This Question Paper contains 16 printed pages.
(Part - A & Part - B)

Sl.No.

056(E)

(MARCH, 2024)
SCIENCE STREAM
(CLASS - XII)

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

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.

10

(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.**

(1) In mature insulin, chain A and chain B interlinked by which bond?

(A) Peptide bond

(B) Hydrogen bond

(C) Glycosidic bond

(D) Disulphide bond

Rough Work

Rough Work

2) Once in a habitat there are 80 Cheeth's present, their birth rate is 4 and death rate is 2 and six (6) new cheeth's added by immigration and 3 decreases by emigration. What is the population density of Cheeth's in that habitat?

(A) 85
(B) 90
(C) 83
(D) 95

3) What is the percentage of photosynthetically active radiation (PAR) in the incident solar radiation?

(A) 100%
(B) < 20 - 30%
(C) < 50%
(D) < 2 - 10%

4) Which of the following naturalist established species - area relationships?

(A) Paul Ehrlich
(B) Robert May
(C) Alexander Von Humboldt
(D) David Tilman

5) Emasculation in angiospermic plant is _____.

(A) Removal of anther
(B) Removal of petals
(C) Removal of style
(D) Removal of calyx

6) In which process sperm is directly introduced into ovum?

(A) AI
(B) ZIFT
(C) ICSI
(D) GIFT

7) The RNA polymerase III is responsible for transcription of which RNA?

(A) tRNA

(B) 185r RNA

(C) mRNA

(D) hnRNA

8) In a population frequency of M allele is 0.8. Calculate the homologous recessive allele in that population.

(A) 64%

(B) 4%

(C) 32%

(D) 10%

9) Which bioactive molecule is produced by Trichoderma polysporum?

(A) Streptokinase

(B) Pectinase

(C) Cyclosporin A

(D) Lipases

10) Which metals are used in gene gun for the insertion of alien DNA in competent host?

(A) Gold and Zinc

(B) Gold and Tungsten

(C) Copper and Gold

(D) Tungsten and Iron

11) In which disease α - 1 antitrypsin is used to treat?

(A) Asthama

(B) Common cold

(C) Pneumonia

(D) Emphysema

12) "India is a country of pre-reproductive aged people". On the basis of this statement, what is the representation of age pyramids for Indian?

(A) Declining

(B) Stable

(C) Irregular

(D) Expanding

13) Detritus food chain begin from _____

(A) Phytoplanton

(B) Dead organic matter

(C) Zooplanton

(D) Grass

14) In which of the following, thalamus contributes to fruit formation?

(A) Mango

(B) Sapota

(C) Strawberry

(D) Orange

15) In vasectomy, a small part of which of the following is cut for sterilisation?

(A) Vas deferens

(B) Urethra

(C) Vasa efferentia

(D) Rete Testis

16) How many years ago modern man Homo sapiens arose?

(A) 1,00,000 - 90,000

(B) 5,000 - 4,000

(C) 1,50,000 - 1,30,000

(D) 75,000 - 10,000

Rough

17) Crystals Bt toxin produced by some bacteria do not kill the bacteria themselves because -

(A) Bacteria are resistant to the toxin

(B) Toxin is inactive

(C) Toxin is mature

(D) Bacteria encloses toxin in a special sac

18) Which of the following layer of micro-sporangium provides nutrition to developing pollen grains?

(A) Epidermis

(B) Middle layer

(C) Endothelium

(D) Tapetum

19) Which of the following hormone is secreted in high amount causing ovulation in women?

(A) Estrogen

(B) Luteinizing Hormone (LH)

(C) Follicle Stimulating Hormone (FSH)

(D) Androgens

20) Statutory ban on 'amniocentesis' for which test

(A) Down's syndrome

(B) Sickle - Cell anemia

(C) Haemophilia

(D) Sex determination

21) In klinefelter syndrome _____.

(A) Monosomy of 23rd pair of chromosome

(B) Trisomy of 23rd pair of chromosome

(C) Monosomy of 21st pair of chromosome

(D) Trisomy of 21st pair of chromosome

22) If a double stranded DNA has 35 percent Guanine, calculate the percent of thymine in the DNA.

(A) 35%
(B) 70%
(C) 15%
(D) 30%

23) Which is the correct example for divergent evolution?

(A) Thorn of Bougain villea and tendril of cucurbita
(B) Flippers of Penguins and Dolphins
(C) Octopus and human eye
(D) Sweet potato root and potato stem

24) Secretion of interferon is which type of barrier?

