

**BRIGHT FUTURE
BEGINS WITH
GATEWAY TRAINING PROGRAMME**

IIT JEE & NEET

Std. XI & XII



Subjects Handled

ENGINEERING: Mathematics, Physics & Chemistry

MEDICAL: Botany, Zoology, Physics & Chemistry

COMBINED: Mathematics, Physics, Chemistry, Botany & Zoology



GATEWAY
Training Programme



THE PREMIER INSTITUTE FOR MEDICAL & ENGINEERING ASPIRANTS

SUCCESS IN NEET

NEET is not a difficult exam but a different one to assess your understanding of the core concepts. Accuracy, clarity in definition, thorough knowledge of all technical and biological terms are sure to fetch you the score. Here are a few important aspects in Biology as a glimpse. Enrol with AIMS to ensure your entry to a medical institution!!!

BIOLOGY

IMPORTANT DEFINITIONS

- Parthenogenesis – development of organisms without fertilization
- Dendrochronology – calculation of age of the tree by counting annual rings
- Histology – study of tissue
- Phosphorescence – is the delayed emission of long wave radiation from an activated molecule
- Genetics – history of heredity and variations
- Translocation – transport over long distances proceeds through Vascular System
- Chemiosmotic Hypothesis – explains the mechanism of how exactly ATP is Synthesized in chloroplast
- Micro biology – study of microbes

FACT FILE

1. Kingdom Monera – Bacteria
 - i. Archae bacteria
 - ii. Eubacteria
 - iii. Cyanobacteria
 - iv. Thermoacidophiles
2. Viruses – They are non-cellular organisms
3. Viroids – New infectious diseases

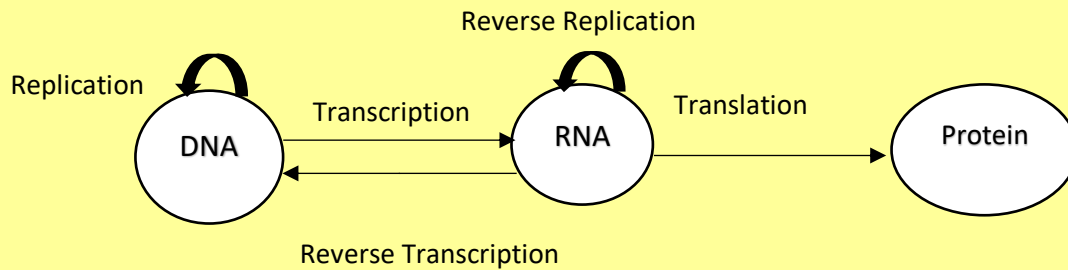
IMPORTANT GLANDS

- **GREEN GLAND** - At the base of antenna in Crustaceans, Excretory in function
- **INK GLAND** - Ventral aide of the body in cuttle fish (sepia)
- **LACHRYMAL GLAND** - Beneath the upper eyelid of many vertebrates
- **PINEAL GLAND** – small pea-sized gland. It controls the day-night cycle

CENTRAL DOGMA OF LIFE

The classic view of the central dogma of biology states that, “the coded genetic information hard-wired into DNA is transcribed into individual transportable cassettes, composed of messenger RNA (mRNA); each mRNA cassette contains the program for synthesis of a particular protein (or small number of proteins)”. In simple terms

“It is the flow of genetic information in a biological system”



Three steps:

- **Transcription** (the process by which the information in DNA is copied into messenger RNA (mRNA) for a protein production, Translation (Protein synthesis) and Replication carried out by a complex group of proteins that unwind the super helix, unwind the double stranded DNA helix, and using DNA polymerase and its associated proteins, copy or replicate the master template itself so the cycle can repeat the DNA → RNA → PROTEIN in a new generation of cell or organisms.
- **Reverse transcription:** Some viruses transcribe RNA into DNA through the use of a specific enzyme called reverse transcriptase i.e. the sequence of events is : RNA → DNA → RNA PROTEIN (e.g. Retroviruses)
- There are also some exceptions to the central dogma of life: some viruses use only RNA proteins (they don't develop DNA) and prions. A new exception to the central dogma is discovered, Protein → Protein i.e. proteins directly replicating themselves by making conformational change in their proteins

REMARKABLE FACTS

Most poisonous

The most active known poison is
Batrachotoxin-derived from dart frog
Phyllobates terribilis of West Colombia

Largest Living Land Animal

African Bush Elephant

Fastest Flying Creature

Falco Peregrinus (Falcon)

AIMS exclusive training modules help you gain absolute clarity of every concept. Your ease and confidence, your speed and accuracy in answering. Your admission to a medical degree through merit are inference of AIMS coaching. Experience your success with us.



