

This Question Paper contains 20 printed pages.
(Part - A & Part - B)
Sl.No.

056(E)
(FEBRUARY-MARCH, 2025)
SCIENCE STREAM
(CLASS - XII)

પ્રશ્ન પેપરનો સેટ નંબર જેની
સામેનું વર્તુળ OMR શીટમાં
ઘટ્ટ કરવાનું રહે છે.
Set No. of Question Paper,
circle against which is to be
darken in OMR sheet.

17

Part - A : Time : 1 Hour / Marks : 50
Part - B : Time : 2 Hours / Marks : 50

(Part - A)

Time : 1 Hour]

[Maximum Marks : 50

Instructions :

- 1) There are 50 objective type (M.C.Q.) questions in Part - A and all questions are compulsory.
- 2) The questions are serially numbered from 1 to 50 and each carries 1 mark.
- 3) Read each question carefully, select proper alternative and answer in the O.M.R. sheet.
- 4) The OMR sheet is given for answering the questions. The answer of each question is represented by (A) O, (B) O, (C) O, (D) O. Darken the circle ● of the correct answer with ball-pen.
- 5) Rough work is to be done in the space provided for this purpose in the Test Booklet only.
- 6) Set No. of Question Paper printed on the upper-most right side of the Question Paper is to be written in the column provided in the OMR sheet.
- 7) For diagram/chart based questions, separate questions are given for visually impaired students. Only they have to attend them.

1) Assertion (A) : Apple is false fruit.

Reason (R) : Thalamus also contributes to fruit formation in apple.

- (A) A is correct & R is wrong.
- (B) A & R both are correct, R is not correct explanation of A.
- (C) A & R both are correct, R is correct explanation of A.
- (D) A is wrong & R is correct.

Rough Work

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- 4) The flows of genetic information in central dogma are in which direction?
- (A) RNA → DNA → Protein
 (B) DNA → Protein → RNA
 (C) Protein → RNA → DNA
 (D) DNA → RNA → Protein
- 5) Which scientist proposed that 'embryo never pass through the adult stages of other animals'?
- (A) Thomas Malthus (B) Karl Ernst von Baer
 (C) Alfred Wallace (D) Ernst Heckel
- 6) They are useful to get rid of aphids.
- (A) Baculovirus (B) Dragonfly
 (C) Lady bird (D) Trichoderma
- 7) Which scientist construct the r - DNA by isolating the antibiotic resistance gene?
- (A) Ernest chain & Howard Florey
 (B) Stanley Cohen & Herbert Boyer
 (C) James Watson & Francis Crick
 (D) Francois Jacob & Jacque Monod
- 8) Which gene controls corn borer- which create pores in maize?
- (A) Cry IIAb (B) Cry IAc
 (C) Cry IAb (D) Cry IIAc

9) Which of the following is correct equation for Verhulst pearl Logistic growth?

(A) $dN / dt = (d - b) N$

(B) $dN / dt = rN \left(\frac{K}{K - N} \right)$

(C) $dN / dt = (b - d) N$

(D) $dN / dt = rN \left(\frac{K - N}{K} \right)$

10) A grass is eaten by goat & goat is eaten by Tiger. So Tiger is _____

(A) Secondary consumer

(B) Tertiary consumer

(C) Primary consumer

(D) Primary Producer

11) _____ is a example of Ex situ conservation.

(A) Wild life sanctuaries

(B) Seed banks

(C) Sacred groves

(D) Biosphere reserves area

12) In _____ the number of ovules in an ovary is one.

(A) Papaya

(B) Orchids

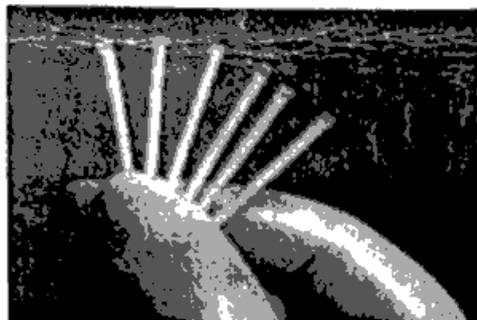
(C) Mango

(D) Water melon

- 13) Which one from the following is mis- matched pair?
- (A) I C S I - sperm is directly injected into uterus
 - (B) Z I F T - early embryos could be transferred into fallopian tub
 - (C) G I F T - Transfer of an ovum collected from donor into the fallopian tube of female
 - (D) I U T - Transfer of an embryo with more than 8 blastomeres into uterus
- 14) The brain capacity of Homo erectus was _____
- (A) 650 - 800 cc
 - (B) 900 cc
 - (C) 1400 cc
 - (D) 1200 cc
- 15) Trichoderma is _____
- (A) Symbiotic lichen
 - (B) Free living bacteria
 - (C) Blue green algae
 - (D) Free living fungi
- 16) Which enzyme is used in isolation of bacterial DNA?
- (A) Ribonuclease
 - (B) Cellulase
 - (C) Lysozyme
 - (D) Chitinase

