



# NEET - UG

## NTA

**Chapterwise + Topicwise**

**BIOLOGY**

**Previous**

**25 Years**  
(1998 - 2022)

**Questions with Video Solutions**

- ✓ Aligned as per 11<sup>th</sup> & 12<sup>th</sup> NCERT Books
- ✓ Physics + Chemistry + Biology



# NEET PREVIOUS YEAR QUESTIONS

## BIOLOGY

### Class - 11<sup>th</sup>

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# NEET PREVIOUS YEAR QUESTIONS

## BIOLOGY

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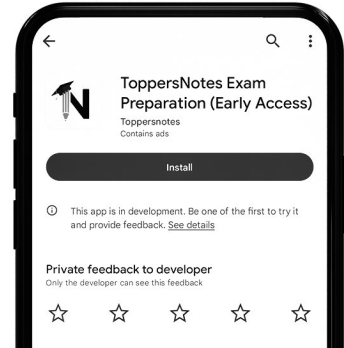
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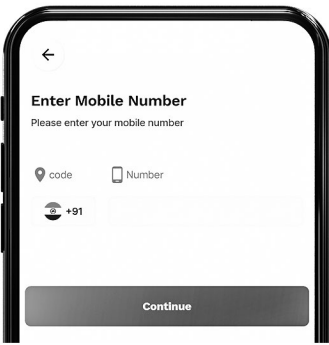
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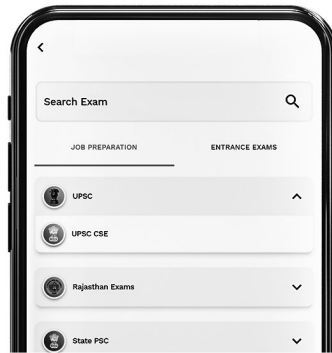
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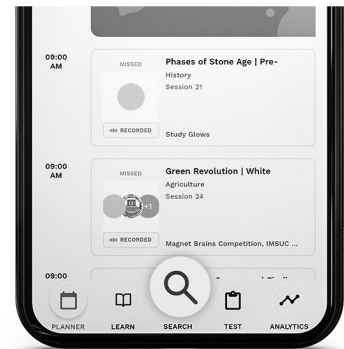
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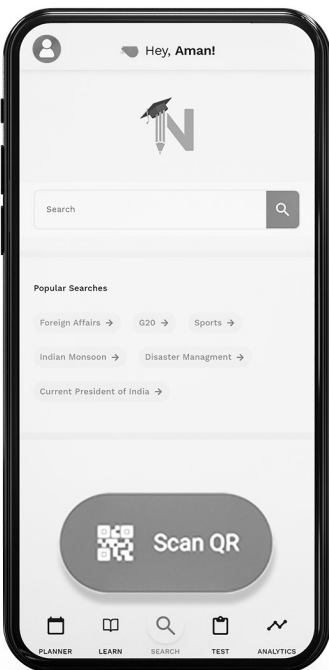
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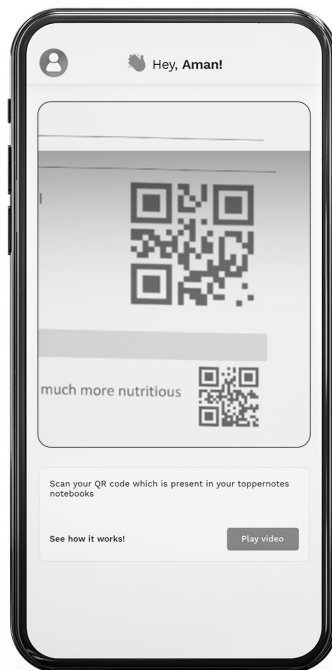
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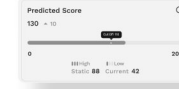
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**Class - 11<sup>th</sup>**

**Biology**

## Anatomy of Flowering Plants

### The Tissues

1996

**Q.448** Which of the following is not true about 'sclereids' ?

- (a) These are groups of living cells.
- (b) These are found in nut shells, guava pulp, pear.
- (c) These are also called stone cells.
- (d) These are form of sclerenchyma with fibres

1997

**Q.449** At maturity, which of the following is non-nucleated ?

- (a) Palisade cell
- (b) Cortical cell
- (c) Sieve cell
- (d) Companion cell

2002

**Q.450** Which of the following statements is true ?

- (a) Vessels are multicellular with wide lumen
- (b) Tracheids are multicellular with narrow lumen
- (c) Vessels are unicellular with narrow lumen
- (d) Tracheids are unicellular with wide lumen

**Q.451** Axillary bud and terminal bud derived from the activity of

- (a) lateral meristem
- (b) intercalary meristem
- (c) apical meristem
- (d) parenchyma

**Q.452** Vessels are found in

- (a) All angiosperms and some gymnosperm
- (b) Most of angiosperms and few gymnosperms
- (c) All angiosperms, all gymnosperms and some pteridophyta
- (d) All pteridophyta

2003

**Q.453** The apical meristem of the root is present

- (a) only in radicals
- (b) only in tap roots
- (c) only in adventitious roots
- (d) in all the roots.

**Q.454** Chlorenchyma is known to develop in the

- (a) cytoplasm of Chlorella
- (b) mycelium of a green mould such as Aspergillus
- (c) spore capsule of a moss
- (d) pollen tube of Pinus.

**Q.455** The cells of the quiescent centre are characterised by

- (a) having dense cytoplasm and prominent nuclei.
- (b) having light cytoplasm and small nuclei.
- (c) dividing regularly to add to the corpus.
- (d) dividing regularly to add to tunica

2006

**Q.456** A common structural feature of vessel elements and sieve tube elements is

- (a) enucleate condition
- (b) thick secondary walls
- (c) pores on lateral walls
- (d) presence of P-protein

2008

**Q.457** The length of different internodes in a culm of sugarcane is variable because of

- (a) size of leaf lamina at the node below each internode
- (b) intercalary meristem
- (c) shoot apical meristem
- (d) position of axillary buds

2010

**Q.458** The chief water conducting elements of xylem in gymnosperms are

- (a) vessels
- (b) fibres
- (c) transfusion tissue
- (d) tracheids

**Q.459** Transport of food material in higher plants takes place through

- (a) companion cells
- (b) transfusion tissue
- (c) tracheids
- (d) sieve elements.

