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Q-1 - 10761404

Under which of the following conditions there will be no change in the reading frame of following mRNA?

5'AACAGCGGUGCUAUU 3'

(A) Deletion of GGU from 7th, 8th and 9th positions

(B) Insertion of G at 5th position

(C) Deletion of G from 5th position

(D) Insertion of A and B at 4th and 5th position respectively

CORRECT ANSWER: A

Q-2 - 36805958

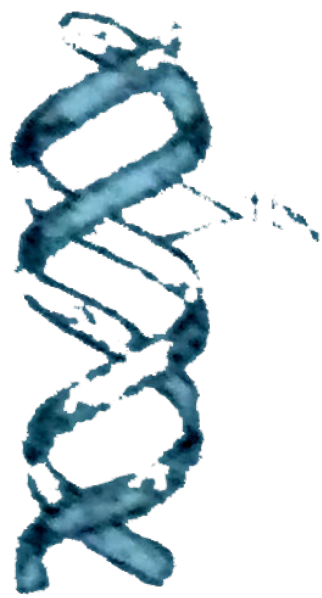
The experimental proof for semiconservative replication of DNA was first shown in a

- (A) plant
- (B) bacterium
- (C) fungus
- (D) virus

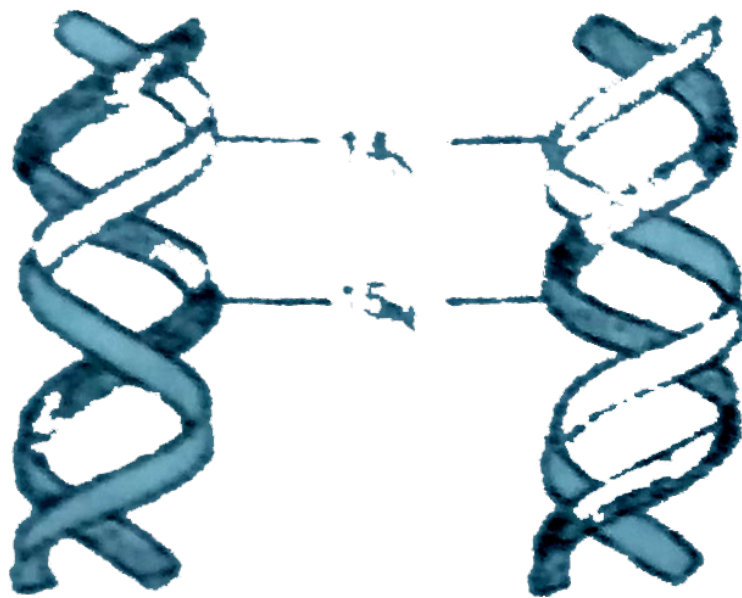
CORRECT ANSWER: B

SOLUTION:

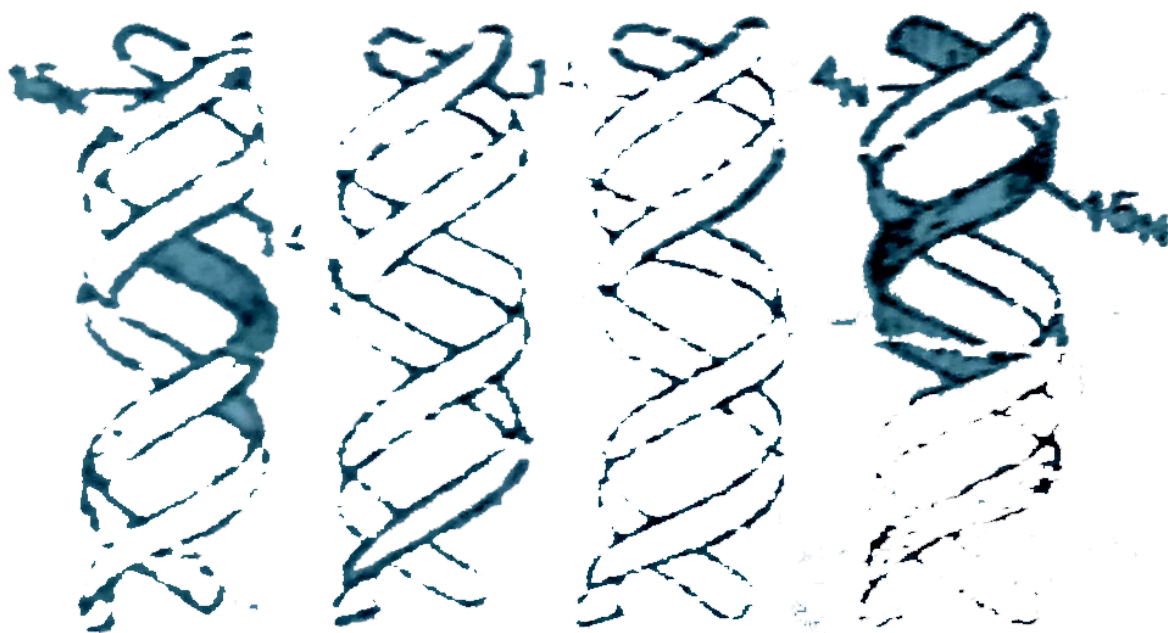
The experimental proof for semiconservative replication of DNA was first shown in a bacterium , *Escherichia coli* . It was discovered by Meselson and Stahl (1958).



Parent DNA molecule



First replication



Interpretation of results of experiment of Meselson and Stahl (1958) to prove semi-conservative replication of DNA

In this mode of replication , one strand of parent DNA is conserved in the progeny while the second is freshly synthesised . Meselson and Stahl proved this by using

heavy isotope of Nitrogen (N^{15}) .

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Q-3 - 36806097

AGGTATCGCAT is a sequence from the coding strand of a gene .

What will be the corresponding sequence of the transcribed mRNA ?

(A) ACCUAUGCGAU

(B) UGGTUTCGCAT

(C) AGGUAUCGCAU

(D) UCCAUGCGUA

SOLUTION:

Coding strand is the one that codes for mRNA. It has same nucleotide sequence as that of mRNA except

thymic (T) is replaced by uracil (U) in mRNA. Hence, the corresponding sequence of transcribed mRNA by template or non-coding strand (complementary to RNA) is AGGUAUCGCAU.

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Q-4 - 35214281

Spliceosomes are not found in cell of

(A) plants

(B) fungi

(C) animals

(D) bacteria

CORRECT ANSWER: D

SOLUTION:

Spliceosome is a large molecules complex found in nucleus of eukaryotic cells of plants , animals and fungi , etc. it is assembled from snRNAs and protein complexes that plays an important role in splicing of introns.

Spliceosome is absent in cells of bacteria.

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Q-5 - 35214342

During replication of a bacterial chromosome DNA syntnthesis starts from a replication origin site and

- (A) RNA primer are involved
 - (B) is facilitated by telomerase
 - (C) moves in one direction of the site
 - (D) moves in bi- directional way
-

CORRECT ANSWER: A

SOLUTION:

The events for initiation of DNA replication in prokaryotes may be classified into (a) pre-priming (occurring only at the origin), (b) priming (recurring with the initiation of each Okazaki fragment during elongation phase. Unwinding of DNA is followed by the synthesis of RNA primers by RNA primase.

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Q-6 - 35214293

A molecule that can act as a genetic material must fulfill the traits give below, except :

(A) it should be able to express itself in the form of Mendelian characters

(B) it should be able to generate its replica

(C) it should be unstable structurally and chemically

(D) it should provide the scope for slow changes that are required for evolution

CORRECT ANSWER: C

SOLUTION:

A molecule that can act as a genetic material must be unstable structurally and chemically.

The criteria that a molecule must fulfil to act as a genetic material are as following

(i) It should be able to replicate.

(ii) It should be chemically and structurally stable.

(iii) It should provide the scope for slow changes, i.e. mutations which are required for evolution.

(iv) It should be able to express itself in the form of

'Mendelian characters'

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Q-7 - 35214354

DNA fingerprinting refers to

- (A) molecular analysis or profiles of DNA samples
- (B) analysis of DNA samples using imprinting device
- (C) techniques used for molecular analysis of different specimens of DNA
- (D) techniques used for identification of finger - prints of individuals

CORRECT ANSWER: A

SOLUTION:

DNA fingerprinting refers to molecular analysis of DNA samples. Alec jeffreys [1985,86] discovered this technique for the first time.