- 17) How many documented varieties of Basmati rice are grown in India?
- (A) 427 (B) 270
(C) 27 (D) 2700
- 18) If 8 drosophilas in a laboratory population of 80 died during one week the death rate in the population during that period is _____ individual/ drosophila/ week.
- (A) 0.1 (B) 1.0
(C) 10 (D) 72
- 19) Ecosystem follows _____
- (A) First Law of Thermodynamics
(B) Second Law of Thermodynamics
(C) First & Second Law of Thermodynamics
(D) None of the above
- 20) From the following which is not example of Albuminous seed?
- (A) castor (B) groundnut
(C) maize (D) wheat

- 21) Given figure of contraceptive is implants at which part of female?



- (A) in vagina (B) in uterus
(C) in fallopian tube (D) under the skin

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- 21) Progestogens alone or in combination with estrogen can be used by females as injection or implants at which part?

- (A) in vagina
(B) in uterus
(C) in fallopian tube
(D) under the skin

- 22) On which plant from the following Hugo devries brought forth the idea of mutation?

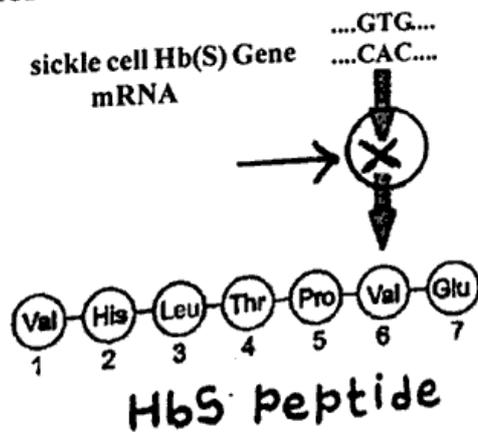
- (A) pea (B) snapdragon
(C) evening primrose (D) cucurbita

- 23) Polypeptide chain A & chain B of insulin are linked together by which bond?

- (A) glycosidic (B) disulphide
(C) dipeptide (D) diester

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- 25) Which type of pistil in papawer?
- (A) multicarpellary, syncarpous
 (B) bicarpellary, apocarpous
 (C) monocarpellary
 (D) multicarpellary, apocarpous
- 26) From the given hormones, which hormone is not released from the placenta?
- (A) human placental lactogen
 (B) estrogen
 (C) human chorionic gonadotropin
 (D) prolactin
- 27) Which of the following sexually Transmitted Infections is not completely curable?
- (A) Genital warts
 (B) Genital herpes
 (C) Syphilis
 (D) Gonorrhoea
- 28) From given chart, which is the correct option of three digit code for 'X'?



- (A) GAG
 (B) GAU
 (C) GUG
 (D) GAA

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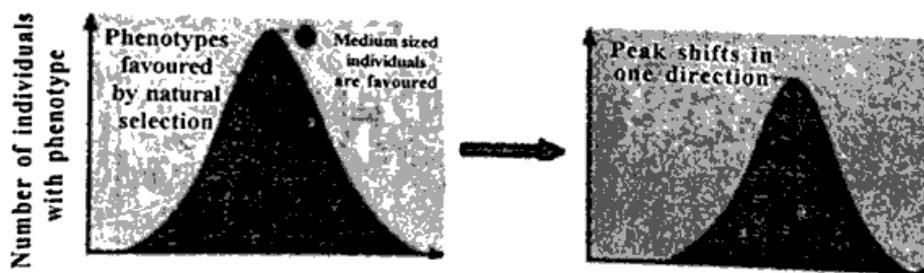
28) In sickle cell anaemia, there is a substitution of Glutamic acid by valine. Which is the codon for valine?

- (A) GAG
- (B) GAU
- (C) GUG
- (D) GAA

29) According to Erwin Chargaff in DNA, if $[A] = 11$, $[G] = 12$ then $[T] + [C] =$ _____

- (A) $11 + 23$
- (B) $12 + 11$
- (C) $11 + 12$
- (D) $23 + 12$

30) What the given diagrammatic representation of the operation of natural selection indicate?



