The candidate should ensure that Question Paper Booklet No. of the Question Paper Booklet and Answer Sheet must be same after opening the Paper Seal / Polythene bag. In case they are different, a candidate must obtain another Question Paper. Candidate himself shall be responsible for ensuring this.
1. Which of these enzyme was discovered by Arthur Kornberg?
   (1) Polymerase-I
   (2) Polymerase-II
   (3) Polymerase-III
   (4) Restriction endonuclease

2. ‘M’ line is present in
   (1) Striated muscle
   (2) Smooth muscle
   (3) Cardiac muscle
   (4) Bone

3. For formation of teeth, enamel is secreted by which of these cells?
   (1) Odontoblast cell
   (2) Ameloblast cell
   (3) Osteoblast cell
   (4) Chondroblastic cell

4. Which of these is made of cartilage?
   (1) Hard palate
   (2) Dentary
   (3) Cranium
   (4) Epiglottis

5. In ribose sugar, group attached to II carbon is
   (1) –COR
   (2) –COOH
   (3) –OH
   (4) –CHO
6. Network of the blood capillaries are found in which of these?
   (1) Pia mater
   (2) Arachnoid
   (3) Dura mater
   (4) Cranium

7. In young adult man, value for tidal volume in lung is
   (1) 3500 ml
   (2) 500 ml
   (3) 5800 ml
   (4) 250 ml

8. Cerebral hemisphere is divided into frontal lobe and temporal lobe by which of these?
   (1) Rhinal fissure
   (2) Sylvian fissure
   (3) Corpus callosum
   (4) Hippocampus

9. Which out of the following is the other name for Laki-Lorand factor?
   (1) Factor XIII
   (2) Factor XII
   (3) Factor XI
   (4) Factor X
10. In which layer of the skin are the macrophage and melanoblasts cells are found?
   (1) Papillary layer
   (2) Stratum Malpighi
   (3) Stratum Lucidium
   (4) Reticular layer

11. Pyloric mucosa of stomach secretes which of these hormones?
   (1) Gastrin
   (2) Secretin
   (3) Motilin
   (4) Renin

12. Which of these is an example of Lentic ecosystem?
   (1) Marine ecosystem
   (2) Fresh water ecosystem
   (3) Brackish water ecosystem
   (4) Pool ecosystem

13. Purkinje fiber are associated with which of these?
   (1) Auricle
   (2) Ventricle
   (3) Corticosystemic arch
   (4) A.V. Node
14. ऑक्सीजन की मात्रा है, जो गंधे जल में उपस्थित कार्बनिक पदार्थों को ऑक्सीडाइज करने में प्रयुक्त होती है।
   (1) COD
   (2) BOD
   (3) ZP
   (4) EP

15. निम्न में क्या द्रितायक बायु प्रदूषक है?
   (1) सस्पेंड डिपार्टिकल मेटर (एस.पी.एम.)
   (2) पराक्सी ऐसीटाइबल नाइट्रेट (PAN)
   (3) SO₂
   (4) NO₂

16. यूरोफिकेशन किसके द्वारा होता है?
   (1) ग्रीन हाउस गैसों के बढ़ने से
   (2) मछलियों की संख्या बढ़ने से
   (3) अधिक कार्बनिक पदार्थ बनने से
   (4) अधिक खाद व पोषक तत्वों के अपवाह से

17. निम्न में से कौन सा जूल्पा कंटोन नहीं है?
   (1) डायटम
   (2) डेफ्याया
   (3) क्रिस्ल
   (4) कोपीपाँड

18. मनुष्य के कान की बिंदु किसी दर्द के शोर सुनने की अधिकतम सीमा है?
   (1) 15 डीसीबल
   (2) 38 डीसीबल
   (3) 85 डीसीबल
   (4) 125 डीसीबल

14. is the amount of oxygen required to oxidise only organic matter in sewage.
   (1) COD
   (2) BOD
   (3) ZP
   (4) EP

