D

Subject Code
વિષય કોડ :- 21022

Que. Paper Series
પ્રશ્નપુસ્તિકા કોડ

Life Science
(Science)

Candidate's Roll No.

Time : 1 Hours
Total Ques. : 50
Total Marks : 50

Supervisor's Signature

Do not open the Question Booklet until ask to do so.

Instructions to Candidates / ઉમેદવારોને સૂચના

(1) There are **50** questions in the Test Booklet. The answer of each question is any **one** out of **A, B, C** and **D**. Four alternatives are given with the question. You have to answer all the questions.

(2) Each correct answer carries **(1)one** mark. For each wrong multiple answer for each question will be treated as wrong. No negative marking for wrong answer.

(3) You have to answer on the OMR Sheet is given separately to you. **For example** : Which State of India has the longest Sea Coast ?
(A) Maharashtra (B) Tamil Nadu
(C) Gujarat (D) Andra Pradesh
In OMR Answer Sheet :

The true answer is **"C"**. Hence circle of **"C"** is blackened (encode).

(4) Don't write anything on the Test Booklet.

(5) Use **blue/black inked ballpoint pen** for filling responses in the OMR Answer Sheet. Any other ink, pen or Pencil is strictly prohibited.

(6) During exam from candidate, if any false matter, guide, cheats, slips, any handwritten material, any printed material, mobile phone, pager, calculator or any electronic equipments are found he/she will be disqualified.

(7) Gossips, making noise or disobeying instructions given by Invigilator will be considered disobedience.

(8) Do Rough Work on last page.

(1) આ પ્રશ્નપુસ્તિકામાં કુલ **50** પ્રશ્નો છે. પ્રત્યેક પ્રશ્નનો સાચો ઉત્તર **A, B, C** અને **D** પૈકી કોઈ એક છે. પ્રશ્નની સાથે જ ચારેય વિકલ્પો આપવામાં આવેલા છે. તમારે બધા જ પ્રશ્નોના ઉત્તર આપવાના છે.

(2) પ્રત્યેક પ્રશ્નના સાચા ઉત્તર માટે **1(એક)** ગુણ છે. એક કરતા વધુ વિકલ્પ ડાર્ક કરનાર જવાબને ખોટો ગણવામાં આવશે. ખોટા જવાબ માટે કોઈ ગુણ કપાત થશે નહીં.

(3) ઉત્તર આપવા માટે **અલગ ઉત્તરવહી (OMR SHEET) આપી છે.**
ઉત્તર નીચેના ઉદાહરણ પ્રમાણે આપવાના છે.
ભારતનું કયું રાજ્ય સૌથી લાંબો દરિયા-કિનારો ધરાવે છે ?
(A) મહારાષ્ટ્ર (B) તામિલનાડું
(C) ગુજરાત (D) આંધ્રપ્રદેશ
ઉત્તરવહી (OMR SHEET)માં

ઉપરોક્ત પ્રશ્નનો સાચો ઉત્તર **"C"** છે. આથી **"C"**નું વર્તુળ કાળું (encode) કરેલ છે.

(4) આ પ્રશ્નપુસ્તિકામાં કશું જ લખવાનું નથી.

(5) ઉત્તરવહીમાં ઉત્તરો **વાદળી / કાળી શાહીની બોલપોઈન્ટ** પેનથી આપવાનાં છે. અન્ય શાહી, પેન કે પેન્સિલનો ઉપયોગ કરી શકાશે નહીં.

(6) પરીક્ષા દરમ્યાન ઉમેદવાર પાસેથી કોઈ પણ સાહિત્ય, ગાઈડ, માર્ગદર્શિકા, કાપલી, સ્લીપો, અન્ય હસ્તલિખિત કે પ્રિન્ટેડ સાહિત્ય, મોબાઈલ ફોન, પેજર, કેલ્ક્યુલેટર કે અન્ય વીજાણુ ઉપકરણો હોવાનું જણાશે તો ઉમેદવારને ગેરલાયક ગણવામાં આવશે.

(7) ચાલુ પરીક્ષા દરમ્યાન અંદરોઅંદર ગુસપુસ કરવી, અવાજ કરવો કે નિરીક્ષકની સૂચનાઓનું ઉલ્લંઘન કરવું તે ગેરશિસ્ત ગણાશે.

(8) રફકામ છેલ્લાં પેજ પર કરવું.

ઉત્તરવહી (OMR Answer sheet) બે પ્રતમાં છે. પરીક્ષા પૂરી થયા બાદ ઉત્તરવહી (OMR Answer Sheet)ની પ્રથમ સ્કેનીંગ પ્રત (Scaning Copy) વર્ગ નિરીક્ષકને પરત કર્યા બાદ જ વર્ગખંડ છોડવાનો રહેશે. તેમ કરવામાં કસૂર થયેથી શિસ્તભંગનાં પગલાં ગણી પરીક્ષા માટે જે તે ઉમેદવારને ગેરલાયક ઠેરવવામાં આવશે. બીજી ઉમેદવાર પ્રત (Candidate Copy) ઉમેદવાર સાથે લઈ જઈ શકશે. પ્રશ્નપુસ્તિકા અને બીજી પ્રત ઉમેદવાર પોતાની જોડે લઈ જઈ શકશે.