**Q.460** Which one of the following is not a lateral meristem ?

- (a) Intrafascicular cambium
- (b) Interfascicular cambium
- (c) Phellogen
- (d) Intercalary meristem

**2011**

**Q.461** Function of companion cells is

- (a) providing energy to sieve elements for active transport.
- (b) providing water to phloem.
- (c) loading of sucrose into sieve elements by passive transport.
- (d) loading of sucrose into sieve elements.

**2012**

**Q.462** Gymnosperms are also called soft wood spermatophytes because they lack

- (a) cambium
- (b) phloem fibres
- (c) thick-walled tracheids
- (d) xylem fibres.

**Q.463** Companion cells are closely associated with

- (a) sieve elements
- (b) vessel elements
- (c) trichomes
- (d) guard cells

**2013**

**Q.464** Meristematic tissue responsible for increase in girth of tree trunk is

- (a) intercalary meristem
- (b) lateral meristem
- (c) phellogen
- (d) apical meristem

**2014**

**Q.465** Tracheids differ from other tracheary elements in

- (a) having Casparian strips
- (b) being imperforate
- (c) lacking nucleus
- (d) being lignified

**2019**

**Q.466** Phloem in gymnosperms lacks

- (a) both sieve tubes and companion cells
- (b) albuminous cells and sieve cells
- (c) sieve tubes only
- (d) companion cells only.

**Q.467** Regeneration of damaged growing grass following grazing is largely due to

- (a) lateral meristem
- (b) apical meristem
- (c) intercalary meristem
- (d) secondary meristem

**The Tissue System**



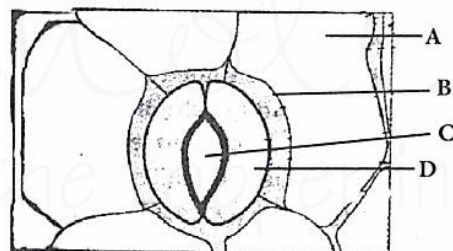
**2009**

**Q.468** In barley stem vascular bundles are

- (a) closed and scattered
- (b) open and in a ring
- (c) closed and radial
- (d) open and scattered.

**2010**

**Q.469** Given below is the diagram of a stomatal apparatus. In which of the following all the four parts labelled as A, B, C and D are correctly identified ?



	A	B	C	D
(a)	Subsidiary cell	Epidermal cell	Guard cell	Stomatal aperture
(b)	Guard cell	Stomatal aperture	Subsidiary cell	Epidermal cell
(c)	Epidermal cell	Guard cell	Stomatal aperture	Subsidiary cell
(d)	Epidermal cell	Subsidiary cell	Stomatal aperture	Guard cell

**2011**

**Q.470** Ground tissue includes

- (a) All tissues external to endodermis.
- (b) All tissues except epidermis and vascular bundles.
- (c) Epidermis and cortex.
- (d) All tissues internal to endodermis

**Q.471** Some vascular bundles are described as open because these

- (a) are surrounded by pericycle but no endodermis.
- (b) Are capable of producing secondary xylem and phloem.
- (c) Possess conjunctive tissue between xylem and phloem.
- (d) Are not surrounded by pericycle

**2012**

**Q.472** Closed vascular bundles lack

- (a) ground tissue
- (b) conjunctive tissue
- (c) cambium
- (d) pith

**2013**

**Q.473** Vascular bundles in monocotyledons are considered closed because

- (a) there are no vessels with perforations.
- (b) xylem is surrounded all around by phloem.
- (c) a bundle sheath surrounds each bundle.
- (d) cambium is absent

**Q.474** Which of the following statements is not true for stomatal apparatus ?

- (a) Guard cells invariably possess chloroplasts and mitochondria.
- (b) Guard cells are always surrounded by subsidiary cells.
- (c) Stomata are involved in gaseous exchange.
- (d) Inner wall of guard cells are thick

**2016**

**Q.475** Specialised epidermal cells surrounding the guard cells are called

- (a) bulliform cells
- (b) lenticels
- (c) complementary cells
- (d) subsidiary cells

**2018**

**Q.476** Stomata in grass leaf are

- (a) dumb-bell shaped
- (b) kidney-shaped
- (c) rectangular
- (d) barrel-shaped

**2021**

**Q.477** Match List-I with List-II.

	List-I	List-II
(p)	Cells with active cell division capacity	(i) Vascular tissues
(q)	Tissue having all cells similar in structure and function	(ii) Meristematic tissue
(r)	Tissue having different types of cells	(iii) Sclereids
(s)	Dead cells with highly thickened walls and narrow lumen	(iv) Simple tissue

Select the correct answer from the options given below.

- (p) (q) (r) (s)
- (a) (iii) (ii) (iv) (i)
- (b) (ii) (iv) (i) (iii)
- (c) (iv) (iii) (ii) (i)
- (d) (i) (ii) (iii) (iv)

**Anatomy of Dicotyledonous and Monocotyledonous Plants**



**1999**

**Q.478** Casparian strips are found in

- (a) epidermis
- (b) hypodermis
- (c) periderm
- (d) endodermis

**2000**

**Q.479** What happens in plants during vascularisation ?

- (a) Differentiation of procambium, formation of primary phloem followed by formation of primary xylem.
- (b) Differentiation of procambium followed by the formation of primary phloem and xylem simultaneously.
- (c) Formation of procambium, primary phloem and xylem simultaneously.
- (d) Differentiation of procambium followed by the formation of secondary xylem