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Q-8 - 35214302

Satellite DNA is important because it

- (A) codes for proteins needed in cell cycle
 - (B) show high degree of polymorphism in population and also the same degree of poylmorphism in an individual , which is heritable from parents to children
 - (C) does not code for proteins and is same in all members of the population
 - (D) codes for enzymes needed for DNA replication
-

CORRECT ANSWER: B

SOLUTION:

Satellite DNA forms the minor peak after centrifugation of DNA. These are repetitive DNA sequences that do not code for any protein. They show high degree of polymorphism and heritable from parents to children , thus form the basis of DNA fingerprinting.

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Q-9 - 35214364

Degeneration of a genetic code is attributed to the :

(A) entire codon

(B) third member of a codon

(C) first member of a codon

(D) seconds member of a codon

CORRECT ANSWER: B

SOLUTION:

It has seen variously that one tRNA molecule codes for more than one amino acid molecules . This is possible due to the improper pairing of third codon with the first anticodon of tRNA.

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Q-10 - 35214284

Which of the following RNAs should be most abundant in animal cell

(A) rRNA

(B) tRNA

(C) mRNA

(D) miRNA

CORRECT ANSWER: A

SOLUTION:

There are three main types of RNA , i.e. rRNA, tRNA and mRNA is the most abundant form of RNA , because it is responsible for condig and protien aynthesis in the cell and associated with ribosomes . mRNA provides the template for translation . tRNA bring amino acids and reads the genetic code.

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Q-11 - 35214396

Genes that are involved in turning on or off the transcription of set of structural genes are called Or Functioning of structural genes is

controlled by

(A) polymorphic genes

(B) operator genes

(C) reductant genes

(D) regulatory genes

CORRECT ANSWER: D

SOLUTION:

The switching on and off of an operator is controlled by repressor protein which is coded by the regulator gene R.

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Genes are packed in bacterial chromosome by

(A) histones

(B) basic protein

(C) acidic protein

(D) actin

CORRECT ANSWER: B

SOLUTION:

Bacteria are prokaryotic organisms . Polyamines (basic proteins) like spermidine and cadaverine (instead of histones) are associated with DNA packaging in bacteria.

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Which of the following is not required for any of the techniques of DNA fingerprinting available at present

- (A) Zinc finger analysis
 - (B) Restriction enzymes
 - (C) DNA - DNA hybridisation
 - (D) Polymerase chain reaction
-

CORRECT ANSWER: A

SOLUTION:

A zinc finger is a small protein structural motif that is characterised by the coordination of one or more Zn ions in order to stabilise the folds.

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Which of the following RNAs up specific amino acid (from amino acid pool) in the cytoplasm to ribosome during protein synthesis

Or Which form of RNA has a structure resebling clover leaf

(A) mRNA

(B) tRNA

(C) rRNA

(D) RNA

CORRECT ANSWER: B

SOLUTION:

tRNA (soluble RNA = sRNA) is a 70-75 nucleotide ling molecule . 80% of this RNA is double helical , one end of this molecule has G and other C- C- A sequences.

The clover leaf model [2D) of tRNA was given by R

Holley [1968] and Kim et al , [1973] suggested 'L' shaped model (3D] of tRNA by X- ray diffraction while studying phenyl alanine tRNA of yeast . Each amino acid had its own specific tRNA molecule which transfers it from cytoplasm to the ribosome.

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Q-15 - 35214286

A complex of attached to a single of RNA is known as

- (A) Polymer
- (B) polypeptide
- (C) okazaki fragment
- (D) polysome

CORRECT ANSWER: D

SOLUTION:

In prokaryotes , several ribosomes may attach to single mRNA and form a chain called polyribosomes or polysomes.

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Q-16 - 35214365

During translation initiation in prokaryotes, a GTP molecule is needed in :

- (A) association of 30S , mRNA with formyl met tRNA
 - (B) association of 50S subunit of ribosome with initiation complex
 - (C) formation of formyl met tRNA
 - (D) binding of 30S subunit of ribosome with mRNA
-

CORRECT ANSWER: A

SOLUTION:

During the process of translation an initial complex is formed between mRNA , 30S ribosomal sub -unit and methionyl tRNA . This complex is formed due to the association of IF_1 , IF_2 , IF_3 initiation factors and GTP molecule.

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Q-17 - 35214418

There are special proteins that help to open up DNA double helix in front of the replication fork . These protein are

(A) DNA gyrase

(B) DNA polymerase -I

(C) DNA ligase

(D) topoisomeras

CORRECT ANSWER: A

SOLUTION:

DNA gyrase helps in opening of DNA double helix in front of replication fork.

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Q-18 - 35214294

Which of the following r-RNAs acts as structural RNA as well as ribozyme in bacteria ?

(A) 5srRNA

(B) 18srRNA

(C) 23srRNA

(D) 58srRNA

CORRECT ANSWER: C

SOLUTION:

Bacteria cells use their 23 srRNA as an enzyme during protien synthesis . This is the only non - proteinaceous enzyme known so far.

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Q-19 - 35214410

In eukaryotic genes, coding sequences are called :

(A) introns

(B) operons

(C) exons

(D) cistrons

CORRECT ANSWER: C

SOLUTION:

In split genes coding region is called exons . In higher organisms (eukaryotes) gene is not continuous , within a single gene there may be four or five silent regions .

These regions are called introns (which do not transcribe mRNA) . The remaining part is called as exons (transcribe temporary complementary pairing with three bases on mRNA).

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Q-20 - 35214368

Exon part of m- RNA code for

(A) protein

(B) lipid

(C) carbohydrate

(D) phospholipid

CORRECT ANSWER: A

SOLUTION:

Exon part of mRNA consists of codons for protein synthesis. Exon is the stretch of bases which codes for amino acids, while the non-coding stretches of bases are called intron.

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Taylor conducted the experiment to prove semiconservative mode of chromosomereplication on:

(A) *Vinca rosea*

(B) *Vicia faba*

(C) *Drosophila melanogaster*

(D) *E. coli*

CORRECT ANSWER: B

SOLUTION:

The use of radioactive thymidine to detect the semiconservative mode of replication of newly synthesised DNA in the chromosomes was performed on *Vicia faba* by Taylor and colleagues in 1958 . This experiment proved that the DNA in chromosomes replicates semiconservatively . Hence, the option (b) is

correct.

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Q-22 - 35214429

A DNA with unequal nitrogen bases would most probably be

- (A) single stranded
- (B) double stranded
- (C) triple stranded
- (D) four stranded

CORRECT ANSWER: A

SOLUTION:

A single stranded DNA do not possess its complementary base pairs so it would have unequal nitrogen bases.

Q-23 - 35214347

The telomeres of eukaryotic chromosomes consist of short sequences of

- (A) thymine rich repeats
- (B) cytosine rich repeats
- (C) adenine rich repeats
- (D) guanine rich repeats

CORRECT ANSWER: D

SOLUTION:

Telomeres have been shown to have unique structures that include short nucleotide sequence present as tandemly repeated units . In eukaryotes the telomeres

terminate with a single- eukaryotes the telomeres
terminate with a single- stranded DNA [12-16
nucleotides long) rich in guanine.

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Q-24 - 35214453

The process of DNA formation from RNA is called :

- (A) transversion
- (B) transcription
- (C) translation
- (D) translocation

CORRECT ANSWER: B

SOLUTION:

The transfer of genetic information from DNA to RNA (mRNA) is known as transcribe RNA but only one of them does it which is called as template strand.

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Q-25 - 35214298

which one of the following is not applicable to RNA

- (A) Complementary base pairing
- (B) 5' phosphory and 3' hydroxy ends
- (C) Heterocyclic nitrogenous bases
- (D) Chargaff's rule

CORRECT ANSWER: D

SOLUTION:

Chargaff's rule is not applicable to RNA. He is the generalisations formulated about DNA structure. The rule states that DNA from any cell of all organisms should have a 1 : 1 ratio (base pair rule) of pyrimidine and purine bases, i.e. the amount of guanine is equal to cytosine and the complementary base pairing is sometimes, visible in RNA as well (in double stranded RNAs viruses) hence option (a) is not taken into consideration.

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Q-26 - 35214424

Reverse transcriptase is :

(A) RNA dependent RNA polymerase

(B) DNA dependant RNA polymerase

(C) DNA dependent RNA polymerase

(D) RNA dependent DNA polymerase

CORRECT ANSWER: D

SOLUTION:

Reverse transcriptase is RNA dependent DNA polymerase . H Temin and D Baltimore discovered reverse transcription . Reverse transcriptase has modified central dogma of molecular biology as RNA \rightarrow DNA \rightarrow RNA \rightarrow Protein.