15. Which of these is a secondary air pollutant?
   (1) Suspended Particulate Matter (SPM)
   (2) Peroxy Acetyl Nitrite (PAN)
   (3) SO₂
   (4) NO₂

16. Eutrophication is caused due to
   (1) Increase in greenhouse gases
   (2) Increase of fish population
   (3) Production of excessive organic matter
   (4) Run off of excessive fertilizer and nutrients

17. Which one of the following is not a zooplankton?
   (1) Diatom
   (2) Daphnia
   (3) Krill
   (4) Copepod

18. Maximum limit of an ear, listening loud noise without pain is
   (1) 15 decibel
   (2) 38 decibel
   (3) 85 decibel
   (4) 125 decibel
19. For diatom test, which is the best site for taking sample?
   (1) Lung
   (2) Blood
   (3) Bone marrow of ulna
   (4) Bone marrow of femur

20. The cell wall of fungi is made of
   (1) Cellulose
   (2) Pectin
   (3) Chitin
   (4) Suberin

21. Clostridium perfringens poisoning is associated with
   (1) Canned foods
   (2) Fish foods
   (3) Egg products
   (4) Meat products

22. Which type of autotroph plankton has a cell wall made of silica?
   (1) Diatom
   (2) Copepod
   (3) Amoeba
   (4) Dinoflagellate
23. In chordates, the true example of class Thaliacea is
(1) Salpa
(2) Herdmania
(3) Ciona
(4) Okiopleura

24. Animals living on upper surface of water are called
(1) Lotic
(2) Benthic
(3) Pelagic
(4) Lentic

25. Which one out of these scientists, discovered the law of incomplete dominance?
(1) Darwin
(2) Carl Correns
(3) Mendel
(4) Hugo de Vries

26. When does gene crossing over occur?
(1) During cleavage
(2) During gastrulation
(3) During organogenesis,
(4) During gametogenesis

27. “Species is a population of interbreeding animals.” This definition of species was given by
(1) Mayer
(2) Simpson
(3) Linnaeus
(4) Friend
28. The genes of 'ABO' blood group system are present on chromosome number
   (1) 1
   (2) 4
   (3) 9
   (4) 12

29. The type of chromosomal aberration which does not change the number of genes is
   (1) Deletion
   (2) Duplication
   (3) Inversion
   (4) Translocation

30. Linkage in Drosophila was first discovered by
   (1) Bridges
   (2) Bateson and Punnet
   (3) Morgan and Castle
   (4) Sutton

31. Which one out of these is responsible for cytoplasmic inheritance?
   (1) Genes
   (2) Plasmogen
   (3) Factors
   (4) Plasmid
32. Helly’s fixative is used in fixation of which of these tissues?
   (1) Bone-marrow, Blood forming organs
   (2) Hard and chitinous tissues
   (3) Eyes, kidney, glands
   (4) Protozoans, cell smears

33. Material like bone or calcareous plates cannot be cut by routine histological sectioning procedure, unless they are
   (1) treated with Lugol’s solution
   (2) washed to remove formalin
   (3) decalcified using EDTA
   (4) treated with chromate solution

34. Free floating sections at thickness of 75 μm to 200 μm can be cut on
   (1) Ultratome
   (2) Cryostat
   (3) Vibratome
   (4) Freezing microtome

35. Which one out of the following groups of Protozoa, forms oceanic ooze?
   (1) Noctiluca, Volvox, Leishmania
   (2) Opalina, Trichomonas, Tripanosoma
   (3) Polystomella, Nummulite, Miliolina
   (4) Giardia, Paramecium, Monocystis
36. For staining of acid-fast bacteria which stain is used?
   (1) Aniline – Fuschin
   (2) Carbol Fuchsin – Methylene blue
   (3) Gram – Weigart
   (4) Malachite green – Pyronin Y

