CHAPTER 12 SECTION 1 DNA THE GENETIC MATERIAL ANSWER KEY

What is the genetic material of DNA Class 12? The deoxyribonucleotides make up the DNA the genetic material. It is acidic in nature and is present in the nucleus of the cell.

What is Hershey and Chase experiment to prove DNA as genetic material class 12? In their experiments, Hershey and Chase showed that when bacteriophages, which are composed of DNA and protein, infect bacteria, their DNA enters the host bacterial cell, but most of their protein does not. Hershey and Chase and subsequent discoveries all served to prove that DNA is the hereditary material.

What are the DNA supercoils to make up the structure known as a? Supercoiled DNA forms two structures; a plectoneme or a toroid, or a combination of both. A negatively supercoiled DNA molecule will produce either a one-start left-handed helix, the toroid, or a two-start right-handed helix with terminal loops, the plectoneme.

What are the characteristics of the nucleotides in DNA? A nucleotide consists of a sugar molecule (either ribose in RNA or deoxyribose in DNA) attached to a phosphate group and a nitrogen-containing base. The bases used in DNA are adenine (A), cytosine (C), guanine (G) and thymine (T). In RNA, the base uracil (U) takes the place of thymine.

Is DNA genetic material? DNA, or deoxyribonucleic acid, is the hereditary material in humans and almost all other organisms.

What is the first genetic material Class 12? RNA: Ribosomal nucleic acid is the first genetic material to be discovered. Its discovery was along with the discovery of nuclein by Freidrich Miescher in 1886. Earlier in 1939, it was found that RNA has a specific role in protein synthesis.

How did Hershey and Chase prove that DNA is the genetic material quizlet? Hershey and Chase knew that bacteriophages are made from protein and DNA, so they labeled them with different elemental isotopes. With this, they were able to conclude what precisely infects the bacteria. They concluded that DNA is inserted into the bacterial cell while the proteins stay outside.

How did Hershey and Chase confirm that DNA is the genetic material? How did Hershey and Chase confirm that DNA is the genetic material? Hershey and Chase labeled bacteriophage DNA with radioactive phosphorus. When the phage was allowed to infect bacteria, the DNA entered the bacterial cell, showing that DNA represented the genetic material responsible for the inheritance of traits.

What was the conclusion of the Hershey and Chase experiment? Hershey and Chase concluded that protein was not genetic material, and that DNA was genetic material. Unlike Avery's experiments on bacterial transformations, the Hershey-Chase experiments were more widely and immediately accepted among scientists.

What is DNA structure called? Double helix, as related to genomics, is a term used to describe the physical structure of DNA. A DNA molecule is made up of two linked strands that wind around each other to resemble a twisted ladder in a helix-like shape. Each strand has a backbone made of alternating sugar (deoxyribose) and phosphate groups.

What enzyme unzips DNA? Helicase is the enzyme that “unzips” a molecule of DNA by breaking the hydrogen bonds between base pairs and unwinding the two strands of the molecule.

How is DNA packaged in chromosomes? This is accomplished by wrapping the DNA around structural histone proteins, which act as scaffolding for the DNA to be coiled around. The entire structure is called a nucleosome, each of which includes an octamer of histone proteins and 146 to 147 base pairs of DNA.

What makes up the backbone of DNA? DNA consists of two strands that wind around each other like a twisted ladder. Each strand has a backbone made of alternating sugar (deoxyribose) and phosphate groups. Attached to each sugar is one of four bases--adenine (A), cytosine (C), guanine (G), or thymine (T).

What types of bonds hold DNA together? Covalent bonds occur within each linear strand and strongly bond the bases, sugars, and phosphate groups (both within each component and between components). Hydrogen bonds occur between the two strands and involve a base from one strand with a base from the second in complementary pairing.

How many steps are involved in nucleotide formation? In summary, the synthesis of a nucleotide involves four steps: the conversion of a sugar into PRPP, the conversion of a ribonucleotide into a deoxyribonucleotide, the phosphorylation of the deoxyribonucleotide, and the synthesis of a DNA strand by DNA polymerase.

What are the two basic kinds of genetic material? Genetic material is the hereditary material of the cell. It holds the information needed for all cell structure and function. There are two main types of genetic material: DNA and RNA.

Why is DNA A better genetic material? RNA is known to be catalytic, thus reactive. DNA is less reactive chemically and more stable structurally in comparison to RNA. Hence, DNA is a better genetic material.