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Q-27 - 35214448

Khorana first deciphered the triplet codons of

(A) serine and isoleucine

(B) threonine and histidine

(C) tyrosine and tryptophan

(D) phenylalanine and methionine

CORRECT ANSWER: B

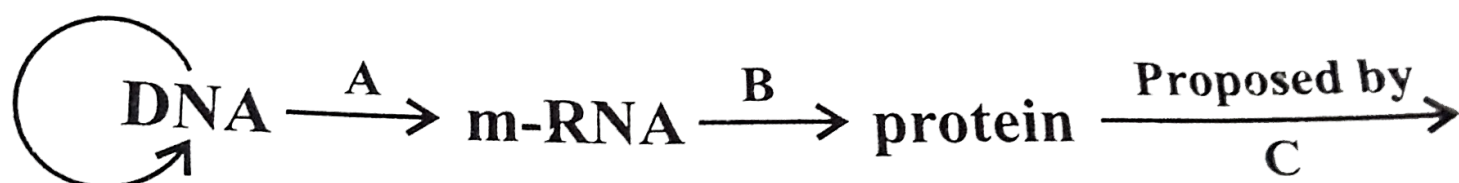
SOLUTION:

Dr Hargobind Khorana deciphered first triplet codon of threonine and histidine.

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Q-28 - 35214307

The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C.



- (A) A- transcription , B - replication, C- James Waston
- (B) A- translation , B- transcription, C- Erwin Chargaff
- (C) A- transcription , B - translation , C - Francis Crick
- (D) A- translation , B - extension , C - Rosalind Franlin
-

CORRECT ANSWER: C

SOLUTION:

DNA

Transcription
—————→ *mRNA*
A

Translation
—————→ Protein
B

Francis Crick
—————→
C

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Q-29 - 35214417

Which is not directly involved in protein synthesis ?

(A) Transcription

(B) Initiation

(C) Elongation

(D) Termination

CORRECT ANSWER: A

SOLUTION:

Transcription is the synthesis of RNA on DNA template .

It is not involved in protein synthesis (translation).

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Q-30 - 18706022

Translation is called

(A) Formation of RNA from DNA

(B) Formation of DNA from DNA

(C) Formation of DNA from RNA

(D) Protein formation

CORRECT ANSWER: D

SOLUTION:

d) Formation of protein with the help of information present in m-RNA is called translation.

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Q-31 - 35214310

Removal of RNA polymerase III from nucleoplasm will affect the synthesis of

Or Eukaryotic RNA Polymerase III catalyse the synthesis of

(A) tRNA

(B) hnRNA

(C) mRNA

(D) rRNA

CORRECT ANSWER: A

SOLUTION:

RNA polymerase III transcribes tRNA , therefore tRNA synthesis will be affected will be affected. RNA polymerase-II synthesises mRNA while , RNA polymerase-I synthesis rRNA in eukaryotes.

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Q-32 - 35214458

Genetic code consists of

(A) adenine and guanine

(B) cytosine and uracil

(C) cyosine and guanine

(D) All of the above

CORRECT ANSWER: D

SOLUTION:

The sequence of nitrogen bases on the mRNA which store information for linking the amino acids in a definite sequence during synthesis of proteins is called genetic code . These nitrogen bases include adenine , guanine , cytosine and uracil

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Q-33 - 35214352

During transcription, if the nucleotide sequence of the DNA strand

that is being coded is ATACG, then the nucleotide sequence in the mRNA would be

(A) TATGC

(B) TCTGG

(C) UAUGC

(D) UATGG

CORRECT ANSWER: C

SOLUTION:

If DNA has ATACG nucleotide sequence then the mRNA would contain UAUGC sequence . The formation of mRNA from DNA is termed as transcription. This process takes place in the nucleus (eukaryotes) or in the cytoplasm (prokaryotes). The base sequence of mRNA is complementary copy of the template DNA strand.

Q-34 - 35214451

In RNA, the thymine is replaced by :

- (A) adenine
- (B) guanine
- (C) cytosine
- (D) Uracil

CORRECT ANSWER: D

SOLUTION:

DNA consists of nitrogenous bases , adenine ., guanine , cytosine and thymine , whereas in RNA thymine is replaced by uracil . The other nitrogenous bases , i.e. adenine , guanine , cytosine are present both in RNA

and DNA.

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Q-35 - 35214314

If one strand of DNA has the nitrogenous base sequence as ATCTG, what would be the complementary RNA strand sequence ?

- (A) TTAGU
- (B) UAGAC
- (C) AACTG
- (D) ATCGU

CORRECT ANSWER: B

SOLUTION:

If one strand of DNA has the nitrogenous base sequence

as ATCTG , the complementary sequence of mRNA will be UAGAC.

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Q-36 - 18706026

Which one of the following sequence represents m-RNA coded from a DNA segment with base pairs as :

GA GC GC ACA

CT CG CG TGT

(A) GAGCGCACA

(B) CUCCGCUGU

(C) CTCGCGTGT

(D) CUCCGCUCC

CORRECT ANSWER: A

Q-37 - 35214358

chromosomes in a bacterial cell can be 1-3 in number and :

- (A) can be either circular or linear, but never both within the same cell
- (B) can be circular as well as linear within the same cell
- (C) are always circular
- (D) are always linear

CORRECT ANSWER: C

SOLUTION:

Bacterial chromosomes are circular DNA molecules.

Nucleotide arrangement in DNA can be seen by

(A) X - ray crystallography

(B) electron microscope

(C) ultracentrifuge

(D) light microscope

CORRECT ANSWER: A

SOLUTION:

Astbury by his X- ray diffraction studies suggested 3- D configuration for DNA molecules which was confirmed by Wilkins and Franklin in 1952 and then in 1953

Waston and Crick designed the model of DNA molecule.

The structure in chromatin seen as 'beads-on' string' when viewed under electron microscope are called

- (A) Genes
- (B) Nucleotides
- (C) Nucleosomes
- (D) Base pairs

CORRECT ANSWER: C

SOLUTION:

Nucleosome appear as "beads - on - string" in the chromosones. Nucleosome is sub - microscopic sub - unit of chromatin which is formed by wrapping of DNA over a core of histone proteins . The term was coined by

Ouder , et , al [1975] . It is oblate structure with a length of 10 nm and a thickness of 5-5.7 nm. its core is called nu - body . the latter is formed of four pairs of histone molecules - H_2A , H_2B , H_3 and H_4 . DNA makes 1.75 turns over the octamer to form a nucleosome.

Two adjacent nucleosomes are connected by a short segment of unbound DNA called linker DNA . A fifth type of histone called H_1 is attached over the linker DNA.

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Q-40 - 18706033

The translation unit is

- (A) TATA box to start point
- (B) TATA box to stop codon
- (C) Start box to stop codon

(D) 35 sequence to start point

CORRECT ANSWER: B

SOLUTION:

b) The transcription unit is that stretch or sequence of DNA that is transcribed into a single RNA molecule. A typical transcription unit has a promoter, a start a coding region and a terminator sequence at the end.