37. For mounting of fluorescein stained tissue sections on glass slide we use
   (1) DPX
   (2) Poly L-lysine
   (3) Chrom-alum-gelatin
   (4) Phosphate buffered saline

38. The symbol SE₅, SE₆ is used in biostatistics for which of these test?
   (1) Standard error of standard deviation
   (2) ANOVA
   (3) Correlation and regression
   (4) Chi-square test

39. The value of correlation coefficient between two variables lies between
   (1) −α and +α
   (2) −1 and +1
   (3) 0 and 1
   (4) 0 and d

40. Mallory’s triple stain can be used for staining of which of these?
   (1) Connective tissue, muscle, bone
   (2) Elastic fibers, collagen
   (3) Myelin sheath, elastic tissue
   (4) Muscles, bone-marrow
41. Which of the following p-values will allow us to reject null hypothesis, if significance levels of the test is 5%?
   (1) 0.15
   (2) 0.20
   (3) 0.025
   (4) 0.05

42. The first set of those bones that become fully ossified in human embryo are
   (1) Cranium
   (2) Clavicles
   (3) Hipbone
   (4) Ear ossicles

43. What part of the body of the deceased resist rapid decomposition, which is used by forensic anthropologist for analysis?
   (1) Bone
   (2) Cartilage
   (3) Soft tissue
   (4) Teeth

44. For diagnostic purpose, endometrial aspiration is collected by which of these methods?
   (1) Cannula passed into uterine cavity and material is aspirated with syringe.
   (2) Material is collected from upper third of the lateral wall of vagina.
   (3) Placing spatula in cervix.
   (4) Using plastic pipette.
45. Place of a joint between the two pelvic bones, which is used for determining the age of a female is called
   (1) Public symphysis
   (2) Diaphysis
   (3) Epiphysis
   (4) Coccyx

46. Which type of human race has aviator type of orbits?
   (1) Negroid
   (2) Caucasoid
   (3) Mongoloid
   (4) Australoid

47. If sagittal suture in the skull is fitted together, it suggests
   (1) The victim is younger than 18 years age.
   (2) The victim is older than 35 years age.
   (3) The victim is older than 50 years age.
   (4) The victim is younger than 60 years age.

48. Physical evidence of an activity that happened slightly before or slightly after the death is called
   (1) post-mortem trauma
   (2) Peri-mortem trauma
   (3) Datum point
   (4) Decomposition
49. Taphonomic analysis can help to determine which of these?
   (1) The diet of an individual.
   (2) The length of time a victim is dead.
   (3) The length of the cut on the body of the victim.
   (4) The method of killing of a victim.

50. A person has extremely long extremities, long tapering fingers and hyper flexible joints. What is the pathogenesis of the disease?
   (1) Mutation of Elastin gene
   (2) Mutation of Fibrillin gene
   (3) Mutation of collagen type-I gene
   (4) Mutation of calcification gene

51. The study of human remains is called
   (1) Criminology
   (2) Forensic archaeology
   (3) Forensic odontology
   (4) Forensic osteology

52. Sex of a victim of unknown can be determined from
   (1) Epiphysis
   (2) Skull
   (3) Pelvic bone
   (4) Teeths
53. Which of these is a non-membranous cell organelle?
   (1) Lysosome
   (2) Ribosome
   (3) Mitochondria
   (4) Endoplasmic reticulum

54. The fluidity of plasma membrane can increase due to which of these?
   (1) Increase in saturated fatty acids in membrane
   (2) Increase in unsaturated fatty acids in membrane
   (3) Increase in protein in membrane
   (4) Increase in glycolipid in membrane

55. In electron transport system of mitochondria, which one of final electron acceptor?
   (1) Cytochrome oxidase
   (2) Cytochrome-A
   (3) Oxygen
   (4) Water