1 Which one of the following is correct about thalassmia ?
(A) Decreased clotting ability
(B) Increased clotting ability
(C) Abnormal sickle shaped RBC
(D) Fragile RBC cause haemolytic anaemia

2 Kidneys are formed from _____.
(A) Endoderm (B) Somites
(C) Mesoderm (D) Ectoderm

3 Which of the following is example of plant secondary metabolite ?
(A) Abietic acid (B) Kaurenoic acid
(C) Pipecolic acid (D) (A) and (C) both

4 _____ is the main hormone produced by the granulosa cells.
(A) FSH (B) Testoterone
(C) Progesterone (D) Oestrogen

5 Which of the following human genetic disorders is sex linked ?
(A) Haemophilia (B) PKU
(C) Cystic fibrosis (D) Sickle cell disease

6 A group of plants or animals with similar traits of any ranks is _____.
(A) Taxon (B) Genus
(C) Species (D) Order

7 Chilka lake harbours high diversity of_____.
(A) Pisces (B) Aves
(C) Reptiles (D) Mammals

8 Kala-azar is caused by _____.
(A) *Taenia solium* (B) *Trypanosoma gambiense*
(C) *Leismaniadonovani* (D) *Wuchereriabancrofti*

9 An oak tree produces thousands of acrons, but very few grow into mature oak tree. The oak tree exhibits _____ survival-ship curves.
(A) Type I (B) Type II
(C) Type III (D) Type I or II

10 In wild populations, individuals most often show a _____ pattern of dispersion.
(A) Random (B) Density dependent
(C) Equilibrial (D) Clumped

11 Using Hardy-Weinberg principle, which expression represent the frequency of the homozygous recessive genotype?
(A) p^2 (B) $2pq$
(C) q^2 (D) q

12 Study of fossils is called _____.
(A) Ethology (B) Paleontology
(C) etiology (D) Anthropology

13 Heredity or inheritance of specific traits became clearer due to _____.
(A) Lanmarck's theory (B) Mendel works on garden peas
(C) Darwinism (D) Neo-Darwinism

14 Thorns of Bougainvillea plant and tendril of cucurbits are _____.
(A) Homologous organs (B) Paralogous organs
(C) Analogous organs (D) (A) and (B) both

15 Which speciation is thought to be the dominant mode of speciation ?
(A) Allopatric speciation (B) Peripatric speciation
(C) Parapatric speciation (D) None of the above

16 In DNA replication, which of the following serves as a Primer.
(A) Helix Destabilizing protein (B) Small deoxyribonucleotide polymer
(C) Small ribonucleotide primer (D) ribosomal rRNA

17 A correct sequence of code transfer for the synthesis of polypeptide is:
(A) DNA,rRNA, rRNA and mRNA
(B) mRNA, tRNA, rRNA and DNA
(C) tRNA, DNA, mRNA, rRNA
(D) DNA, mRNA, tRNA and amino acids

18 In C4 plants the initial carbon dioxide fixation occurs in leaf mesophy II cells containing chloroplasts. Which of the following enzymes is involved in this reaction?
(A) Phosphoenolpyruvate carboxylase
(B) Pyruvate crboxylase
(C) Ribulose-1, 5-bisphophate carboxylase
(D) Malate enzyme

19 Which of the following contains muramic acid as a consistuent of the cell walls?
(A) Bacteria (B) Blue green algae
(C) Green algae (D) (A) and (B) both

20 The Hardy-Weinberg law desribes :
(A) How mutations occur and balance each other
(B) Genotype frequencies of a population when evolutionary forces are acting
(C) How sexual reproduction would change the relative gene frequencies in a population
(D) Genotype frequencies of a population when evolutionary forces are not acting

21 Which of the following is connected with the cell division?

(A) Microtubules (B) Peroxisomes

(C) Ribosomes (D) ER

22 Considering the carbohydrate structure, L and D refers to:

(A) Mutrotation

(B) Absolute configuration of the isomers

(C) Optical activity

(D) (A) and (B) both

23 Ribozymes are :

(A) Enzymes associated with ribosome biogenesis

(B) Ribonucleic acid with catalytic activity

(C) Ribosomes with catalytic activity

(D) Enzyme involved in the biosynthesis of ribosomal RNA

24 Which of the following virus needs a helper virus for their genome replication?

(A) Hepatitis A

(B) Hepatitis B

(C) Hepatitis C

(D) Hepatitis D

25 A chlorophyll absorbs maximum light in _____ region of electromagnetic spectrum.

(A) Red (B) Green

(C) Far Red (D) Violet

26 Proto-oncogenes are:

(A) Oncogenes found on transforming retro viruses

(B) Oncogenes present in protozoa

(C) Genes encoding oncogene related proteins in extinct organisms

(D) Cellular genes encoding proteins related to viral oncogene

27 Prolonged exposure of a signalling molecule to the receptor may result in its _____.

(A) Degradation (B) Disintegration

(C) Desensitization (D) All of the above

28 The most abundant polymer of the glucose found in the plants is _____.

(A) Cellulose (B) Starch

(C) Pectin (D) Lignin

29 The average molecular weight of 20 standard amino acids is 120 Da. The molecular weight of a protein composed of 100 such amino acids will be _____ Da.