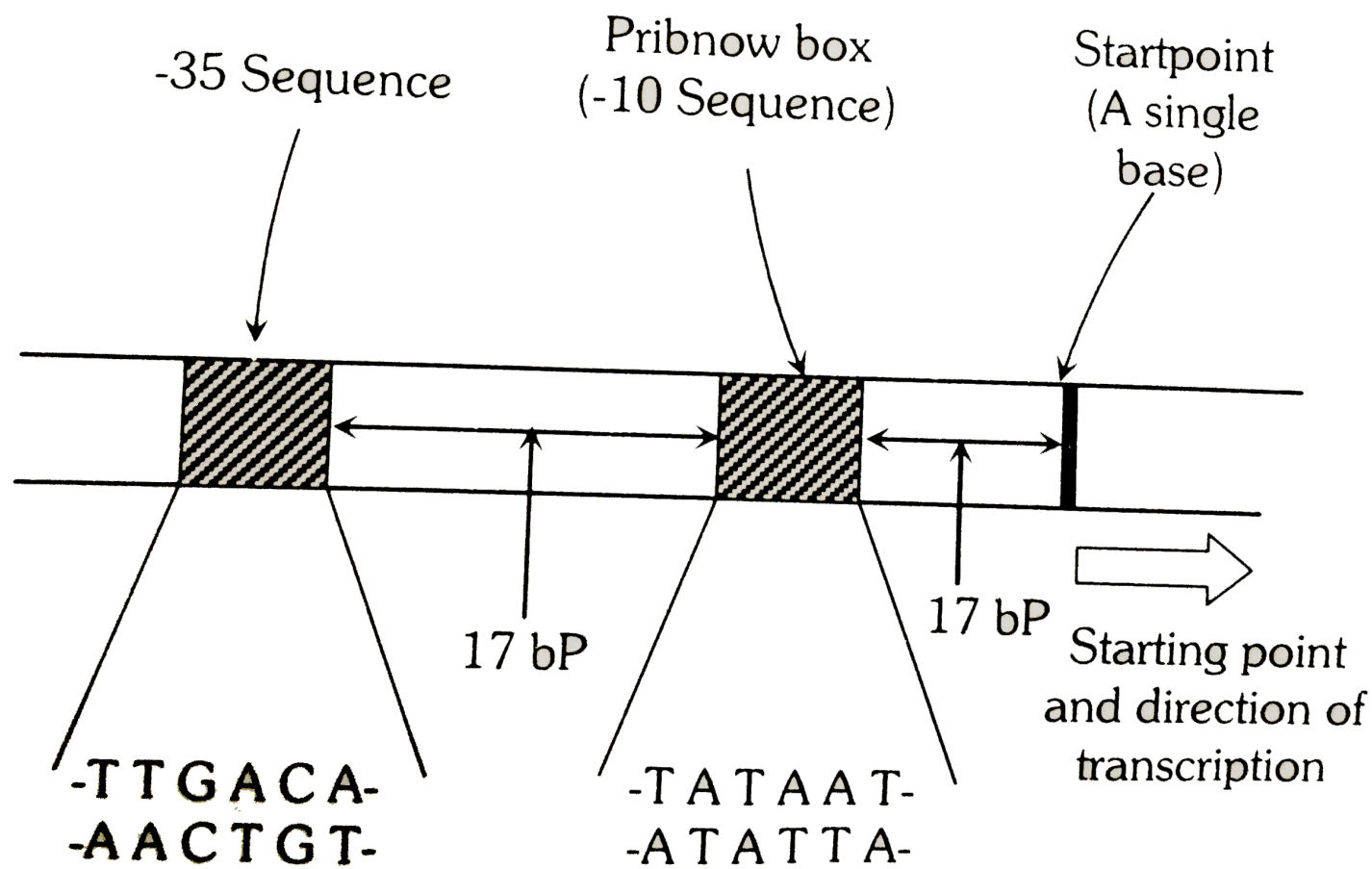
1) Start point is the site within a promoter from which transcription begins.

2. - 10 sequence is 10 bP upstream of the start point has consensus sequences TATAAT. This is commonly known as Pribnow box.

3) 35 sequences is on 35 bP upstream of the start point. It has consensus sequence TTGACA.

4) The distance between -10 to -35 sequences is 16-18

and seems to be critical for proper orientation of RNA polymerase during transcription initiation.



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Q-41 - 35214322

Polysome is formed by

- (A) several ribosomes attached to a single mRNA
- (B) many ribosomes attached to a strand of endoplasmic reticulum
- (C) a ribosome with several subunits

(D) ribosomes attached to each other in a linear arrangement

CORRECT ANSWER: A

SOLUTION:

The group of ribosomes together with the single mRNA molecules, they are translating is called polysome. They are formed by several ribosomes attached to a single mRNA.

In eukaryotic cells the ribosomes are attached to rough endoplasmic reticulum by ribophorin protein. Electron microscopy reveals that membranes of homogenised endoplasmic reticulum disrupt to form closed vesicles called microsomes. Microsomes derived from rough endoplasmic reticulum are studied with ribosomes and are called rough ribosomes.

Q-42 - 35214405

Okazaki fragments are seen during

(A) transcription

(B) translation

(C) replication

(D) transduction

CORRECT ANSWER: C

SOLUTION:

During DNA replication in lagging strand DNA fragments are formed in small pieces these are called Okazaki fragments.

Q-43 - 35214324

A sequential expression of a set of human genes occurs when a steroid molecule binds to the

- (A) transfer RNA
- (B) messenger RNA
- (C) DNA sequence
- (D) ribosome

CORRECT ANSWER: C

SOLUTION:

The steroid hormone receptor protein complex activate transcription of target gene by binding to sepecific DNA sequence.

Q-44 - 35214385

Gene and cistron words are sometimes used synonymously because

- (A) one cistron contains many genes
- (B) one gene contains many cistrons
- (C) one gene contains one cistron
- (D) one gene contains no cistron

CORRECT ANSWER: C

SOLUTION:

Cistron is generally accepted as a synonym for gene .

Gene (Gr. Genos = birth , race) is the basic unit of heredity . It is a sequence of nucleotides on a chromosome that encodes a polypeptide or RNA

molecule and so , determines the nature of individual 's inherited traits . Cistron is a segment of DNA that codes for one polypeptide.

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Q-45 - 18706038

Select the correct statement regarding protein synthesis :

- (A) When the small subunit of the ribosome encounters an *mRNA* the process of translation begins
 - (B) Peptidase catalyses the formation of peptide bond
 - (C) *UTRs* are present between the codon binds to the initiation codon
 - (D) The completed polypeptide is stored in the ribosome and released when required
-

CORRECT ANSWER: A

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Q-46 - 35214331

Molecular basis of organ differentiation depends on the modulation in transcription by

- (A) RNA polymerase
- (B) ribosome
- (C) transcription factor
- (D) anticodon

CORRECT ANSWER: C

SOLUTION:

Transcription factor is molecular basis of organ

differentiation.

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Q-47 - 35214452

A nucleotide is formed of

- (A) purine , pyrimidine and phosphate
- (B) purine , sugar and phosphate
- (C) nitrogen base , sugar and phosphate
- (D) pyrimidine , sugar and phosphate

CORRECT ANSWER: C

SOLUTION:

Nucleotide is the basic unit of nucleic acids (DNA and RNA) . It is composed of nucleoside nitrogenous base

+ pentose sugar) and phosphate group.

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Q-48 - 35214278

If there are 999 bases in RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered

- (A) 1
- (B) 11
- (C) 33
- (D) 333

CORRECT ANSWER: C

SOLUTION:

33 condons will be altered if the 901 1st base is deleted and RNA has only 998 bases instead of 999 bases.

Total bases presents in RNA = 999 Bases left after deletion of 901 st base in RNA = $999 - 901 = 98$ Number of codon present in 98 = 33 (Approximately as three codens code for one amino acid).

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Q-49 - 35214345

After a mutation at a genetic locus the character of an organism changes due to the change in :

- (A) protein structure
- (B) DNA replication
- (C) protein synthesis pattern
- (D) RNA transcription pattern

CORRECT ANSWER: A

SOLUTION:

Normally , genetic information flows from DNA → mRNA → protein . Hence ,any change in nucleotides due to the mutation , would result in change in the structure of protein/ enzyme which might result in some change in the organism.

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Q-50 - 35214291

DNA-dependent RNA polymerase catalyzes transcription on one strand of the DNA which is called the :

(A) template strand

(B) coding strand

(C) alpha strand

(D) anti strand

CORRECT ANSWER: A

SOLUTION:

DNA dependent RNA polymerase catalyses transcription on one strand of the DNA called a template strand.

A template can be considered as one of those strands of DNA which decodes its information directly through RNA polymerase.

This information is then restored within the RNA molecule and transferred outside the nucleus for protein synthesis within the cytoplasm.

The criteria that a molecule must fulfil to act as a genetic material are as following

(i) It should be able to replicate.

(ii) It should be chemically and structurally stable.

(iii) It should provide the scope for slow changes , i.e. mutations which are required for evolution.

(iv) It should be able to express itself in the form of 'Mendelian characters'

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Q-51 - 35214362

What would happen if in a gene encoding a polypeptide of 50 amino acids, 25th codon (UAU) is mutated to UA A?

(A) A polypeptide of 49 amino acids will be formed

(B) A polypeptide of 25 amino acids will be formed

(C) A polypeptide of 24 amino acids will be formed

(D) Two polypeptides of 24 and 25 amino acids will be formed

CORRECT ANSWER: C

SOLUTION:

It has been seen variously that one tRNA molecule codes for more than one amino acid molecules . This is possible due to the improper pairing of third codon with the first anticodon of tRNA.