56. Unicellular microscopic organisms were first observed by
   (1) Robert Hooke
   (2) Priestley
   (3) Pasteur
   (4) Leeuwenhoek
57. Nucleus controls the activity and shape of a cell. This was experimentally proved by
(1) Barbara McClintock
(2) Fontana
(3) Duchene
(4) J. Hammerling

58. Shape of submetacentric chromosome is
(1) Rod shaped
(2) L-shaped
(3) V-shaped
(4) Uncertain shape

59. In cell division the term “Karyokinesis” is related to
(1) Cytoplasm
(2) Chromocentre
(3) Centriole
(4) Nucleus

60. Lysosomes are called ‘suicidal bags’ because they contain
(1) Phagocytic activity
(2) Catabolic enzymes
(3) Hydrolytic enzymes
(4) Oxidative enzymes
Part - B
BIO-CHEMISTRY

1. Competitive inhibitor of enzyme is
   (1) Structural analogue of enzyme
   (2) Functional analogue of enzyme
   (3) Functional analogue of substrate
   (4) Structural analogue of substrate

2. The maximum velocity of an enzyme catalysed reaction reached when
   (1) enzyme is completely free.
   (2) enzyme concentration is equal to the enzyme substrate complex.
   (3) substrate concentration high.
   (4) enzyme concentration very high.

3. Which of these ribozyme resemble tRNA?
   (1) HDV Ribozyme
   (2) Hairpin Ribozyme
   (3) Hammer Head Ribozyme
   (4) RNase P

4. As per international classification of enzymes, which of these category enzymes belongs to class II?
   (1) Hydrolases (2) Ligases (3) Transferases (4) Isomerases

5. If Km value is low, the affinity of enzyme for substrate is
   (1) low
   (2) more
   (3) zero
   (4) no change

6. Enzyme lactate dehydrogenase is
   (1) Dimer (2) Trimer (3) Tetramer (4) Pentamer
7. Which of these relationship was not studied by Mendel?
   (1) Flower colour and seed colour
   (2) Flower colour and shape of pollen grains
   (3) Height and seed coat colour
   (4) Height and seed colour

8. In which type of animals Mendelian inheritance is truly exemplified?
   (1) Aploid
   (2) Protist
   (3) Polyploid
   (4) Diploid

9. Anticodons are present on
   (1) mRNA
   (2) hnRNA
   (3) t-RNA
   (4) r-RNA

10. Chromosome theory of inheritance was proposed by
    (1) Watson
    (2) Bohr
    (3) Correns
    (4) Sutton and Boveri

11. Sickle cell anaemia is due to which type of mutation?
    (1) Silent
    (2) Point
    (3) Frame shift
    (4) None sense

12. Chain initiating codon is
    (1) UAA
    (2) UAG
    (3) AUG
    (4) GUA

13. Serum amylase and lipase are raised in
    (1) Acute pancreatitis
    (2) Hepatitis
    (3) Obstructive jaundice
    (4) Bone disease
14. Tetracyclin blocks protein synthesis by
   (1) Inhibiting binding of aminoacyl
        tRNA to ribosome.
   (2) Inhibiting initiation of
        transcription
   (3) Inhibiting peptidyl transferase
   (4) Inhibiting translocase enzyme

15. Which of the energy rich molecule is
    required for initiation of translation?
   (1) ADP
   (2) GTP
   (3) CTP
   (4) AMP

16. Which model of plasma membrane
    was proposed by Danielle and Davson?
   (1) Fluid mosaic
   (2) Lipid membrane
   (3) Unit membrane
   (4) Sandwich and Lamellar

17. Which of these are called sperm
    mother cell?
   (1) Spermatid
   (2) Spermatogonia
   (3) Spermatocyste
   (4) Primordial germ cell

18. Which of these is also called
    meroblastic cleavage?
   (1) Equal holoblastic
   (2) Unequal holoblastic
   (3) Partial
   (4) Superficial