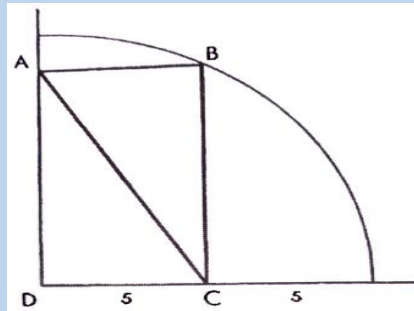
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SUCCESS IN IIT JEE

In competitive examinations, a well- equipped student adopts the simplest & the shortest path to achieve his/her goal. Once you get on this track you will experience the progress. Smart work not only awards score but also rewards you with a glorious career and future. A few samples here!!

MATHEMATICS

A rectangle is inscribed in the quadrant of a circle as shown.
What is the length of the diagonal AC?



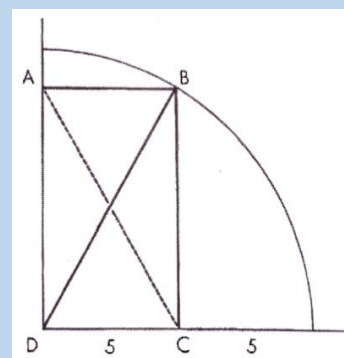
The Traditional Solution

This problem may appear unsolvable because of inscribe of the rectangle in the quadrant of the circle. Also, except for the radius, no other measurement is given.

Change your perception of looking at the problem with a small construction in it!!

The Smart Solution

In this case the construction you draw is the diagonal BD. Line AC is one diagonal of the rectangle. The other diagonal is clearly the 10- Unit radius of the circle. Since the Diagonals are equal, line AC is 10 units long.



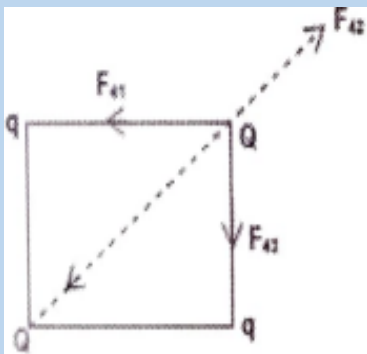
PHYSICS

A charge Q is placed at each of the opposite corners of a square. A charge q is placed at each of the other corners. If the net force on the charge Q is zero, then Q/q equals

- (1) $-2\sqrt{2}$ (2) -1 (3) 1 (4) $-1/\sqrt{2}$

The Traditional Solution

Draw the diagram, with the charges and the directions of the forces. Now write the equations. Solve for Q in terms of q . The three forces F_{41} , F_{42} , and F_{43} acting on Q are shown in the diagram.



The resultant of F_{41} and $F_{43} = \sqrt{2}F_{41} = \sqrt{2} (1/4\pi\epsilon) (Q*q/r^2)$
the resultant on Q becomes zero only if the ' q ' charges are of opposite charge to Q
 $F_{42} = (1/4\pi\epsilon) (Q*Q/(\sqrt{2}r))$

Since we know that the charge Q is at rest, the two forces must cancel each other out.

Solving the equations we get

$$\sqrt{2} (Q*q/r^2) = -(Q*Q/(\sqrt{2}r)^2)$$

$$\sqrt{2}Q*q = -Q*Q/2 \quad Q/q = -2\sqrt{2}$$

This will take anything between 2-4 minutes. The usual way!!

The Smart Solution

1. There are three forces on Q : One force is exerted by the other Q charge along the diagonal. The other two forces are equal and are exerted by the two q charges along the sides.
2. The diagonal of the square is longer than the sides. Hence, the resultant of the two q forces is stronger than either q force.
3. Here are two charges ' q ' and ' q ' which are closer to ' Q ' are balanced by another ' Q ' which is farther
4. So Q must be larger than q $|Q/q| > 1$, so option 1 is only possible

Can you believe it!!

We arrived at the correct answer in just 4 steps. Not a single formula is written!!

A journey of a thousand miles start with the single step. Your 'single step' with AIMS Education will offer you the SMART WAY to lead you to your dream destination –The IIT.



THE PREMIER INSTITUTE FOR MEDICAL & ENGINEERING ASPIRANTS

Advantages @ AIMS

- Well-designed course structure with ample teaching hours, well-spaced and scheduled.
- Maximum time utilization during the first year (in Std. XI), so that the student finds it comfortable to prepare and perform well in both the boards and in the entrance exams in second year.
- Thorough coverage of all minute aspects in every chapter.
- Result oriented course materials with assignments and worked examples.
- Guidance by faculty to help students excel in areas of academics and associated learning skills.

FREE

E-PRACTICE

A Unique platform with numerous tests at various difficulty level

Course	Subjects	Fee (Rs)	*Merit Scholarship Discount (Rs)	Fee after Discount (Rs)
ENGINEERING OR MEDICAL	Maths Physics Chemistry	19,500	2,500	17,000
	Biology Physics Chemistry	19,500	2,500	17,000
ENGINEERING AND MEDICAL (Combined)	Maths Physics Chemistry Biology	22,500	2,500	20,000

Merit scholarship

Students with 85% and above in Mathematics & Science in Std. X can avail a discount of Rs.2500

* A photocopy of the mark sheet is MUST to avail the scholarship

ADMISSION OPEN

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