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Q-52 - 35214299

Identify the correct order of organisation of genetic material from largest to smallest :

- (A) Chromosome , gene , genome , nucleotide
- (B) Genome , chromosome , nucleotide gene
- (C) Genome , chromosome , gene , nucleotide

(D) Chromosome , genome , nucleotide , gene

CORRECT ANSWER: C

SOLUTION:

The correct order of organisation of genetic material from largest to smallest is as follows Genome , chromosome , gene , nucleotide.

Genome It is the total genetic material of a individual .

Chromosome It is a packed and organised structure containing most of the DNA of a living organism.

Gene It is a segment of DNA that encodes for a protein.

Nucleotide It is one of the structural components, or building blocks , of DNA and RNA.

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In DNA percentage of thymine is 20, then what is the percentage of guanine ?

(A) 20 %

(B) 40 %

(C) 30 %

(D) 60 %

CORRECT ANSWER: C

SOLUTION:

Total DNA [100] = A + T + C + G

A = 20% (given)

A = T (base pairing rule)

$100 = 20 + 20 + C + G$

$C + G = 100 - 40 = 60$

$C = G = 30$ (C = G)

Q-54 - 35214369

Which of the following reunites the exon segments after RNA splicing ?

(A) RNA polymerase

(B) RNA primase

(C) RNA ligase

(D) RNA protease

CORRECT ANSWER: C

SOLUTION:

RNA ligase reunites the exon segments after RNA splicing.

Q-55 - 35214341

Telomerase is an enzyme which is a

- (A) repetitive DNA
- (B) RNA
- (C) simple protein
- (D) ribonucleoprotein

CORRECT ANSWER: D

SOLUTION:

Ends of an eukaryotic chromosome are known as telomeres. Telomerase , which is a special ribonucleoprotein molecule (enzymatic in nature) is responsible for the synthesis of these telcomeres.

Q-56 - 35214399

The three codons which result in the termination of polypeptide chain synthesis are

(A) TAG , TAA , TGA

(B) GAT, AAT , AGT

(C) AGT , TAG , UGA

(D) UAA , UAG , UGA

CORRECT ANSWER: D

SOLUTION:

UAA , UAG and UGA act as stop codons (terminator codons) because these are not translated into amino acid . UAA is called ochre, UAG as ambera and UGA s

opal.

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Q-57 - 35214283

DNA replication in bacteria occurs

(A) during S- phase

(B) within nucleolus

(C) prior to fission

(D) just before transcription

CORRECT ANSWER: C

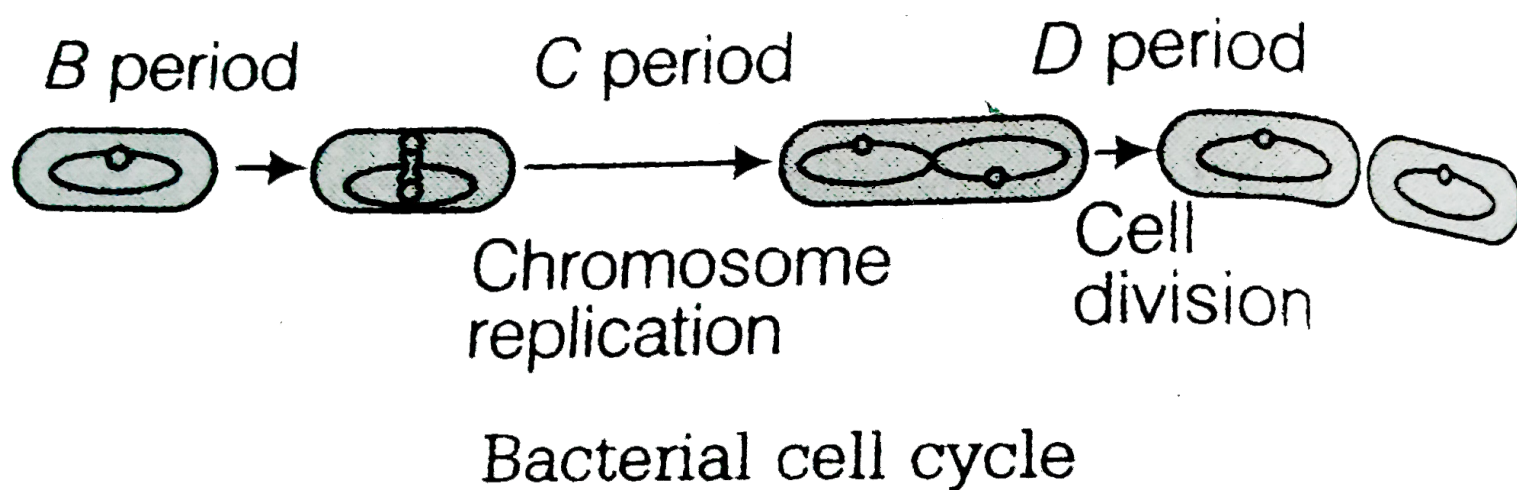
SOLUTION:

Bacteria lack a cell nucleus . Due to their primitive nature they lack a well marked S- phase . In bacteria DNA

replication occurs before fission. Concept Enhancer :

Bacteria cell cycle is divided into the B,C and D periods .

The B period extends from the end of cell division to the beginning of DNA replication .DNA replication occurs during the C period . the D period refers to the stage between the end of DNA replication and the division of bacterial cell into daughter cells.



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Q-58 - 35214409

The basis of DNA fingerprinting is :

(A) occurrence of Restriction Fragment Length

Polymorphism (RFLP)

(B) phenotypic differences between individuals

(C) availability of cloned DNA

(D) knowledge of human karyotype

CORRECT ANSWER: A

SOLUTION:

The basis of DNA fingerprinting is the occurrence of restriction fragment length polymorphism which are distributed throughout human genome . DNA fingerprinting was developed by a British geneticist Prof. Alec Jeffreys in 1984.

The chromosomes of every human cell contain short , highly repeated 15 nucleotide segments called mini - satellites or variable number tandem repeats scattered through their DNA.

Q-59 - 35214355

What does "lac" refer to in what we call the lac operon ?

- (A) Lac insect
- (B) The number , 1,00,000
- (C) Lactose
- (D) Lactase

CORRECT ANSWER: C

SOLUTION:

Lac operon refers to the DNA sequence in the genome of the bacterium *E. coli* encoding enzymes involved in lactose uptake and metabolism.

Q-60 - 35214416

The wild type *E. coli* cells are growing in normal medium with glucose. They are transferred to a medium containing only lactose as sugar. Which of the following changes take place ?

- (A) The lac operon is repressed
- (B) All operons are induced
- (C) The lac operon is induced
- (D) *E. coli* cells stop dividing

CORRECT ANSWER: C

SOLUTION:

Inducible genes are the genes which remain inactive or repressed in a cell and can be activated when a certain

substrate is to be metabolised . It has been seen when lactose is added to the medium of E. coli the poeron is induced and synthesis of enzymes required for degradation of lactose to glucose and galactose starts.

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Q-61 - 35214285

Which one of the following is the starter codon ?

(A) UGA

(B) UAA

(C) UAG

(D) AUG

CORRECT ANSWER: D

SOLUTION:

AUG is the start codon . It also codes for amino acid called methionine which is the first amino acid in a polypeptide chain . UAA , UAG and UGA are stop codons and are meant for termination of polypeptide chain during protein synthesis.

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Q-62 - 35214404

An enzyme that joins the ends of two strands of nucleic acids is a

- (A) polymerase
- (B) synthetase
- (C) helicase
- (D) ligase

CORRECT ANSWER: D

SOLUTION:

Liagase enzyme joins the ends of two strands of nucleic acid.

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Q-63 - 35214366

Which one of the following triplet codes, is correctly matched with its specificity for an amino acid in protein synthesis or as 'start' or 'stop' codon ?

(A) UGU - Leucine

(B) UAC- Tyrosine

(C) UCG- Start

(D) UUU - Stop

CORRECT ANSWER: B

SOLUTION:

UGU	→	Cistine
UAG	→	Tyrosine
UAC	→	Serine
UUU	→	Phenylalanine
UAG, UAG, UAA	→	Stop codons
UAG	→	Strart codon.

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Q-64 - 35214338

Which one of the following makes use of RNA as a template to synthesize DNA ?

- (A) Reverse transcriptase
- (B) DNA dependant RNA polymerase
- (C) DNA polymerase
- (D) RNA polymerase

CORRECT ANSWER: A

SOLUTION:

In 1970 H Temin and D Baltimore independently discovered the enzyme reverse transcriptase. This enzyme uses RNA as template for the synthesis of cDNA (complementary DNA).