- (A) Stabilising
- (B) Directional
- (C) Disruptive
- (D) Stabilising & Disruptive

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30) Which type of stabilisation lead when more individuals acquire value other than the mean character value in the operation of natural selection on different traits?

- (A) Stabilising
 (B) Directional
 (C) Disruptive
 (D) Stabilising & Disruptive

31) What is the common name of Diacetyl morphine?

- (A) Smack (B) Hashish
 (C) Cocaine (D) Charas

32) Match Column - I and Column - II by suitable manner.

	Column - I		Column - II
(p)	Lipase	(i)	as a clot buster
(q)	Streptokinase	(ii)	removing oily stains from laundry
(r)	Cyclosporin A	(iii)	as blood cholesterol lowering agent
(s)	Statin	(iv)	as an immunosuppressive agent

- (A) (p - iv), (q - iii), (r - ii), (s - i)
 (B) (p - iii), (q - iv), (r - i), (s - ii)
 (C) (p - ii), (q - i), (r - iv), (s - iii)
 (D) (p - ii), (q - iii), (r - iv), (s - i)

- 33) _____ is the recognition site for amp^R gene.
 (A) PvuII (B) Hind III
 (C) Bam HI (D) Pst I
- 34) Which human protein used to treat emphysema?
 (A) α - 1 antitrypsin (B) α - 1 eropsin
 (C) α - 1 trypsin (D) α - 1 enterogastrin
- 35) Which parasite depends on two intermediate host a snail & a fish to complete its life cycle?
 (A) Trematode (B) Plasmodium
 (C) Copepods (D) Pisaster
- 36) Sentence (P) : $GPP = NPP + \text{respiration losses}$
 Sentence (Q) : $NPP = GPP + \text{respiration losses}$
 (A) Sentence P is true but Q is wrong
 (B) Sentence P & Q both are wrong
 (C) Sentence P & Q both are true
 (D) Sentence P is wrong but Q is true

37) Match Column - I & Column - II

	Column - I		Column - II
(p)	Paul Ehrlich	(i)	Popularised the Biodiversity term
(q)	David Tilman	(ii)	Species - area relationship
(r)	Von Humboldt	(iii)	increased diversity contributed to higher productivity.
(s)	Edward Wilson	(iv)	rivet popper hypothesis.

- (A) (p - iii), (q - iv), (r - i), (s - ii)
 (B) (p - iv), (q - iii), (r - ii), (s - i)
 (C) (p - ii), (q - i), (r - iv), (s - iii)
 (D) (p - iv), (q - i), (r - ii), (s - iii)

38) Choose the correct option for given statement.

(T = True, F = False)

- (i) If both male & female flowers are present on same plant then it is dioecious.
 (ii) In papaya, male & female flowers are present on different plants.
 (iii) In castor & maize, it prevents autogamy & geitonogamy
 (iv) In monoecious, it prevents autogamy but not geitonogamy.

- (A) FFFT (B) TTFF
 (C) TFTF (D) FTFT

39) Match Column - I & Column - II

	Column - I		Column - II
(p)	after one month of pregnancy	(i)	foetus develops limbs & digits
(q)	after second month of pregnancy	(ii)	well development of external genital organs
(r)	end of first trimester	(iii)	separation of eye - lids
(s)	end of second trimester	(iv)	embryo's heart is formed

- (A) (p - ii), (q - i), (r - iv), (s - iii)
 (B) (p - iii), (q - iv), (r - i), (s - ii)
 (C) (p - iv), (q - i), (r - ii), (s - iii)
 (D) (p - iv), (q - iii), (r - ii), (s - i)

40) What is the correct name of AI technique in assisted reproductive technologies.

- (A) Assisted Insemination
 (B) Artificial Insemination
 (C) Artificial Injection
 (D) Artificial Intelligence

- 41) Genes which controlled α -Thalassemia & β -Thalassemia are present on which number of chromosomes.
- (A) On 21 & on 11 (B) On 16 & on 11
(C) On 16 & on 21 (D) On 11 & on 16
- 42) Distance between two consecutive base pair of DNA is ____
- (A) 34 nm (B) 0.34 nm
(C) 0.34×10^{-9} m (D) both B & C
- 43) In a family tree of dinosaurs, which dinosaurs was about 20 feet in height & had huge fearsome dagger like teeth?
- (A) Tyrannosaurus (B) Pteranodon
(C) Triceratops (D) Stegosaurus
- 44) If a person is positive in Widal test. then that person is affected by which pathogen?
- (A) Plasmodium falciparum
(B) Salmonella typhi
(C) Streptococcus pneumoniae
(D) Entamoeba histolytica
- 45) Which chemical is obtained from microorganism *Aspergillus niger*?
- (A) Acetic acid (B) Butyric acid
(C) Lactic acid (D) Citric acid