When was DNA proved to be genetic material? Subsequently it was discovered by Oswald Avery in 1944 that DNA was the genetic material, and then Erwin Chargaff showed that the proportions of the bases included in the structure of DNA followed a certain law.

Is RNA A genetic material? RNA serves as a messenger for the transmission of information. RNA carries genetic information as well, thus functioning as genetic material.

How do I prepare for high school biology?

What do you dissect in high school biology? The most commonly dissected vertebrates are frogs, fetal pigs, and cats. Others include dogfish sharks, perch, rats,

pigeons, salamanders, rabbits, mice, turtles, snakes, mink, foxes, and bats. Invertebrates include crayfish, grasshoppers, earthworms, clams, sea stars, squid, sea urchins, and cockroaches.

What is biology like in high school? High School biology will teach students about the basics of life while also challenging high schoolers to complete labs, record findings, and walk through the scientific process from start to finish. Students should gain real-life science experience with nature studies, dissections, and microscopic slide kits.

How to read a biology textbook?

How to study for grade 12 biology?

How to memorize biology fast? Flash cards are a really good way to help with memorization. Biology is full of illustrations and they can be really helpful when learning how all the different components of a cell work together. Redrawing, tracing, labeling, or printing out diagrams are all helpful when figuring out the application of each term.

How can I make high school biology fun?

Do kids still dissect frogs? (AP) — It's a rite of passage in schools across the U.S.: frog dissection. Sometimes it happens in middle school, sometimes in high school. Feelings about the lesson are generally summed up in one word: gross. The frogs are slimy and greenish-grey, and they stink because they're pickled in formaldehyde.

What animal do you dissect in grade 12? Animals used for dissection vary according to the level of the class which it is used. A fetal pig, grass frog, earthworm, grasshopper, crayfish, clam, perch and starfish in grades 5-11. And a cat in grade 12.

Do you need math for high school biology? Basic math is required for biology because it creates the foundation for many scientific principles used in biology. Math may be used to: analyze data. create models.

Does studying biology hard? So college biology classes may be more difficult than your average high school class. But, according to Draft, biology is a highly

accessible subject, especially if you're really interested in it. You don't need to come into an introductory biology class with a specific knowledge base or level of talent.

Is biology 9th grade? In the science curriculum, ninth grade students are required, in most areas, to take biology.

How do I start reading biology?

How do I study my textbook?

How do you memorize what you read in a textbook?

What is the best way to study biology?

How can I make high school biology fun?

How do I start studying for a biology exam?

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What is the strength of materials in mechanical engineering? Definition. In the mechanics of materials, the strength of a material is its ability to withstand an applied load without failure or plastic deformation. The field of strength of materials deals with forces and deformations that result from their acting on a material.

What are the strengths of mechanical engineering?

Which is the toughest subject in diploma mechanical engineering?

What is the objective of strength of materials? Strength of Materials focuses on the strength of materials and structural components subjected to different types of force and thermal loadings, the limiting strength criteria of structures, and the theory of strength of structures.

Is strength of materials the same as Mechanics of Materials? Strength of materials, also know as mechanics of materials, is focused on analyzing stresses and deflections in materials under load. Knowledge of stresses and deflections allows for the safe design of structures that are capable of supporting their intended

loads.

How to calculate strength of materials? The unit of stress is N/mm2 or N/m2 When an external force acts on a body, the body tends to undergo deformation. Due to cohesion between molecules the body resist the force. This resistance offered by the body is known as strength of material. 1 N/mm2 =106N/m2 1 bar = 1x105N/m2 2.

What are 3 skills you need to be a mechanical engineer?

Is mechanical engineering difficult? The workload in a mechanical engineering programme is notoriously intense. Juggling multiple courses, assignments, and projects necessitates effective time management. This is because the pressure to meet deadlines and excel in coursework can be overwhelming.

Do mechanical engineering worth it? Is mechanical engineering a good career? Yes. A mechanical engineering degree can lead to careers in many fields, including manufacturing and aerospace. These careers provide strong annual salaries.

Is diploma in mechanical engineering hard? Mechanical engineering is an exciting and challenging field, and while the degree of difficulty varies from person to person, some commonly known difficult courses in the major are: 1. Thermodynamics: This course typically covers the principles and laws governing the transfer of heat and energy in mechanical systems.