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Q-65 - 35214420

DNA template sequence of CTGATAGC is transcribed over mRNA as

(A) GUCTUTCG

(B) GACUAUCG

(C) GAUTATUG

(D) UACTATCU

CORRECT ANSWER: B

SOLUTION:

During transcription complementary mRNA is formed on DNA template in which T is replaced by U. So , the sequence will be GACUAUCG.

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Q-66 - 35214348

The following ratio is generally constant for a given species

(A) $A+G/C+T$

(B) $T+C/G+A$

(C) $G+C/A+T$

(D) $A+C/T+G$

CORRECT ANSWER: C

SOLUTION:

The base ratio $A+T/G+C$ may vary from one species to another, but is constant for a given species. It is rarely equal to one species to another, but is constant for a given species. It is rarely equal to one and varies between 0.4 and 1.9.

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Q-67 - 35214437

The process of translation is :

(A) ribosome synthesis

(B) protein synthesis

(C) DNA synthesis

(D) RNA synthesis

CORRECT ANSWER: B

SOLUTION:

Translation is the process of protein synthesis in which the triplet base sequences of mRNA molecules is converted into a specific sequences of amino acids in a polypeptide chain , this occurs on ribosomes.

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Q-68 - 35214286

A complex of attached to a single of RNA is known as

(A) Polymer

(B) polypeptide

(C) okazaki fragment

(D) polysome

CORRECT ANSWER: D

SOLUTION:

In prokaryotes , several ribosomes may attach to single mRNA and form a chain called polyribosomes or polysomes.

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Q-69 - 35214411

If the sequences of bases in DNA is ATTCGATG, then the sequence of bases in its transcript will be

(A) CAUCGAAU

(B) UAAGCUAC

(C) GUAGCUUA

(D) AUUCGAUG

CORRECT ANSWER: B

SOLUTION:

Transcription is the process of synthesis of mRNA on DNA template by the complementary bases . As thymine is replaced by uracil in RNA so, the sequence of bases will be UAAGCUAC.

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Q-70 - 35214390

Who proposed the 'Signal hypothesis' meant for the biosynthesis of secretory type of proteins

(A) Camillo Golgi

(B) Blobel and Sabatini

(C) Baltimore

(D) Sheeler and Bianchi

CORRECT ANSWER: B

SOLUTION:

A variety of proteins are synthesised on ribosomes .

However , these have different destinations . David

Sabatini and G. Blobel proposed singal sequence

hypothesis according to which a short amino acid

sequence at the amino terminus of a newly synthesised

polypeptide directs a protein to its appropriate sequence.

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Which one of the following hydrolyses internal phosphodiester, bonds in a polynucleotide chain

(A) Lipase

(B) Exonuclease

(C) Endonuclease

(D) Protease

CORRECT ANSWER: C

SOLUTION:

Endonuclease hydrolyses internal phosphodiester bonds in a polynucleotide chain.

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DNA replication is :

- (A) conservative and discontinuous
 - (B) semi - conservative and semidiscontinuous
 - (C) semi - conservative and discontinuous
 - (D) conservative
-

CORRECT ANSWER: B

SOLUTION:

DNA replication is semi- conservative that means DNA formed after replication contains one strand of its parent DNA and this was proved by Meselson and Stahl [1958]. During replication the strand formed in leading strand is continuous , while the strand formed in lagging strand is discontinuous in the small pieces (Okazaki fragments).

Q-73 - 35214407

Triplet for inhibiting process of translation is

- (A) UAU
- (B) UAA
- (C) UAC
- (D) UGC

CORRECT ANSWER: B

SOLUTION:

Termination codons are three in number they are UAA (ochre) UAG (amber) and UGA (opal).

One functional unit of gene which specifies synthesis of one polypeptide is known as

Or

The equivalent of a structural gene

(A) muton

(B) cistron

(C) operon

(D) recon

CORRECT ANSWER: B

SOLUTION:

Cistron is the segment of DNA which determines the synthesis of complete polypeptide . Thus , it is

considered as equivalent to a correct and others are incorrect.

Concept Enhancer Eukaryotic structural gene is monocistronic whereas prokaryotic structural gene is polycistronic.

Muton Smallest unit of genomic DNA containing a cluster of genes under control of single promoter.

Recon Smallest unit of DNA for recombination.

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Q-75 - 35214422

In *Escherichia coli*, lac operon is induced by :

(A) lactose

(B) promoter gene

(C) β - galactosidase

(D) I- gene

CORRECT ANSWER: A

SOLUTION:

In E. coli lac operon is induced by adding lactose sugar to the culture.

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Q-76 - 35214373

Which statements is correct for bacterial transduction ?

(A) Transfer of some genes from one bacteria to another bacteria through virus

(B) Transfer of genes from one bacteria to another bacteria by conjugation

(C) Bacteria obtained its DNA directly

(D) Bacteria obtained DNA from other external source

CORRECT ANSWER: A

SOLUTION:

Transduction involves the picking up of DNA by bacteriophage from one bacterial cell and carrying it to another where, the DNA fragment may get incorporated into the bacterial host's genome.

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Q-77 - 35214440

some amino acids are coded by more than one codon, hence the genetic code is

(A) overlapping

(B) wobbling

(C) degenerate

(D) generate

CORRECT ANSWER: C

SOLUTION:

Degeneracy means lack of specificity . Presence of more than one meaningful codons for an amino acid is called degeneracy , e.g methionine and tryptophan has single code for each . The maximum number of codons for an amino acid is six , e.g. Serine , arginine and leucine . degeneracy provides a protection against mutation.

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Q-78 - 35214309

Which enzyme/s will be produced in a cell in which there is a nonsense mutation in the lac Y gene

(A) β - galactosidase

(B) Lactose permease

(C) Transacetylase

(D) Lactose permease and transacetylase

CORRECT ANSWER: A

SOLUTION:

β - galactosidase is a structural gene , which carry codes for the synthesis of protein Mutation in the lac Y gene of E. coli needs residues of cytoplasmic enzyme β - galactosidase . Lactose permease is a membrane protein , which is a major facilitator superfamily.

Transacetylase is an enzyme transferring acetyl groups from one compound to another.

During DNA replication, the strands separate by

- (A) DNA polymerase
 - (B) topoisomerase
 - (C) unwindase/ helicase
 - (D) gyrase
-

CORRECT ANSWER: C

SOLUTION:

Unwinding of DNA helix is caused by enzyme helicase.

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During transcription, the site of DNA molecule at which RNA polymerase binds is called

(A) receptor

(B) enhancer

(C) promoter

(D) regulator

CORRECT ANSWER: C

SOLUTION:

Promoter is the nucleotide sequence to which RNA polymerase binds and initiates transcription. Formation of a single stranded linear chain of complementary RNA (mRNA) on the template strand of DNA in nucleus (eukaryotes) or in cytoplasm (prokaryotes) is known as transcription.

Q-81 - 18706024

Repressor protein is produced by :

- (A) Repressor gene
- (B) Structural gene
- (C) Operator gene
- (D) Regularatory gene

CORRECT ANSWER: D

SOLUTION:

d) Regulator gene controls the activity of operator gene by producing repressor molecules or it codes for repressor protein (gene regulatory protein).

Q-82 - 35214316

Removal of introns and joining of exons in a defined order during transcription is called :

- (A) looping
- (B) inducing
- (C) slicing
- (D) splicing

CORRECT ANSWER: D

SOLUTION:

The primary transcript from a typical eukaryotic gene contains introns as well as exons. During RNA splicing , introns are removed and exons are joined in a defined

order , to produce functional RNA.

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Q-83 - 18706029

The sequence of nitrogen bases (triple) on t RNA is

- (A) Anticodon
- (B) Terminating codon
- (C) Degenerate codon
- (D) Initiating codon

CORRECT ANSWER: A

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Q-84 - 35214383

In which direction mRNA is synthesised on DNA template ?

(A) $5' \rightarrow 3'$

(B) $3' \rightarrow 5'$

(C) Both (a) and (b)

(D) Any of above

CORRECT ANSWER: A

SOLUTION:

$5' \rightarrow 3'$ is the direction of synthesis of mRNA on DNA template.

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Q-85 - 35214318

Select the two correct statements out of the four (1-4) given below about lac operon.

