In the contemporary era, engineering is generally considered to consist of the major primary branches of chemical engineering, civil engineering, electrical engineering, and mechanical engineering. There are numerous other engineering sub-disciplines and interdisciplinary subjects that may or may not be part of these major engineering branches.

CHEMICAL ENGINEERING : Chemical engineering is the application of chemical, physical and biological sciences to the process of converting raw materials or chemicals into more useful or valuable forms.

CIVIL ENGINEERING : Civil engineering comprises the design, construction, and maintenance of the physical and natural built environments.

ELECTRICAL ENGINEERING : Electrical engineering comprises the study and application of electricity, electronics and electromagnetism.

MECHANICAL ENGINEERING : Mechanical engineering comprises the design and analysis of heat and mechanical power for the operation of machines and mechanical systems.

Question 8 : What is the scope of CS Branch in different Sector & What are your interest of field ?

Answer : As the world is shrinking and is becoming more and more digital, the scope for Computer Science is on a rise. You must have heard people from other specializations (Mechanical, Civil, Electronics, etc.) working in the Computer Science area. While according to NASSCOM, by 2020, the Indian IT exports are expected to expand to the tune of US$ 175 billion. The domestic sector will account for US$ 50 billion!

Positions/ Job Opportunities in various fields :-

There are various areas where you can work, depending upon your interest and vacancy in the market. Software Developers, Software Testing, Data Architect, Database Developer, Data Modeler, Quality Assurance Associate / AnalystMobile Applications Developer, UI/UX Designer, Software Quality Assurance (QA), Game Designer, Website/ Mobile Application Designer, Information Technology Auditor

Mention your interest of field by yourself because it varies…….