(A) 13800 (B) 11000

(C) 14500 (D) 24000

30 At low pH, an amino acid exist as:

(A) $H_3N^+CHRCOOH$

(B) $H_3N^+CHRCOO^-$

(C) $H_2NCHRCOO^-$

(D) $H_2NCHRCOOH$

31 A homogeneous protein of native molecular weight 100,000 Da gave a single band of molecular weight 50,000 Da on SDS-PAGE in the presence of β-mercapatoethanol. N-terminal analysis gave two amino acids alanine and leucine in equal proportions. Which of the following is correct?

(A) Protein has two polypeptides linked by disulphide bridges

(B) Protein is contaminated with another proteins

(C) Protein is a homodimer

(D) Two Proteins merged with each other

32 Which of the following equation is correct for aerobic respiration?

(A) $C_6H_{12}O_6 \rightarrow 6CO_2+4H_2O$

(B) $C_6H_{12}O_6 \rightarrow 6CO_2 + 6H_2O$

(C) $C_6H_{12}O_6 \rightarrow 6O_2+6H_2O \rightarrow 6CO_2 + 12H_2O + 686Kcal$

(D) $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$

33 Leukaemia is characterized by tremendous increase in the number of_____

(A) White blood cells (B) Red blood cells

(C) Immature cells (D) (A) and (B) both

34 Which of the following is unique in mitosis and not a part of meiosis ?

(A) Homologous chromosome crossover

(B) Homologous chromosomes behave independently

(C) Homologous chromosomes pair to form bivalents

(D) Daughter cells receive as many chromosomes as the mother cell

35 A cell from rapidly dividing population had 2 C amount of DNA at the end of the mitosis. What will be the amount of DNA at G2 phase?

(A) 2C (B) 4C

(C) 1C (D) 8C

36 The largest energy reserve (in terms of kilocalories) in humans is _____.

(A) Blood glucose

(B) Liver glycogen

(C) Muscle glycogen

(D) Adipose tissue triacylglycerol

37 A single turn of Kreb's cycle yields :

(A) 1 $FADH_2$, 1 NADH, & 1 ATP

(B) 1 $FADH_2$, 2 NADH, & 1 ATP

(C) 1 $FADH_2$, 3 NADH, & 1 ATP

(D) 1 $FADH_2$, 2 NADH, & 2 ATP

38 The secondary structure of a protein cannot be determined by

(A) X-ray crystallography

(B) Fluorescence spectroscopy

(C) NMR spectroscopy

(D) Circular dichorism

39 Where is the light harvesting complex II is locted?

(A) Thylakoid lumen

(B) Stroma

(C) Outer membrane of chloroplast

(D) Thylakoid membrane

40 Which of the following enzymes is the most abundant in the biosphere?

(A) Ribulose-1,5-bisphophate carboxylase/ oxygenase

(B) Pyruvate dehydrogenase complex

(C) Golycogen phosphorylase

(D) Cellulase

41 The single letter code for tryptophan is _____.
(A) T (B) S
(C) V (D) W

42 Insulin is a simple peptide hormone which consist of 51 amino acids and _____ disulphide linkage.
(A) One (B) Two
(C) Three (D) Four

43 Among the following _____ is/are protein domain.
(A) Rossmann fold (B) Greek Key Motif
(C) β hairpin (D) All of the above

44 Sugars are transported in cell through_____.
(A) Passive diffusion transport (B) Active transport
(C) Passive facilitated transport (D) (B) and (C) both

45 Glycophorin is a membrane spanning protein of _____plasma membrane and carries sugar molecule.
(A) Red blood cell (B) White blood cell
(C) Mitochondria (D) Golgi apparatus

46 Sertoli cells generates _____ which in turn converts testosterone to form 17-β-estradiol that directs spermatogenesis.
(A) Anti-Mullerian Hormone (AMH)
(B) Ets related molecule (ERM transcription factor)
(C) Aromatase
(D) Glial cell line derived neurotrophic factor (GDNF)

47 Sea urchins show _____.
(A) Radial holoblastic cleavage (B) Spiral cleavages
(C) Bilateral cleavage (D) Rotational cleavage

48 During developmental phase, different cleavage patterns of embryo are observed. However, they governs _____ basic principles.
(A) Watson and Crick law (B) Von Baer's law
(C) Hamilton's Law (D) Sach's or Balfour's Law

49 *Drosophila*, exhibits _____ pattern of gastrulation
(A) Delamionation (B) Ingression
(C) Epiboly (D) Invagination

50 The ability of cells to achieve their respective facets by interactions with other cells is known as _____.
(A) Conditional specification (B) Autonomous specification
(C) Morphogenetic determinants (D) Syncytial specification

SPACE FOR ROUGH WORK