**2002**

**Q.480** Four radial vascular bundle are found in

- (a) dicot root
- (b) monocot root
- (c) dicot stem
- (d) monocot stem

**2005**

**Q.481** In a woody dicotyledonous tree, which of the following parts will mainly consist of primary tissues ?

- (a) All parts
- (b) Stem and root
- (c) Flowers, fruits and leaves
- (d) Shoot tips and root tips

**2007**

**Q.482** Passage cells are thin walled cells found in

- (a) phloem elements that serve as entry points for substance for transport to other plant parts.
- (b) testa of seeds to enable emergence of growing embryonic axis during seed germination.
- (c) central region of style through which the pollen tube grows towards the ovary.
- (d) endodermis of roots facilitating rapid transport of water from cortex to pericycle

**2009**

**Q.483** Palisade parenchyma is absent in leaves of

- (a) mustard
- (b) soybean
- (c) gram
- (d) Sorghum

**Q.484** The annular and spirally thickened conducting elements generally develop in the protoxylem when the root or stem is

- (a) elongating
- (b) widening
- (c) differentiating
- (d) maturing

**Q.485** Anatomically fairly old dicotyledonous root is distinguished from the dicotyledonous stem by

- (a) absence of secondary phloem
- (b) presence of cortex
- (c) position of protoxylem
- (d) absence of secondary xylem.

**2012**

**Q.486** Water containing cavities in vascular bundles are found in

- (a) sunflower
- (b) maize
- (c) Cycas
- (d) Pinus

**Q.487** As compared to a dicot root, a monocot root has

- (a) more abundant secondary xylem
- (b) many xylem bundles
- (c) inconspicuous annual rings
- (d) relatively thicker periderm.

**2014**

**Q.488** You are given a fairly old piece of dicot stem and a dicot root. Which of the following anatomical structures will you use to distinguish between the two ?

- (a) Secondary xylem
- (b) Secondary phloem
- (c) Protoxylem
- (d) Cortical cells

**2015**

**Q.489** A major characteristic of monocot root is the presence of

- (a) vasculature without cambium
- (b) cambium sandwiched between phloem and xylem along the radius
- (c) open vascular bundles
- (d) scattered vascular bundles.

**2016**

**Q.490** Cortex is the region found between

- (a) epidermis and stele
- (b) pericycle and endodermis
- (c) endodermis and pith
- (d) endodermis and vascular bundle

**2017**

**Q.491** Root hair develop from the region of

- (a) elongation
- (b) root cap
- (c) meristematic activity
- (d) maturation

**2018**

**Q.492** Casparian strips occur in

- (a) epidermis
- (b) pericycle
- (c) cortex
- (d) endodermis

**2019**

**Q.493** Grass leaves curl inwards during very dry weather. Select the most appropriate reason from the following.

- (a) Tyloses in vessels
- (b) Closure of stomata
- (c) Flaccidity of bulliform cells
- (d) Shrinkage of air spaces in spongy mesophyll.

**Q.494** In the dicot root the vascular cambium originates from

- (a) tissue located below the phloem bundles and a portion of pericycle tissue above protoxylem
- (b) cortical region
- (c) parenchyma between endodermis and pericycle
- (d) intrafascicular and interfascicular tissue in a ring

**2020**

**Q.495** The transverse section of a plant shows following anatomical features:

- (i) Large number of scattered vascular bundles surrounded by bundle sheath
- (ii) Large conspicuous parenchymatous ground tissue
- (iii) vascular bundles conjoint and closed
- (iv) phloem parenchyma absent

**Identify the category of plant and its part.**

- (a) Monocotyledonous stem
- (b) Monocotyledonous root
- (c) Dicotyledonous stem
- (d) Dicotyledonous root

### Secondary Growth



**1998**

**Q.496** Which of the following meristems is responsible for extrastelar secondary growth in dicotyledonous stem ?

- (a) Interfascicular cambium
- (b) Intercalary meristem
- (c) Phellogen
- (d) Intrafascicular cambium

**Q.497** The periderm includes

- (a) secondary phloem
- (b) cork
- (c) cambium
- (d) all of these

**2003**

**Q.498** Diffuse porous woods are characteristic of plants growing in

- (a) alpine region
- (b) cold winter regions
- (c) temperature climate
- (d) tropics

**2007**

**Q.499** For a critical study of secondary growth in plants, which one of the following pairs is suitable ?

- (a) Teak and pine
- (b) Deodar and fern
- (c) Wheat and maiden hair fern
- (d) Sugarcane and sunflower

**2008**

**Q.500** Vascular tissues in flowering plants develop from

- (a) periblem
- (b) dermatogen
- (c) phellogen
- (d) plerome

**2010**

**Q.501** Heartwood differs from sapwood in

- (a) presence of rays and fibres
- (b) absence of vessels and parenchyma
- (c) having dead and non-conducting elements
- (d) being susceptible to pests and pathogens

**2011**

**Q.502** The cork cambium, cork and secondary cortex are collectively called

- (a) phellogen
- (b) phellogen
- (c) periderm
- (d) phellem



**2012**

**Q.503** The common bottle cork is a product of

- (a) dermatogen
- (b) phellogen
- (c) xylem
- (d) vascular cambium

**2013**

**Q.504** Lenticels are involved in

- (a) food transport
- (b) photosynthesis
- (c) transpiration
- (d) gaseous exchange

**Q.505** Age of a tree can be estimated by

- (a) number of annual rings
- (b) diameter of its heartwood
- (c) its height and girth
- (d) biomass.

**Q.506** Interfascicular cambium develops from the cells of

- (a) endodermis
- (b) pericycle
- (c) medullary rays
- (d) xylem parenchyma

**2015**

**Q.507** Read the different components from (i) to (iv) in the list given below and tell the correct order of the components with reference to their arrangement from outer side to inner side in a woody dicot stem.