19. Replication process of DNA occur in
    which phase of mitotic cycle?
   (1) Prophase
   (2) Anaphase
   (3) Interphase
   (4) Metaphase
20. The process in which three germ layers are formed is
(1) Cleavage   (2) Gastrulation
(3) Organogenesis   (4) Morphogenesis

21. Which of these cells act as phagocyte in central nervous system?
(1) Microglia
(2) Astrocytes
(3) Oligodendrocytes
(4) Ependymal cells

22. In normal 28 days of menstrual cycle when would one expect the surge of LH to occur?
(1) At 8 – 10 days
(2) At 11 – 13 days
(3) At 18 – 20 days
(4) At 20 – 24 days

23. Total number of muscles found in human body is
(1) 680   (2) 640
(3) 500   (4) 695

24. Deficiency of which hormone causes diabetes mellitus type 1?
(1) Glucagon   (2) ADH
(3) Insulin   (4) Prolactin

25. In frog gastrula, which layer lines the roof and floor of the archenteron respectively?
(1) Mesoderm and Endoderm
(2) Endoderm and Mesoderm
(3) Ectoderm and Mesoderm
(4) Mesoderm and Ectoderm
26. A classical and alternate pathway meet at which component of complement pathway?
   (1) C₁  (2) C₄  (3) C₄ 6  (4) Factor-D

27. Most of the volume of normal human blood is composed of
   (1) Red blood cells  (2) Haemoglobin  (3) Plasma  (4) White blood cells

28. Branches of lymph capillaries inside villi of intestine are called
   (1) Lymph node  (2) Thoracic lymph duct  (3) Lacteals  (4) Cisterna chyli

29. What prevents clotting of blood in blood vessels?
   (1) Serotonin  (2) Fibrinogen  (3) Heparin  (4) Fibrin

30. In McArdle’s syndrome muscle cramps and muscle fatigue increased with increase in glycogen. This occurs due to deficiency of
   (1) Hepatic hexokinase  (2) Muscle phosphorylase  (3) Muscle hexokinase  (4) Muscle ATPase

31. Which of the following hormone produced by pituitary in both male and female but hormone is active only in female?
   (1) Relaxin  (2) Prolactin  (3) Somatotropin  (4) Vasopressin
32. During activation of renin-angiotensin aldosterone system, which gland release aldosterone hormone?
(1) Hypothalamus  (2) Pituitary  
(3) Adrenal  (4) Parathyroid

33. Amount of which of these will increase in blood when liver become inactive?
(1) Ammonia  (2) Urea  
(3) Uric acid  (4) Creatine

34. Albinism is due to defect in metabolism of which Amino acid?
(1) Tryptophan  (2) Serine  
(3) Methionine (4) Tyrosine

35. Increased accumulation of sphingomyelin in phagocytic cells is a feature seen in
(1) Gaucher disease  (2) Niemen picks disease  
(3) Down syndrome  (4) Tay sach's disease

36. The two main patterns of liver injury are
(1) Hepatocellular and cholestatic  
(2) Cholestatic and obstructive  (3) Necrotic and Hepatocellular  
(4) Neoplastic and Cholestatic

37. Which of these is not a symptom of Thalassemia?
(1) Slow growth and weakness  (2) Abdominal cramps  
(3) Dark urine  (4) Facial bone deformities
38. The widal test is a type of
(1) Precipitation reaction
(2) Agglutination reaction
(3) Complement fixation test
(4) Anti-globulin test

39. FISH (Fluorescence In-situ Hybridization) is used in
(1) Detect and localise presence or absence of special DNA
(2) Detect and localize cDNA
(3) Gene amplification
(4) Detect reciprocal translation

40. What is the major advantage of ELISA in comparison to other biological quantification techniques?
(1) Detection of an antigen at a low concentration
(2) Low specificity
(3) Easily available
(4) Inexpensive