1. Glucose or galactose may bind with the repressor and inactivate it

2. In the absence of lactose the repressor binds with the operator region
3. The z-gene codes for permease
4. This was elucidated Francois Jacob and Jacque Monod

The correct statements are :

- (A) I and III
- (B) I and III
- (C) II and IV
- (D) I and II

CORRECT ANSWER: C

SOLUTION:

Statement II and IV are true about lac operon . In prokaryotes ,a hypothesis was given in 1961 to explain the protein synthesis regulation . This hypothesis was

given by F Jacob and J Monod and for this they were awarded Nobel Prize in 1965 , the hypothesis was known by the name of Operon Model.

The operator gene is the segment of DNA , which exercise a control over transcriptions . in the absence of lactose , the repressor binds with the operator gene.

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Q-86 - 18706034

Terminum is also called as

- (A) Reverse transcription
 - (B) Transcription
 - (C) Translation
 - (D) Replication
-

CORRECT ANSWER: A

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Q-87 - 35214323

Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acid ?

(A) GUU , GCU - Alanine

(B) UAG , UGA - Stop

(C) AUG , ACG - Start/ methionine

(D) UUA, UCA - Leucine

CORRECT ANSWER: B

SOLUTION:

The group of nucleotides that specifies one amino acid is

a code word or codon . The nucleotides of mRNA are arranged as linear sequence of codons , each codon consisting of three successive nitrogenous bases.

Three codons UAG UAA and UGA are the termination codons . they do not code for any of the amino acids.

In most organisms AUG codon is the start or initiation codon , i.e. the polypeptide chain starts either with methionine or N- formylmethionine.

Leucine - UUA, UUG, CUU, CUC, CUA, CUG.

Alanine - GCU , GCC , GCA , GCG.

GUU - Valine

UCA - Serine.

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Q-88 - 18706032

The genes are responsible for growth and differentiation in an

organism through regulation of

(A) Translocation

(B) Transformation

(C) Transcription and translation

(D) Transcription and translation

CORRECT ANSWER: D

SOLUTION:

d) By the process of transcription and translation

proteins are formed, which are responsible for growth and differentiation.

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The length of DNA molecule greatly exceeds the dimensions of the nucleus in eukaryotic cell. How is this DNA accommodated

- (A) Deletion of non - essential gene
 - (B) Super - coiling in nucleosomes
 - (C) DNase digestion
 - (D) Through elimination of repetitive DNA
-

CORRECT ANSWER: B

SOLUTION:

In eukaryotic cells , DNA is accommodated by super-coiling in nucleosomes.

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RNA interference involves

- (A) Synthesis of *cRNA* from RNA using reverse transcriptase
 - (B) Silencing of specific *mRNA* due to complementary RNA
 - (C) Interference of RNA in synthesis of DNA
 - (D) Synthesis of *mRNA* from DNA
-

CORRECT ANSWER: B

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Q-91 - 35214454

In the coding dictionary, there are 64 codons as :

- (A) 64 amino acids are to be coded

(B) 64 types of tRNAs are present

(C) there are 44 non - sense codons and 20 sense codons

(D) genetic code is triplet

CORRECT ANSWER: D

SOLUTION:

It has been found that a sequence of 3 consecutive bases in a DNA molecule codes for one specific amino acid . So , genetic codes is a triplet code and there are 64 triplets which are called codons ($4 \times 4 \times 4 = 64$) of nitrogen bases for protein synthesis.

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"One gene one enzyme" theory was proposed by

(A) R Franklin

(B) Harshey and Chase

(C) A Garrod

(D) Beadle and Tatum

CORRECT ANSWER: D

SOLUTION:

One gene- one enzyme hypothesis was given by Beadle and Tatum [1948] which states that particular gene controls the synthesis of specific enzyme. Later , it was modified to one gene - one polypeptide hypothesis by Yanofsky , et . Al , [1965).

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The transforming principle of Griffith's experiment was DNA. Avery, MacLeod and McCarty was :

(A) mRNA

(B) DNA

(C) protein

(D) polysaccharide

CORRECT ANSWER: B

SOLUTION:

Avery , MacLeod and McCarty [1944] showed the significance of DNA in hereditary transmission in bacteria *Pneumococcus* . They discovered the biochemical nature of gene.

Q-94 - 35214340

During transcription holoenzyme RNA polymerase binds to a DNA sequence and the DNA assumes a saddle like structure at that point.

What is that sequence called ?

(A) CAAT box

(B) GGTT box

(C) AAAT box

(D) TATA box

CORRECT ANSWER: D

SOLUTION:

TATA box is present in eukaryotic promoter region . It has a resemblance with Pribnow box of prokaryotes .

TATA box was identified by Dr. Hogness and so , it is also called as Hogness box It is a 7 bp long region located 20 bp upstream to the start point.

During the prcess of transcription the RNA polymerase (a holoenzyme which has a core unit and a sigma factor for proper initiation of transcription) binds to TATA box due to which DNA assumes a saddle like structure at this place.

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Q-95 - 35214425

The number of base substitution possible in amino acid codons is

(A) 261

(B) 264

(C) 535

(D) 549

CORRECT ANSWER: D

SOLUTION:

There are 64 codons out of which 61 codes for amino acid . Each codon possess 3 bases which can undergo transition and transversion , so the number of base substitution possible in amino acid codon is

$$61 \times 3^2 = 549.$$

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Q-96 - 35214327

The Okazaki fragments in DNA chain growth

(A) result in transcription

(B) polymerise in the 3 ' to 5' direction and form

replication fork

(C) prove semi - conservative nature of DNA replication

(D) polymerase in the 5' to 3' direction and explain 3' to 5' DNA replication

CORRECT ANSWER: A

SOLUTION:

The Okazaki fragments in DNA chain growth polymerise in the 5' to 3' direction . The replicated DNA results in transcription.

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Q-97 - 35214313

Ribosomal RNA is synthesised in

(A) lysosomes

(B) nucleolus

(C) nucleoplasm

(D) ribosomes

CORRECT ANSWER: B

SOLUTION:

Nucleolus is the centre for synthesis of ribosomal RNA (rRNA). Ribosomal proteins migrate to the nucleolus from their assembly sites in the cytoplasm and are packaged into ribonucleoproteins. These return to the cytoplasm where they become mature ribosome particles.

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Jacob and Monod studied lactose metabolism in *E. coli* and proposed operon concept which is applicable for all :

- (A) all prokaryotes
 - (B) all prokaryotes and some eukaryotes
 - (C) all prokaryotes and all eukaryotes
 - (D) all prokaryotes and some protozoans
-

CORRECT ANSWER: B

SOLUTION:

Jacob and Monod ' s operon concept is basically a theory of gene expression in prokaryotes - though it is of some value in the explanation of eukaryotic gene expression.

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Differentiation of organs and tissues in a developing organism, is associated with

- (A) developmental mutations
- (B) differential expression of genes
- (C) lethal mutations
- (D) deletion of gene

CORRECT ANSWER: B

SOLUTION:

Differentiation of organs and tissues in a developing organism is associated with differential expression of genes . In regulation of gene expression the chromosomal proteins play important role.

The chromosomal proteins are of two types, histones and non - histones . The regulation of gene expression involves an interaction between histones and non - histones.

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Q-100 - 35214382

In negative operon

- (A) co -repressor binds with repressor
- (B) co- repressor does not bind with repressor
- (C) co- repressor binds with inducer
- (D) cAMP has negative effect on lac operon

CORRECT ANSWER: A

SOLUTION:

In negative operon co - repressor binds with repressor to form repressor co - repressor complex which further binds with operator . Since , the product of the regulator (the repressor) acts by shutting off the transcription of structural genes , it referred to as negative control system.

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Q-101 - 35214304

Which one of the following is wrongly matched ?

- (A) Transcription - Writing information from DNA to tRNA
- (B) Translation - Using information in mRNA to make protein
- (C) Repressor protein - Binds to operator to stop enzyme synthesis

(D) Operon - Structural genes, operator and promoter

CORRECT ANSWER: A

SOLUTION:

Statement (a) is wrongly matched because transcription is a process of mRNA synthesis from a DNA template . It involves three main events, i.e. initiation (binding of RNA polymerase to as DNA), elongation (development of a short stretch of DNA) and termination (recognition of the transcription termination sequence and the release of RNA polymerase).

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Q-102 - 35214395

DNA parts which can switch their position are

(A) exons

(B) introns

(C) cistrons

(D) transposons

CORRECT ANSWER: D

SOLUTION:

Transposons are genetic elements varying from 750 base pairs to 40 kilo base pairs on length and can move from a site in one genome to another site in the same or in a different genome.