(A) Physical barrier
(B) Cytokine barrier
(C) Cellular barrier
(D) Physiological barrier

25) Match the column I and II

Column - I	Column - II
(P) Aspergillus niger	(i) Acetic acid
(Q) Acetobacter aceti	(ii) Butyric acid
(R) Clostridium butylicum	(iii) Citric acid
(S) Lactobacillus	(iv) Lactic acid

(A) (P - i) (Q - iii) (R - ii) (S - iv)
(B) (P - iii) (Q - i) (R - ii) (S - iv)
(C) (P - iii) (Q - i) (R - iv) (S - ii)
(D) (P - i) (Q - iii) (R - iv) (S - ii)

26) Eco-RI cuts the DNA between _____ only when the sequence GAATTC is present in the DNA.

(A) G and A

(B) T and C

(C) A and T

(D) A and A

27) Golden rice is enriched with which vitamin?

(A) Vitamin A

(B) Vitamin C

(C) Vitamin B

(D) Vitamin D

28) Match column I and Column II by suitable manner

Column - I	Column - II
(P) Lichens	(i) Parasitism
(Q) Abingdon tortoise and goat	(ii) Commensalism
(R) Sea anemone and clown fish	(iii) Competition
(S) Human and liver fluke	(iv) Mutualism

(A) (P - i) (Q - ii) (R - iii) (S - iv)

(B) (P - iii) (Q - iv) (R - ii) (S - i)

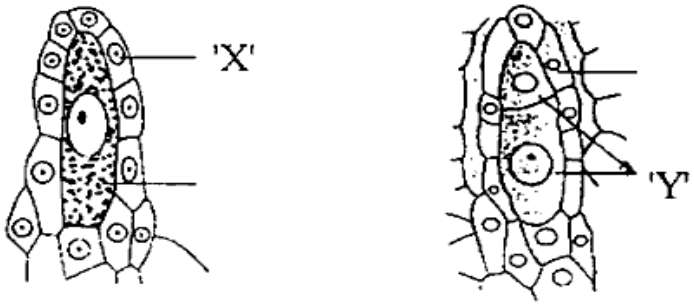
(C) (P - iv) (Q - iii) (R - i) (S - ii)

(D) (P - iv) (Q - iii) (R - ii) (S - i)

29) Choose the correct option for given statement
(T = True, F = False)
(i) Pyramid of energy is always upright
(ii) Pyramid of number in sea is generally inverted
(iii) Pyramid of biomass in sea is generally inverted
(iv) In most ecosystem the pyramid of number and energy are always inverted
(A) FTFT
(B) TFTT
(C) FFTF
(D) TFTF

30) What is the main cause of biodiversity losses of Amazon rain forest?
(A) Habitat loss and fragmentation
(B) Alien species invasions
(C) Over exploitation
(D) Co-extinctions

31) In given figure, megasporogenesis is shown in angiosperms - What are ploidy in given 'X' and 'Y' respectively?



(A) $n, 2n$
(B) $2n, n$
(C) $3n, n$
(D) n, n

32) Which gland help in the lubrication of the penis during coitus?
(A) Prostate glands
(B) Bulbourethral glands
(C) Seminal Vescicles
(D) Testis

33) LNG - 20 is _____.

(A) Hormone releasing IUD
(B) Vaults
(C) Copper releasing IUD
(D) Non-medicated IUD

34) What is represented by following cross?

$Tt \times tt$

(A) Test cross
(B) Dihybrid cross
(C) Co-dominance
(D) Incomplete dominance

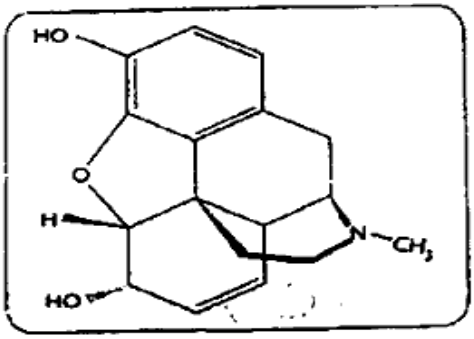
35) The length of DNA double helix in human sperm is approximately _____.

(A) 1.36 mm
(B) 2.2 m
(C) 1.1 m
(D) 2.2 mm

36) The brain capacity of Neanderthal man was

(A) 900 cc
(B) 650 cc
(C) 1400 cc
(D) 800 cc

37) Chemical structure of which drug is given below?



(A) Amphetamine
(B) Cannabinoids
(C) Barbiturates
(D) Morphine

38) Assertion (A) - The statin produced by the yeast monoscus purpureus lowered the blood cholesterol

Reason (R) - Statin act as by competitively in habiting the enzyme responsible for synthesis of cholesterol

(A) A and R both are correct R is correct explanation of A

(B) A is correct and R is wrong

(C) A and R both are correct R is not correct explanation of A

(D) A is wrong and R is correct

39) The amp^R gene contain the recognition sites for which endonucleases in pBR 322 _____.