What's the hardest engineering degree? Biomedical Engineering is often regarded as the hardest engineering majors due to its broad, interdisciplinary nature, combining diverse fields and extensive memorization of biological concepts.

Which is the toughest branch in diploma engineering? The hardest engineering branches in India involve chemical engineering, electrical engineering, biomedical engineering, aerospace engineering and computer engineering.

Why strength of materials is important in mechanical engineering? Understanding the Strength of Materials is crucial in designing mechanical components and structures that can withstand stress and load. With this knowledge, engineers can select appropriate materials and determine their sizes and shapes for specific applications.

What do you learn in strength of materials? Strength of materials, also known as mechanics of materials, is a branch of engineering that deals with the behavior of solid objects when acted upon by objects. Because it deals with how objects deform under loading, strength of materials is an essential topic for mechanical and civil engineers.

What is an example of strength of materials? Usually, the strength of a material is described with units of pressure, because then the value can be applied to many different shapes. For example, a wire and a rod made out of the same steel may have the same tensile strength but the thicker rod will require more force to break.

What does strength of materials mean in engineering? strength of materials, Engineering discipline concerned with the ability of a material to resist mechanical forces when in use. A material's strength in a given application depends on many factors, including its resistance to deformation and cracking, and it often depends on the shape of the member being designed.

What is G in strength of materials? Shear modulus, also known as Modulus of rigidity, is the measure of the rigidity of the body, given by the ratio of shear stress to shear strain. It is often denoted by G sometimes by S or ?.

Why is mechanics of materials hard? Mechanics of Materials: Also known as Strength of Materials, this course covers the response of solid materials when exposed to various forces and loads. Students can have a hard time with this class due to the complex stress-strain relationships and deriving or applying equations to various loading scenarios.

What is Z in strength of materials? Sectional Modulus (Z): It is the ratio of moment of inertia (I) of the beam cross-section about the neutral axis to the distance (ymax) of extreme fiber from the neutral axis, The section modulus (Z) of the cross-sectional shape is significant in designing beams. It is a direct measure of the strength of the beam.

What is the symbol for strength of materials? ? = the Tensile Strength of the material (obtainable from tables or by experiment) Capital I = the Moment of Inertia about the Neutral Axis (for a rectangular beam this is its breadth times the depth

cubed divided by 12).

How do you test strength of materials? A material is gripped at both ends by an apparatus, which slowly pulls lengthwise on the piece until it fractures. The pulling force is called a load, which is plotted against the material length change, or displacement.

What is the hardest part of being a mechanical engineer? Project deadlines Mechanical engineers often work on multiple projects at one time. They may find it difficult to track project deadlines, particularly if problems occur that change or delay development timelines.

Can you become a mechanical engineer without a degree? Certificate programs and apprenticeships are practical ways for people without a four-year degree to start a career in mechanical engineering. These programs teach the exact skills needed in the job market.

What are the four types of mechanical engineering? Fluid mechanics (including fluid statics and fluid dynamics) Mechanism and Machine design (including kinematics and dynamics) Instrumentation and measurement. Manufacturing engineering, technology, or processes.

Which engineering is the hardest? 1) Chemical Engineering Novik's list ranks chemical engineering as the hardest major in this field. This might be because chemical engineers' unique training involves concepts from across many other STEM disciplines, including chemistry, biology, math, and physics.

What's harder, electrical or mechanical engineering? The ability to analyse and optimise mechanical systems dictates a solid foundation in mathematics and physics. This may lend to the argument that mechanical engineering is 'harder'.

How many years does it take to be a mechanical engineer? The friendly academic advisor told us that STEM majors, particularly mechanical engineering majors, actually take, on average, 5-6 years to graduate, although it can be done within 4 years.

What is the strength of all materials?

What is MoS in engineering? Through Margin of Safety (MoS) the Structural designer store some reserve capacity in the structure to take extra loads beyond the allowable load. Those Structures whose margin of safety (MoS) is equal or greater than the value one are more resistant to accidental loads.

What is dom in mechanical engineering? DOM refers to Dynamics of Machinery. It is usually a continuation to KOM (Kinematics of Machinery). While KOM is about velocity and acceleration triangles and analysing motion, DOM is about analysing the forces that cause or influence motion.