- (i) Secondary cortex
- (ii) Wood
- (iii) Secondary phloem
- (iv) Phellem

The correct order is

- |     |       |       |       |       |
|-----|-------|-------|-------|-------|
|     | (p)   | (q)   | (r)   | (s)   |
| (a) | (iv)  | (i)   | (iii) | (ii)  |
| (b) | (iv)  | (iii) | (i)   | (ii)  |
| (c) | (iii) | (iv)  | (ii)  | (i)   |
| (d) | (i)   | (ii)  | (iv)  | (iii) |

**2016**

**Q.508** The balloon-shaped structures called tyloses

- (a) originate in the lumen of vessels
- (b) characterise the sapwood
- (c) are extensions of xylem parenchyma cells into vessels
- (d) are linked to the ascent of sap through xylem vessels

**2017**

**Q.509** The vascular cambium normally gives rise to

- (a) primary phloem
- (b) secondary xylem
- (c) periderm
- (d) phelloderm

**Q.510** Which of the following is made up of dead cells ?

- (a) Collenchyma
- (b) Phellem
- (c) Phloem
- (d) Xylem parenchyma

**Q.511** Identify the wrong statement in context of heartwood.

- (a) It is highly durable.
- (b) It conducts water and minerals efficiently.
- (c) It comprises dead elements with highly lignified walls.
- (d) Organic compounds are deposited in it

**2018**

**Q.512** Secondary xylem and phloem in dicot stem are produced by

- (a) apical meristems
- (b) vascular cambium
- (c) phellogen
- (d) axillary meristems

**Q.513** Plants having little or no secondary growth are -

- (a) grasses
- (b) deciduous angiosperms
- (c) conifers
- (d) cycads

**2019**

**Q.514** Which of the statements given below is not true about formation of annual rings in trees ?

- (a) Annual rings are not prominent in trees of temperate region.
- (b) Annual ring is a combination of spring wood and autumn wood produced in a year.
- (c) Differential activity of cambium causes light and dark bands of tissue-early and late wood respectively.
- (d) Activity of cambium depends upon variation in climate



**2020**

**Q.515 Identify the incorrect statement.**

- (a) Heartwood does not conduct water but gives mechanical support.
- (b) Sapwood is involved in conduction of water and minerals from root to leaf.
- (c) Sapwood is the innermost secondary xylem and is lighter in colour.
- (d) Due to deposition of tannins, resins, oils, etc., heartwood is dark in colour.

**2021**

**Q.516 Match List-I with List-II.**

	List-I	List-II
(p)	Lenticels	(i) Phellogen
(q)	Cork cambium	(ii) Suberin deposition
(r)	Secondary cortex	(iii) Exchange of gases
(s)	Cork	(iv) Phelloderm

**Choose the correct answer from the options given below.**

- |     |       |       |       |       |
|-----|-------|-------|-------|-------|
|     | (p)   | (q)   | (r)   | (s)   |
| (a) | (iv)  | (ii)  | (i)   | (iii) |
| (b) | (iv)  | (i)   | (iii) | (ii)  |
| (c) | (iii) | (i)   | (iv)  | (ii)  |
| (d) | (ii)  | (iii) | (iv)  | (i)   |

**Q.517 Select the correct pair.**

- (a) Loose parenchyma cells – Spongy rupturing the epidermis parenchyma and forming a lens-shaped opening in bark
- (b) Large colorless empty cells in – Subsidiary the epidermis of grass leaves cells
- (c) In dicot leaves, vascular – Conjunctive bundles are surrounded by tissue large thick-walled cells
- (d) Cells of medullary rays that – Interfascicular form part of cambial ring cambium

**Class - 12<sup>th</sup>**

**Biology**

# Molecular Basis of Inheritance

## The DNA



1996

**Q.1853** Radiotracer technique shows that DNA is in

- (a) multi-helix stage
- (b) single-helix stage
- (c) double-helix stage
- (d) none of these

1997

**Q.1854** Genes are packaged into a bacterial chromosome by -

- (a) acidic protein
- (b) actin
- (c) histones
- (d) basic protein

1999

**Q.1855** DNA is mainly found in -

- (a) nucleolus
- (b) nucleus only
- (c) cytoplasm only
- (d) none of these

**Q.1856** In prokaryotes, the genetic material is

- (a) linear DNA without histones
- (b) circular DNA without histones
- (c) linear DNA with histones
- (d) circular DNA with histones

**Q.1857** In DNA, when AGCT occurs, their association is as per which of the following pair ?

- (a) AT-GC
- (b) AG-CT
- (c) AC-GT
- (d) All of these

**Q.1858** The eukaryotic genome differs from the prokaryotic genome because

- (a) the DNA is complexed with histone in prokaryotes
- (b) the DNA is circular and single stranded in prokaryotes
- (c) repetitive sequences are present in eukaryotes
- (d) genes in the former case are organised into operons

2000

**Q.1859** Length of one loop of B-DNA ?

- (a) 3.4 nm
- (b) 0.34 nm
- (c) 20 nm
- (d) 10 nm.

2002

**Q.1860** In a DNA percentage of thymine is 20% then what will be percentage of guanine ?

- (a) 20%
- (b) 40%
- (c) 30%
- (d) 60%

2004

**Q.1861** 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

2005

**Q.1862** Which one of the following makes use of RNA template to synthesise DNA ?

- (a) DNA polymerase
- (b) RNA polymerase
- (c) Reverse transcriptase
- (d) DNA dependant RNA polymerase

**Q.1863** Which one of the following hydrolyses internal phosphodiester bonds in a polynucleotide chain ?

- (a) Lipase
- (b) Protease
- (c) Endonuclease
- (d) Exonuclease

2006

**Q.1864** One turn of the helix in a B-form DNA is approximately -

- (a) 2 nm
- (b) 20 nm
- (c) 0.34 nm
- (d) 3.4 nm

**Q.1865** Antiparallel strands of a DNA molecule means that

- (a) one strand turns clockwise
- (b) one strand turns anti-clockwise
- (c) the phosphate groups of two DNA strands, at their ends, share the same position
- (d) the phosphate groups at the start of two DNA strands are in opposite position (pole).