(A) Pvu II and Pvu I

(B) Pst I and Pvu I

(C) Sal I and BamH I

(D) Pst I and Sal I

40) Which part of tobacco plant is infected by nematode meloidogyne incognita?

(A) Stem

(B) Leaf

(C) Root

(D) Fruit

41) Which of the following is correct equation for Verhulst Pearl Logistic growth?

(A) $dN / dt = rN$

(B) $N_t = N_0 e^{rt}$

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

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

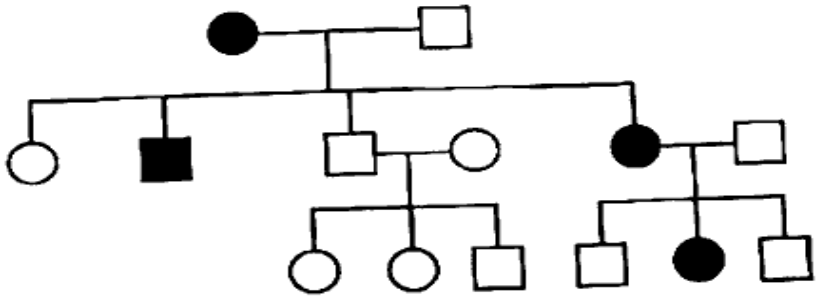
42) The second trophic level in a lake is _____.
(A) Phytoplankton
(B) Algae
(C) Zooplankton
(D) Fishes

43) Which of the following is not the part of in situ conservation?
(A) National Park
(B) Biosphere reserve
(C) Sanctuaries
(D) Zoological parks

44) Which pollinating agent is responsible for pollination in water hyacinth and water lily?
(A) Wind, Water
(B) Insects, Water
(C) Insects, Wind
(D) Only Water

45) MTPs are considered relatively safe during the _____.
(A) 30 weeks
(B) 18 weeks
(C) 24 weeks
(D) 12 weeks

46) In given chart, which mendelian disorder is represented?



(A) Autosomal dominant trait
(B) Sex linked dominant trait
(C) Autosomal recessive trait
(D) Sex linked recessive trait

47) If E.coli was allowed to grow for 60 minutes then what would be the respective proportions of light and hybrid densities DNA molecule?

(A) 1 : 1

(B) 3 : 1

(C) 1 : 3

(D) 7 : 1

48) "Single step, large mutation is known as saltation." This statement is given by _____

(A) Darwin

(B) Thomas Malthus

(C) Hugo de vries

(D) Lamark

49) Which fungus is taking part in the formation of mycorrhiza?

(A) Mucor

(B) Glomus

(C) Rhizopus

(D) Monuscus

50) Which chemical is utilised during the isolation of DNA at the end for the precipitation?

(A) Chilled methanol

(B) Chilled butanol

(C) Chilled ethanol

(D) Chilled phenol

056(E)

(MARCH, 2024)
SCIENCE STREAM
(CLASS - XII)

(Part - B)

me : 2 Hours] *[Maximum Marks : 50*

structions :

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.**

SECTION - A

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

1) Explain - Geitonogamy and Xenogamy
2) What is sexually Transmitted infections? Give simple principles to control it.
3) Write short note - Phenylketonuria
4) Give the successive steps for DNA - finger printing technique.
5) Draw only neat and labelled diagram of S.L. Miller's experiment.
6) What is withdrawal syndrome? Give their symptoms.
7) How the first antibiotic was discovered? Explain it.
8) Explain four basic processes for population density. (Figure is not required)
9) Define Gross primary productivity and Net primary productivity.
10) Draw the labelled diagram of typical anatropus ovule.
11) When medical termination of pregnancy is needed?
12) Explain the Brood parasitism in birds.

SECTION - B

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

13) Explain the ex situ conservation.

14) Define decomposition and Describe the processes of decomposition. (Diagram is not required)

15) What is gene therapy? Illustrate using the example of adenosine deaminase (ADA) deficiency.

16) Explain a typical biogas plant with diagram.

17) Illustrate the chart of Replication of retrovirus.

18) Explain - adaptive radiation

19) Give the salient features of genetic code.

20) Explain the internal structure of testis (Figure is not essential)

21) What are cry proteins? Name an organism that produce it. How has man exploited this protein to his benefit?

SECTION - C

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

(Each Question carry 4 marks)

22) Describe out breeding devices in angiospermic plants.

23) Describe the process of formation of mature gamate in female. (Figure is not required)

24) Describe the inheritance of two genes with chart in garden pea.

25) Explain the process of transcription in bacteria. (diagram is essential)

26) Describe Lymphoid organs.

27) Describe briefly the following. (diagram is not required)

(i) Simple stirred-tank bioreactor

(ii) Downstream processing