What is the measure of strength of a material? Tensile Strength Units The units used to measure tensile strength in the international system are called “Pascals” (Pa), “Megapascals” (MPa), and “Gigapascals” (GPa). Sometimes in the US, tensile strength is measured in Pounds-force per square inch (psi) or Kilo-pounds per square inch (KPSI).

What is another name for the strength of materials? Strength of materials, also known as mechanics of materials is focused on analyzing stresses and deflections in materials under load. Strength of materials, also known as mechanics of materials, is a branch of mechanics that deals with the behavior of solid objects subject to stresses and strains.

Which material has the highest strength? Tungsten. Tungsten has the highest tensile strength of any pure metal – up to 500,000 psi at room temperature. It has the highest tensile strength even at temperatures over 1,500°C.

What is the strength of materials simplified? strength of materials, Engineering discipline concerned with the ability of a material to resist mechanical forces when in use. A material's strength in a given application depends on many factors, including its resistance to deformation and cracking, and it often depends on the shape of the member being designed.

What is a good MOS score? Due to the human tendency to avoid perfect ratings (now reflected in the objective approximations), somewhere around 4.3 - 4.5 is considered an excellent quality target. On the low end, call or video quality becomes unacceptable below a MOS of roughly 3.5.

What is MOS subject in mechanical engineering? Therefore, the subject of mechanics of materials or strength of materials is central to the whole activity of engineering design. Usually the objectives in analysis here will be the determination of the stresses, strains, and deflections produced by loads.

Is solid mechanics hard? Solid Mechanics can be considered a challenging subject as it involves understanding complex mathematical concepts and applying them to real-world problems.

What is the full form of DME in Mechanical Engineering? Diploma in Mechanical Engineering (DME)

What is the full form of SD in Mechanical Engineering? A project begins with conceptual design and then moves into schematic design (SD), wherein the concepts are translated into physical drawings.

What is DOM for dummies? The DOM Explained The DOM is a hierarchical structure composed of objects that make up a web page. Web browsers then expose this DOM so that you can change the page structure, style, and content using JavaScript. The DOM looks like a tree structure with a set of connected nodes.

What is G in strength of materials? Shear modulus, also known as Modulus of rigidity, is the measure of the rigidity of the body, given by the ratio of shear stress to shear strain. It is often denoted by G sometimes by S or ?.

How do you test strength of materials? A material is gripped at both ends by an apparatus, which slowly pulls lengthwise on the piece until it fractures. The pulling force is called a load, which is plotted against the material length change, or displacement.

What is the mechanical strength test? Tensile testing is a fundamental mechanical strength test used to determine material properties such as stress, strain, and yield deformation. It involves subjecting a material to a force on opposite ends and pulling till it breaks. Testing occurs in a tensile testing machine that is either hydraulic or electric.

Understanding Thermodynamics Concepts and Applications with Solutions

Thermodynamics is a branch of physics that deals with the relationships between heat and other forms of energy. It is a fundamental science with applications in many fields, including engineering, chemistry, and biology. The study of thermodynamics can help us to understand the behavior of matter and energy, and to design systems that are more efficient and sustainable.

One of the most important concepts in thermodynamics is the law of conservation of energy. This law states that energy cannot be created or destroyed, only transferred or transformed. This means that the total amount of energy in the universe is constant. The law of conservation of energy can be used to solve many problems in thermodynamics, such as determining the efficiency of a heat engine or the amount of heat required to raise the temperature of a substance.

Another important concept in thermodynamics is entropy. Entropy is a measure of the disorder of a system. The more disordered a system is, the higher its entropy. Entropy can be used to determine the spontaneity of a reaction. A spontaneous reaction is one that proceeds without the need for external input of energy. The spontaneity of a reaction can be predicted by the change in entropy of the system.

The principles of thermodynamics are used in a wide variety of applications. For example, thermodynamics is used to design heat engines, air conditioners, and refrigerators. Thermodynamics is also used to study the behavior of materials, such as metals, plastics, and ceramics. The study of thermodynamics can help us to develop new materials with improved properties.

If you are interested in learning more about thermodynamics, there are a number of resources available. One of the best ways to learn about thermodynamics is to read a textbook. There are many different textbooks on thermodynamics available, so you can find one that is appropriate for your level of understanding. You can also find online courses on thermodynamics. These courses can be a great way to learn about thermodynamics at your own pace.

> *high school biology textbook*, *diploma mechanical engineering strength of materials*, *thermodynamics concepts and applications solutions manual*

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