**2008**

**Q.1866** In the DNA molecule,

- (a) the proportion of adenine in relation to thymine varies with the organism
- (b) there are two strands which run anti parallel-one in 5' → 3' direction and other in 3' → 5'
- (c) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
- (d) there are two strands which run parallel in the 5' → 3' direction

**Q.1867** Which one of the following pairs of nitrogenous bases of nucleic acids, is wrongly matched with the category mentioned against it ?

- (a) Guanine, Adenine - Purines
- (b) Adenine, Thymine - Purines
- (c) Thymine, Uracil - Pyrimidines
- (d) Uracil, Cytosine - Pyrimidines

**2010**

**Q.1868** Which one of the following does not follow the central dogma of molecular biology ?

- (a) Pea
- (b) Mucor
- (c) Chlamydomonas
- (d) HIV

**Q.1869** The 3' - 5' phosphodiester linkages inside a polynucleotide chain serve to join

- (a) one DNA strand with the other DNA strand
- (b) one nucleoside with another nucleoside
- (c) one nucleotide with another nucleotide
- (d) one nitrogenous base with pentose sugar.

**Q.1870** Which one of the following statements about the particular entity is true ?

- (a) Centromere is found in animal cells, which produces aster during cell division.
- (b) The gene for producing insulin is present in every body cell.
- (c) Nucleosome is formed of nucleotides.
- (d) DNA consists of core of eight histones.

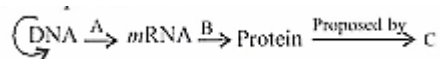
**2011**

**Q.1871** What are the structures called that give an appearance as 'beads-on-string in the chromosomes when viewed under electron microscope ?

- (a) Genes
- (b) Nucleotides
- (c) Nucleosomes
- (d) Base pairs

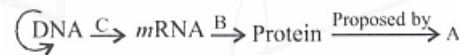
**2013**

**Q.1872** The diagram shows an important concept in the genetic implication of DNA. Fill in the blanks A to C.



- (a) A - Transcription, B - Translation, C - Francis Crick
- (b) A - Translation, B - Extension, C - Rosalind Franklin
- (c) A - Transcription, B - Replication, C - James Watson
- (d) A - Translation, B - Transcription, C - Ervin Chargaff

**Q.1873**



The figure gives an important concept in the genetic implication of DNA. Fill the blanks A, B and C.

- (a) A-Maurice Wilkins, B-Transcription, C- Translation
- (b) A-James Watson, B-Replication, C- Extension
- (c) A-Erwin Chargaff, B-Translation, C- Replication
- (d) A-Francis Crick, B-Translation, C- Transcription

**2015**

**Q.1874** In sea urchin DNA, which is double stranded, 17% of the bases were shown to be cytosine. The percentages of the other three bases expected to be present in this DNA are -

- (a) G 17%, A 33%, T 33%
- (b) G 8.5%, A 50%, T 24.5%
- (c) G 34%, A 24.5%, T 24.5%
- (d) G 17%, A 16.5%, T 32.5%.

**2017**

**Q.1875** The association of histone H<sub>1</sub> with a nucleosome indicates that

- (a) DNA replication is occurring
- (b) the DNA is condensed into a chromatin fibre
- (c) the DNA double helix is exposed
- (d) transcription is occurring

**2019**

**Q.1876** Purines found both in DNA and RNA are

- (a) cytosine and thymine
- (b) adenine and thymine
- (c) adenine and guanine
- (d) guanine and cytosine

**2020**

**Q.1877** Which of the following statements is correct ?

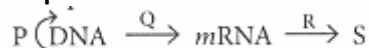
- (a) Adenine pairs with thymine through two H-bonds.
- (b) Adenine pairs with thymine through one H-bond.
- (c) Adenine pairs with thymine through three H-bonds.
- (d) Adenine does not pair with thymine

**Q.1878** If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is  $6.6 \times 10^9$  bp, then the length of the DNA is approximately -

- (a) 2.0 meters
- (b) 2.5 meters
- (c) 2.2 meters
- (d) 2.7 meters.

**2021**

**Q.1879** Complete the flow chart on central dogma.



- (a) (P)-Transduction; (Q)Translation; (R)-Replication; (S)-Protein
- (b) (P)-Replication; (Q)-Transcription; (R)- Transduction; (S)-Protein
- (c) (P)- Translation; (Q)-Replication; (R)- Transcription; (S)- Transduction
- (d) (P)-Replication; (Q)- Transcription; (R)-Translation; (S)-Protein

**Q.1880** If adenine makes 30% of the DNA molecule, what will be the percentage of thymine, guanine and cytosine in it ?

- (a) T : 20 ; G : 25 ; C : 25
- (b) T : 20 ; G : 30 ; C : 20
- (c) T : 20 ; G : 20 ; C : 30
- (d) T : 30 ; G : 20 ; C : 20

**Q.1881** Which one of the following statements about histones is wrong ?

- (a) Histones carry positive charge in the side chain.
- (b) Histones are organized to form a unit of 8 molecules.
- (c) The pH of histones is slightly acidic.
- (d) Histones are rich in amino acids - Lysine and Arginine.

### The Search for Genetic Material



**1997**

**Q.1882** DNA synthesis can be specifically measured by estimating the incorporation of radio-labelled -

- (a) thymidine
- (b) deoxyribose sugar
- (c) uracil
- (d) adenine

**1999**

**Q.1883** The Pneumococcus experiment proves that

- (a) bacteria do not reproduce sexually
- (b) RNA sometime controls the production of DNA and proteins
- (c) DNA is the genetic material
- (d) bacteria undergo binary fission

**2002**

**Q.1884** Transformation experiment was first performed on which bacteria ?

- (a) E. coli
- (b) Diplococcus pneumoniae
- (c) Salmonella
- (d) Pasteurella pestis

**2009**

**Q.1885 Semi-conservative replication of DNA was first demonstrated in -**

- (a) Escherichia coli
- (b) Streptococcus pneumoniae
- (c) Salmonella typhimurium
- (d) Drosophila melanogaster

**2011**

**Q.1886 The unequivocal proof of DNA as the genetic material came from the studies on a -**

- (a) bacterium
- (b) fungus
- (c) viroid
- (d) bacterial virus

**2014**

**Q.1887 Transformation was discovered by -**

- (a) Meselson and Stahl
- (b) Hershey and Chase
- (c) Griffith
- (d) Watson and Crick

**2016**

**Q.1888 Taylor conducted the experiments to prove semi conservative mode of chromosome replication on**

- (a) Vinca rosea
- (b) Vicia faba
- (c) Drosophila melanogaster
- (d) E. coli

**Q.1889 A molecule that can act as a genetic material must fulfill the traits given 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.