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Q-103 - 35214426

The codon for the initiation of protein synthesis in eukaryotes is :

(A) GUA

(B) GCA

(C) C CA

(D) AUG

CORRECT ANSWER: D

SOLUTION:

At 5 ' end of mRNA where protein synthesis starts codon AUG is present . So AUG is called as initiating or strating codon or start signal.

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Q-104 - 35214325

One gene - one enzyme relationship was established for the first time on

(A) *Neurospora crassa*

(B) *Salmonella typhimurium*

(C) *Escherichia coli*

(D) *Diplococcus pneumoniae*

CORRECT ANSWER: A

SOLUTION:

One gene- one enzyme relationship was initially proposed by Beadle and Tatum based on their experiments conducted on *Neurospora crassa*. They were awarded by Nobel Prize in 1958.

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Q-105 - 35214381

Sequence of which of the following is used to know the phylogeny

?

(A) mRNA

(B) rRNA

(C) tRNA

(D) DNA

CORRECT ANSWER: B

SOLUTION:

The genes for rRNAs tend to be highly conserved and are therefore , often employed for phylogenetic studies.

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Q-106 - 35214337

Amino acid sequence, in protein synthesis is decided by the

sequence of

(A) tRNA

(B) mRNA

(C) cRNA

(D) rRNA

CORRECT ANSWER: B

SOLUTION:

In the process of protein synthesis, the messenger RNA (mRNA) is responsible for carrying the genetic code transcribed from DNA to specialised sites within the cell (called ribosomes) where the information is translated into protein. The sequence of amino acids in a particular protein is determined by the sequence of nucleotides in mRNA . Sequence of tRNA , cDNA or rRNA do not

decide the amino acid sequence in protein synthesis,

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Q-107 - 35214439

Who proved that DNA is the basic genetic material ?

- (A) Griffith
- (B) Waston
- (C) Boveri and Sutton
- (D) Hershey and Chase

CORRECT ANSWER: D

SOLUTION:

Hershey and Chase [1952] proved that DNA is basic genetic material.

Q-108 - 35214311

Which one of the following is not a part of transcription unit in DNA

- (A) The inducer
- (B) A terminator
- (C) A promoter
- (D) The structural gene

CORRECT ANSWER: A

SOLUTION:

Transcription unit consists of promoter structural gene and terminator . The inducer (lactose/ allolactose) is not a component of transcription unit.

Q-109 - 35214428

Nucleosome core is made of :

- (A) H1 , H2A , H2B and H3
- (B) H1 , H2A , H2B and H4
- (D) H1 , H2A, H2B, H3 and H4

CORRECT ANSWER: D

SOLUTION:

A nucleosome is an octamer of histone proteins and has a core of 8 molecules of histone proteins (two each of H2A, H2B, H3 and H4] wrapped by two turns of DNA.

Telomere repetitive DNA sequences control the function of eukaryotic chromosomes because they

- (A) act as replicons
- (B) are RNA transcription initiator
- (C) help chromosome pairing
- (D) prevent chromosome loss

CORRECT ANSWER: D

SOLUTION:

Telomeres, i.e. the ends of chromosome, have repetitive DNA sequences and are stable and resistant to exonuclease digestion hence, prevent chromosome loss.

Q-111 - 35214397

Protein synthesis in an animal cell, takes place

- (A) only in the cytoplasm
- (B) in the nucleolus as well as in the mitochondria
- (C) in the cytoplasm as well as in mitochondria
- (D) only on ribosomes attached to a nucleus

CORRECT ANSWER: C

SOLUTION:

Protein synthesis is a complex process it essentially involves DNA for the synthesis of mRNA (transcription) which contains information for the synthesis of proteins (translation). The process of translation takes place on

ribosomes which are found in cytoplasm (in attached form on ER) and in mitochondria (in the free form).

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Q-112 - 35214380

In E.coli during lactose metabolism, repressor binds to :

- (A) regulator gene
- (B) operator gene
- (C) structural gene
- (D) promoter gene

CORRECT ANSWER: B

SOLUTION:

In Lac operon , the repressor protein combines with the

operator gene to express its functioning.

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Q-113 - 35214305

Transformation was discovered by

- (A) Meselson and Stahl
- (B) Hershey and Chase
- (C) Griffith
- (D) Wastson and Crick

CORRECT ANSWER: C

SOLUTION:

Transformation was discovered by F Griffith [1928] . He isolated the DNA as genetic material that inherit the

genetic information between two generations by using two strain of Pneumococcus bacteria which infect mice .
i.e. type III S(smooth) and type II R (rough) strain.

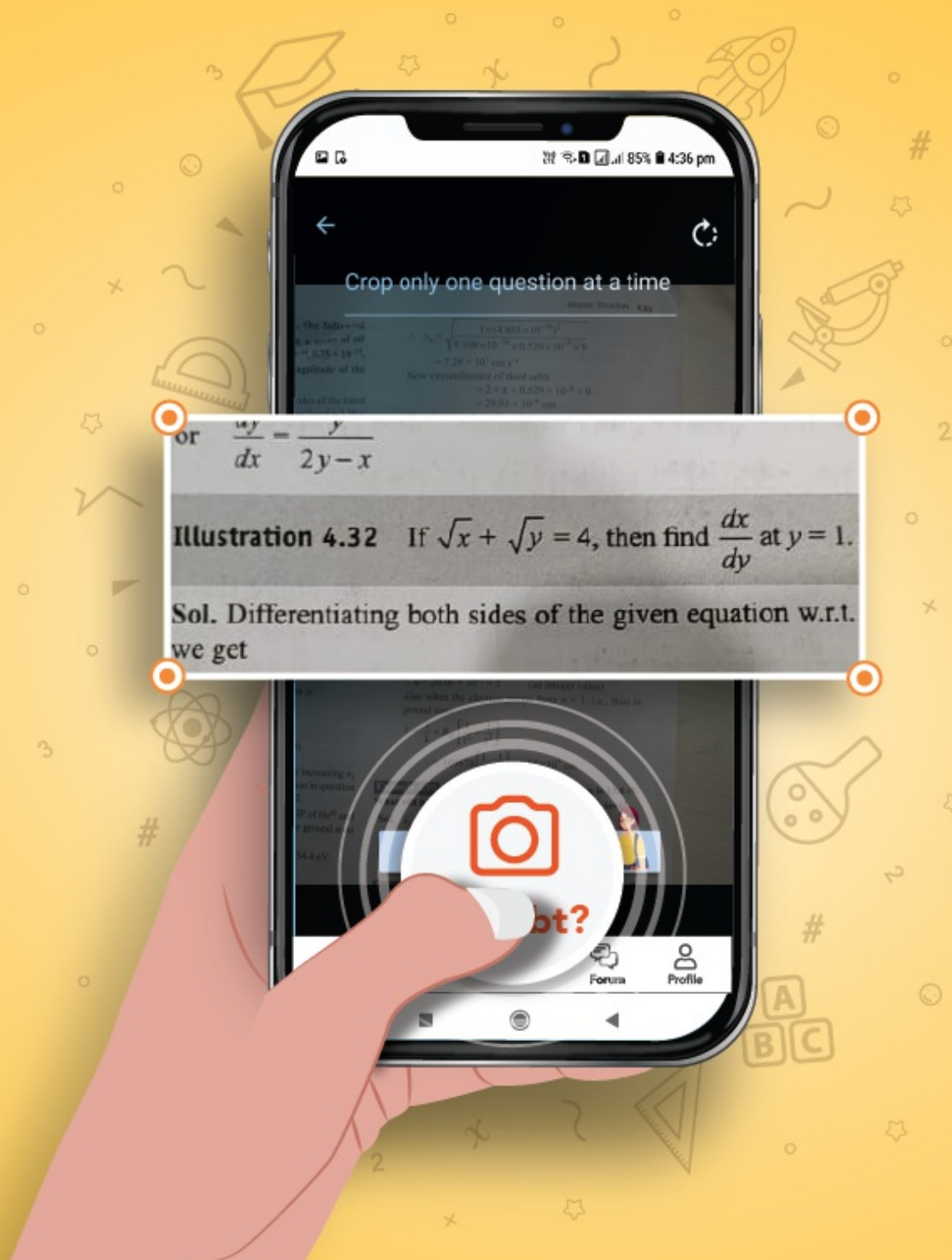
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