- 46) The first r - DNA was constructed in which micro - organism?
- (A) Salmonella typhimurium
(B) Vibrio cholera
(C) E. coli
(D) Staphylococci
- 47) Which molecule is tagged with a radioactive molecule is allowed to hybridise to its complementary DNA in a clone of cells?
- (A) ds - DNA or ds - RNA
(B) ss - DNA or ss - RNA
(C) ss - DNA or ds - RNA
(D) ds - DNA or ss - RNA
- 48) Who proposed the competitive Exclusion principle?
- (A) Von Humboldt (B) MacArthur
(C) G.F. Gause (D) Verhulst - pearl
- 49) How many billion tons productivity of oceans?
- (A) 70 (B) 155
(C) 55 (D) 170
- 50) How many number of biodiversity hotspots in the world right now?
- (A) 14 (B) 25
(C) 9 (D) 34

056(E)
(FEBRUARY-MARCH, 2025)
SCIENCE STREAM
(CLASS - XII)

(Part - B)

Time : 2 Hours]

[Maximum Marks : 50

Instructions :

- 1) Write in a clear legible handwriting.
- 2) There are three sections in Part - B of the question paper and total 1 to 27 questions are there.
- 3) All the questions are compulsory. Internal options are given.
- 4) The numbers at right side represent the marks of the question.
- 5) Start new section on new page.
- 6) Maintain sequence.
- 7) For diagram/chart based questions, separate questions are given for visually impaired students. Only they have to attend them.

SECTION - A

- Answer Questions No. 1 to 12 as directed. Each question carry 2 marks. [16]
 (Attempt any 8)

- 1) Draw labelled diagram of enlarged view of one microsporangium showing wall layers.

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- 1) Explain the structures of microsporangium.
- 2) Write down the characters of ideal contraceptive.
- 3) What is pleiotropic gene? Explain with example.
- 4) Write down the types of RNA in bacteria & explain their functions.
- 5) Draw the labelled diagram of Miller's experiment.

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- 5) Describe in brief Miller's Experiment.

- 6) Which disease caused by Haemophilus influenzae? How it spread? Write down the symptoms of it.
- 7) Explain Biological control of viruses that attack insects & arthropods.
- 8) Explain Brood parasitism in birds.
- 9) Write down the limitations of ecological pyramid.
- 10) Explain the mechanism of production of seed without fertilisation.
- 11) Explain Intra Uterine devices (IUD's)
- 12) Explain commensalism with examples.

SECTION - B

- Answer question no 13 to 21 as directed. Each Question carry 3 marks. (Attempt any six) [18]

13) Explain the structure of sperm cell with labelled diagram.

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- 13) Explain the structure of sperm cell & Define spermiogenesis & spermiation.
- 14) Give the salient features of genetic code.
- 15) Explain the Homologous & Analogous structure with example.
- 16) What is Innate Immunity? Explain the barriers of it.
- 17) Explain Biological treatment of sewage Treatment.
- 18) What are Genetically Modified Organism (GMO)? Write down the uses of G.M. plants.
- 19) Explain tissue culture.
- 20) Define Decomposition & Describe the steps of Decomposition.
- 21) Explain causes of biodiversity losses by Alien species invasion & co-extinction.

SECTION - C

- Answer Question No. 22 to 27 in detail, Attempt any four.

[16]

(Each Question carry 4 marks)

- 22) Explain the structure of typical angiosperm ovule with labelled diagram.

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- 22) Explain the structure of ovule & explain megasporogenesis.

- 23) Draw the labelled diagram of female reproductive system & explain the structure of womb.

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- 23) Explain the female accessory ducts & structure of womb, in female reproductive system.

- 24) Explain Mendel's Dihybrid cross experiment with chart.

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- 24) Explain the Law of Independent Assortment on the basis of Mendel's Dihybrid cross experiment.

- 25) Write down salient features of Human Genome.

- 26) Give the causes of cancer & describe the diagnostic methods of cancer.

- 27) Describe the separation & isolation of DNA fragments.

(diagram is not required)