**2017**

**Q.1890 The final proof for DNA as the genetic material came from the experiments of -**

- (a) Hershey and Chase
- (b) Avery, MacLeod and McCarty
- (c) Hargobind Khorana
- (d) Griffith

**2018**

**Q.1891 The experimental proof for semi-conservative replication of DNA was first shown in a -**

- (a) fungus
- (b) bacterium
- (c) plant
- (d) virus.

**Q.1892 Select the correct match.**

- (a) Ribozyme - Nucleic acid
- (b)  $F_2 \times$  Recessive parent - Dihybrid cross
- (c) T.H. Morgan - Transduction
- (d) G.Mendel - Transformation

### RNA World



**2000**

**Q.1893 Similarity in DNA and RNA is that**

- (a) both are polymer of nucleotides
- (b) both have similar pyrimidine
- (c) both have similar sugar
- (d) both are genetic material

**2015**

**Q.1894 Which one of the following is not applicable to RNA?**

- (a) Heterocyclic nitrogenous bases
- (b) Chargaff's rule
- (c) Complementary base pairing
- (d) 5' phosphoryl and 3' hydroxyl ends

### Replication



**2000**

**Q.1895 Method of DNA replication in which two strands of DNA separate and synthesise new strands is called -**

- (a) dispersive
- (b) conservative
- (c) semi-conservative
- (d) non conservative

**2004**

- Q.1896** During replication of a bacterial chromosome DNA synthesis starts from a replication origin site and
- RNA primers are involved
  - is facilitated by telomerase
  - moves in one direction of the site
  - moves in bidirectional way

**2017**

- Q.1897** During DNA replication, Okazaki fragments are used to elongate
- the lagging strand towards replication fork
  - the leading strand away from replication fork
  - the lagging strand away from the replication fork
  - the leading strand towards replication fork

### Transcription



**1996**

- Q.1898** The maximum formation of mRNA occurs in
- |               |                 |
|---------------|-----------------|
| (a) ribosome  | (b) nucleoplasm |
| (c) cytoplasm | (d) nucleolus   |

**1998**

- Q.1899** Genes that are involved in turning on or off the transcription of a set of structural genes are called -
- redundant genes
  - regulatory genes
  - polymorphic genes
  - operator genes

- Q.1900** DNA elements, which can switch their position, are called -
- |             |                 |
|-------------|-----------------|
| (a) citrons | (b) transposons |
| (c) exons   | (d) introns     |

**2000**

- Q.1901** Anticodon occurs in -
- |          |          |
|----------|----------|
| (a) tRNA | (b) mRNA |
| (c) rRNA | (d) DNA  |

- Q.1902** In three dimensional view the molecule of RNA is -

- |              |              |
|--------------|--------------|
| (a) L-shaped | (b) S-shaped |
| (c) Y-shaped | (d) E-shaped |

**2001**

- Q.1903** mRNA is synthesised on DNA template in which direction ?

- |                      |             |
|----------------------|-------------|
| (a) 5' → 3'          | (b) 3' → 5' |
| (c) Both (a) and (b) | (d) Any     |

- Q.1904** Gene and cistron words are sometimes used synonymously because

- one cistron contains many genes
- one gene contains many citrons
- one gene contains one cistron
- one gene contains no cistron

- Q.1905** Types of RNA polymerase required in nucleus of eukaryotes for RNA synthesis -

- |       |       |
|-------|-------|
| (a) 1 | (b) 2 |
| (c) 3 | (d) 4 |

**2002**

- Q.1906** Which of the following reunites the exon segments after RNA splicing ?

- |                    |                   |
|--------------------|-------------------|
| (a) RNA polymerase | (b) RNA primase   |
| (c) RNA ligase     | (d) RNA proteoses |

- Q.1907** Exon part of mRNAs have code for -

- |                  |                  |
|------------------|------------------|
| (a) protein      | (b) lipid        |
| (c) carbohydrate | (d) phospholipid |

**2003**

- Q.1908** During transcription, the DNA site at which RNA polymerase binds is called

- |              |               |
|--------------|---------------|
| (a) promoter | (b) regulator |
| (c) receptor | (d) enhancer  |

**2004**

- Q.1909** Which form of RNA has a structure resembling clover leaf ?

- |          |           |
|----------|-----------|
| (a) rRNA | (b) hnRNA |
| (c) mRNA | (d) tRNA  |

- Q.1910** 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) UATGC |



**2005**

**Q.1911** Telomerase is an enzyme which is a

- (a) simple protein
- (b) RNA
- (c) ribonucleoprotein
- (d) repetitive DNA

**Q.1912** 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) AAAT box
- (b) TATA box
- (c) GGTT box
- (d) CAAT box

**2006**

**Q.1913** One gene-one enzyme hypothesis was postulated by -

- (a) Beadle and Tatum
- (b) R. Franklin
- (c) Hershey and Chase
- (d) A. Garrod

**2010**

**Q.1914** In eukaryotic cell transcription, RNA splicing and RNA capping take place inside the -

- (a) ribosomes
- (b) nucleus
- (c) dictyosomes
- (d) ER

**2011**

**Q.1915** Which one of the following also acts as a catalyst in a bacterial cell ?

- (a) 5S rRNA
- (b) snRNA
- (c) hnRNA
- (d) 23S rRNA

**2012**

**Q.1916** Removal of introns and joining of exons in a defined order during transcription is called

- (a) looping
- (b) inducing
- (c) slicing
- (d) splicing

**Q.1917** 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

**Q.1918** Ribosomal RNA is actively synthesised in -

- (a) lysosomes
- (b) nucleolus
- (c) nucleoplasm
- (d) ribosomes

**Q.1919** Which one of the following is not a part of a transcription unit in DNA ?

- (a) The inducer
- (b) A terminator
- (c) A promoter
- (d) The structural gene

**Q.1920** Removal of RNA polymerase III from nucleoplasm will affect the synthesis of

- (a) tRNA
- (b) hnRNA
- (c) mRNA
- (d) rRNA

**2014**

**Q.1921** Select the correct option.

Direction of RNA synthesis	Direction of reading of the template DNA strand
----------------------------	---

- |             |         |
|-------------|---------|
| (a) 5'-3'   | 3' - 5' |
| (b) 3' - 5' | 5' - 3' |
| (c) 5' - 3' | 5' - 3' |
| (d) 3' - 5' | 3' - 5' |

**2016**

**Q.1922** The equivalent of a structural gene is -

- (a) muton
- (b) cistron
- (c) operon
- (d) recon

**Q.1923** Which of the following rRNAs acts as structural RNA as well as ribozyme in bacteria ?

- (a) 5S rRNA
- (b) 18S rRNA
- (c) 23S rRNA
- (d) 5.8S rRNA

**Q.1924** DNA-dependent RNA polymerase catalyses transcription on one strand of the DNA which is called the

- (a) template strand
- (b) coding strand
- (c) alpha strand
- (d) antistrand

**2017**

**Q.1925** Which of the following RNAs should be most abundant in animal cell ?

- (a) tRNA
- (b) mRNA
- (c) miRNA
- (d) rRNA

**Q.1926** Spliceosomes are not found in cells of -

- (a) fungi
- (b) animals
- (c) bacteria
- (d) plants

**2018**

**Q.1927** Select the correct statement.

- (a) Franklin Stahl coined the term "linkage"
- (b) Punnett square was developed by a British scientist.
- (c) Spliceosomes take part in translation.
- (d) Transduction was discovered by S. Altman.



**Q.1928** AGGTATCGCAT is a sequence from the coding strand of a gene. What will be the corresponding sequence of the transcribed mRNA ?

- (a) AGGUAUCGCAU      (b) UGGTUTCGCAT  
 (c) ACCUAUGCGAU      (d) UCCAUAGCGUA

**2019**

**Q.1929** What will be the sequence of mRNA produced by the following stretch of DNA?

3'ATGCATGCATGCATG5'TEMPLATE STRAND  
 5' TACGTACGTACGTAC3' CODING STRAND

- (a) 3' AUGCAUGCAUGCAUG 5'  
 (b) 5' UACGUACGUACGUAC 3'  
 (c) 3' UACGUACGUACGUAC 5'  
 (d) 5' AUGCAUGCAUGCAUG 3'

**Q.1930** Match the following RNA polymerase with their transcribed products :

1. RNA polymerase I    (i) tRNA
2. RNA polymerase II    (ii) rRNA
3. RNA polymerase III    (iii) hnRNA

Select the correct option from the following:

- (a) 1 - i, 2 - iii, 3 - ii  
 (b) 1 - i, 2 - ii, 3 - iii  
 (c) 1 - ii, 2 - iii, 3 - i  
 (d) 1 - iii, 2 - ii, 3 - i

**2020**

**Q.1931** Name the enzyme that facilitates opening of DNA helix during transcription.

- (a) DNA ligase              (b) DNA helicase  
 (c) DNA polymerase      (d) RNA polymerase

**2021**

**Q.1932** What is the role of RNA polymerase III in the process of transcription in eukaryotes ?

- (a) Transcribes only snRNAs  
 (b) Transcribes rRNAs (28S, 18S and 5.8s)  
 (c) Transcribes tRNA, 5S rRNA and snRNA  
 (d) Transcribes precursor of mRNA

**Q.1933** Identify the correct statement.

- (a) Split gene arrangement is characteristic of prokaryotes.  
 (b) In capping, methyl guanosine triphosphate is added to the 3' end of hnRNA.  
 (c) RNA polymerase binds with Rho factor to terminate the process of transcription in bacteria.  
 (d) The coding strand in a transcription unit is copied to an mRNA

**Q.1934** Which is the "only enzyme that has "capability to catalyse initiation, elongation and termination in the process of transcription in prokaryotes ?

- (a) DNase  
 (b) DNA dependent DNA polymerase  
 (c) DNA dependent RNA polymerase  
 (d) DNA Ligase

**Genetic Code**



**1996**

**Q.1935** Which of the following serves as a terminal codon ?

- (a) UAG                      (b) AGA  
 (c) AUG                      (d) GCG

**1997**

**Q.1936** The codons causing chain termination are -

- (a) AGT, TAG, UGA      (b) UAG, UGA, UAA  
 (c) TAG, TAA, TGA      (d) GAT, AAT, AGT

**2000**

**Q.1937** Which of the following is initiation codon ?

- (a) UAG                      (b) AUC  
 (c) AUG                      (d) CCU

**2002**

**Q.1938** Out of 64 codons, 61 codons code for 20 types of amino acid. It is called -

- (a) degeneracy of genetic code  
 (b) overlapping of gene  
 (c) wobbling of codon  
 (d) universality of codons

**Q.1939** Change in sequence of nucleotide in DNA is called -

- (a) mutagen                  (b) mutation  
 (c) recombination          (d) translation

**2003**

**Q.1940** What would happen if in a gene encoding a polypeptide of 50 amino acids, 25<sup>th</sup> codon (UAU) is mutated to UAA ?

- (a) A polypeptide of 24 amino acids will be formed.  
 (b) Two polypeptides of 24 and 25 amino acids will be formed.  
 (c) A polypeptide of 49 amino acids will be formed.  
 (d) A polypeptide of 25 amino acids will be formed

**Q.1941** 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) UCG - Start                      (b) UUU - Stop  
 (c) UGU - Leucine                  (d) UAC - Tyrosine

**Q.1942** Degeneration of a genetic code is attributed to the -

- (a) first member of a codon  
 (b) second member of codon  
 (c) entire codon  
 (d) third member of a codon

**Q.1943** In the genetic code dictionary, how many codons are used to code for all the 20 essential amino acids ?

- (a) 20                                      (b) 64  
 (c) 61                                      (d) 60

**2004**

**Q.1944** After a mutation at a genetic locus the character of an organism changes due to change in -

- (a) protein structure  
 (b) DNA replication  
 (c) protein synthesis pattern  
 (d) RNA transcription pattern

**Q.1945** In mutational event, when adenine is replaced by guanine, it is a case of -

- (a) frame shift mutation  
 (b) transcription  
 (c) transition  
 (d) transversion

**2008**

**Q.1946** Which one of the following pairs of codons is correctly matched with their function or the signal for the particular amino acid ?

- (a) AUG, ACG - Start/methionine  
 (b) UUA, UCA - Leucine  
 (c) GUU, GCU - Alanine  
 (d) UAG, UGA - Stop

**2009**

**Q.1947** Whose experiments cracked the DNA and discovered unequivocally that a genetic code is a "triplet" ?

- (a) Hershey and Chase  
 (b) Morgan and Sturtevant  
 (c) Beadle and Tatum  
 (d) Nirenberg and Mathaei

**Q.1948** What is not true for genetic code ?

- (a) It is nearly universal.  
 (b) It is degenerate.  
 (c) It is unambiguous.  
 (d) A codon in mRNA is read in a non-contiguous fashion

**2010**

**Q.1949** The one aspect which is not a salient feature of genetic code, is its being

- (a) degenerate                      (b) ambiguous  
 (c) universal                        (d) specific

**2013**

**Q.1950** Which of the following is not a property of the genetic code ?

- (a) Non-overlapping              (b) Ambiguous  
 (c) Degeneracy                    (d) Universal

**2016**

**Q.1951** Which one of the following is the starter codon ?

- (a) UAA                                (b) UAG  
 (c) AUG                                (d) UGA

**2017**

**Q.1952** If there are 999 bases in an RNA that code 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) 11                                      (b) 33  
 (c) 333                                    (d) 1

**2019**

**Q.1953** 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 7<sup>th</sup>, 8<sup>th</sup> and 9<sup>th</sup> positions  
 (b) Insertion of G at 5<sup>th</sup> position  
 (c) Deletion of G from 5<sup>th</sup> position  
 (d) Insertion of A and G at 4<sup>th</sup> and 5<sup>th</sup> position respectively

**Q.1954** Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology ?

- (a) Genetic code is specific  
 (b) Genetic code is not ambiguous.  
 (c) Genetic code is redundant.  
 (d) Genetic code is nearly universal.

**2021**

**Q.1955 Statement I: The codon AUG codes for methionine and phenylalanine.**

**Statement II: 'AAA' and 'AAG' both codons code for the amino acid lysine.**

**In the light of the above statements, choose the correct answer from the options given below.**

- (a) Statement I is incorrect but Statement II is true.
- (b) Both Statement I and Statement II are true.
- (c) Both Statement I and Statement II are false.
- (d) Statement I is correct but Statement II is false.

**Translation**



**1997**

**Q.1956 The RNA that pick up specific amino acid from amino acid pool in the cytoplasm to ribosome during protein synthesis is called**

- (a) rRNA
- (b) RNA
- (c) mRNA
- (d) tRNA

**Q.1957 Which of the following step of translation does not consume a high energy phosphate bond ?**

- (a) Peptidyl transferase reaction
- (b) Aminoacyl tRNA binding to A-site
- (c) Translocation
- (d) Amino acid activation

**Q.1958 Protein synthesis in an animal cell, takes place**

- (a) in the cytoplasm as well as endoplasmic reticulum
- (b) only on ribose attached to nucleon
- (c) only in the cytoplasm
- (d) in the nucleolus as well as in the cytoplasm.

**2003**

**Q.1959 During translation initiation in prokaryotes, a GTP molecule is needed in -**

- (a) formation of formyl-met-tRNA
- (b) binding of 30S subunit of ribosome with mRNA
- (c) association of 30S mRNA with formyl-met RNA
- (d) association of 50S subunit of ribosome with initiation complex

**2005**

**Q.1960 Using imprints from a plate with complete medium and carrying bacterial colonies, you can select streptomycin resistant mutants and prove that such mutations do not originate as adaptation. These imprints need to be used**

- (a) on plates with and without streptomycin
- (b) on plates with minimal medium
- (c) only on plates with streptomycin
- (d) only on plates without streptomycin.

**Q.1961 Protein synthesis in an animal cell occurs**

- (a) only on the ribosomes present in cytosol
- (b) only on ribosome attached to the nuclear envelope and endoplasmic reticulum
- (c) on ribosome present in the nucleolus as well as in cytoplasm
- (d) on ribosomes present in cytoplasm as well as in mitochondria.

**2006**

**Q.1962 Which antibiotic inhibits interaction between tRNA and mRNA during bacterial protein synthesis ?**

- (a) Tetracycline
- (b) Erythromycin
- (c) Neomycin
- (d) Streptomycin

**Q.1963 Amino acid sequence, in protein synthesis is decided by the sequence of**

- (a) rRNA
- (b) tRNA
- (c) mRNA
- (d) cDNA

**2008**

**Q.1964 Polysome is formed by**

- (a) a ribosome with several subunits
- (b) ribosomes attached to each other in a linear arrangement
- (c) several ribosomes attached to a single mRNA
- (d) many ribosomes attached to a strand of endoplasmic reticulum