41. Electrophoresis was developed by
(1) Tswett
(2) Svedberg
(3) Tiselius
(4) Sanger

42. Which of the following radioactive isotope is generally used in RIA?
(1) Tritium
(2) C-14
(3) I-125
(4) S-35
43. Measures of central tendencies are
(1) Mean  (2) Median
(3) Mode  (4) All of these

44. When two coins are tossed simultaneously, what will be the probability of getting tail at least once?
(1) \(\frac{3}{4}\)  (2) \(\frac{1}{5}\)
(3) \(\frac{4}{5}\)  (4) \(\frac{1}{4}\)

45. Chi-square test is used for what purpose?
(1) To test for dependent samples.
(2) To test for independent samples.
(3) To test the difference in two variance.
(4) To test for equality of proportions.

46. Analysis of variance is a statistical method for comparing ______ of several populations.
(1) Proportions
(2) Variance
(3) Standard Deviation
(4) Means

47. What is the alternative name of repeated measure t-test?
(1) F-test
(2) Duncan’s test
(3) Paired-Sample t-test
(4) t-test for equality of mean
48. जल (पानी) है
   (1) ध्रुवीय विलायक
   (2) अध्रुवीय विलायक
   (3) अन्तर्प्रेषिय विलायक
   (4) अन्तर्विद्युत विलायक

49. लेक्ट्रोज में होते हैं
   (1) म्यूकोज + फ्रूक्टोज
   (2) म्यूकोज + सुक्रोज
   (3) म्यूकोज + ग्लेक्टोज
   (4) म्यूकोज + राइबोज

50. हेमोसेम माइमाफ्लेक्ट जंट (HMP) के एन्जाइम्स
    पाए जाते हैं:
    (1) माइटोकान्निया
    (2) साइटोसोल
    (3) माइक्रोसोम
    (4) लाइसोसोम

51. निम्न में कौन सी वसा उद्दीपन वसा कहलाती है?
    (1) ट्रायलाइमिन क्लीरोल
    (2) स्टरोईड
    (3) फैस्कोलिपिड
    (4) गोम

52. कॉलेस्टरोल से निम्न में से कौन सा पदार्थ नहीं
    बनता है?
    (1) विटामिन D
    (2) ब्राइल साल्ट
    (3) ब्राइल पिगमेंट
    (4) कोटिसोल

53. जब pH एक इकाई घटती है, तो हाइड्रोजन
    आयन की संख्या:
    (1) 10 गुना बढ़ती है।
    (2) 2 गुना बढ़ती है।
    (3) 7 गुना बढ़ती है।
    (4) 10 गुना बढ़ती है।

54. Water is a
    (1) Polar solvent
    (2) Non-polar solvent
    (3) An amphipathic solvent
    (4) Non-polar uncharged solvent

55. Lactose consists of
    (1) Glucose + Fructose
    (2) Glucose + Sucrose
    (3) Glucose + Galactose
    (4) Glucose + Ribose

56. Enzymes of hexose monophosphate
    shunt are present in
    (1) Mitochondria
    (2) Cytosol
    (3) Microsomes
    (4) Lysosomes

57. Which of the following fats are also
    called neutral fats?
    (1) Triacyl glycerol
    (2) Steroid
    (3) Phospholipid
    (4) Wax

58. Useful substances produced from
    cholesterol, except
    (1) Vitamin-D
    (2) Bile salt
    (3) Bile pigments
    (4) Cortisol

59. When pH falls by 1 unit, the hydrogen
    ion concentration
    (1) decreases 10 times
    (2) increases 2 fold
    (3) changes by 7 times
    (4) increases 10 times
54. Which of these is not a classified form of conjugated protein?
   (1) Lipoprotein  (2) Glycoprotein
   (3) Metalloprotein  (4) Metaprotein

55. A short length of DNA molecule has 80 Thymine (T) and 80 Guanine (G) bases in each strand then the total number of nucleotide in that DNA fragment will be
   (1) 640  (2) 320
   (3) 160  (4) 80

56. Who proposes double Helix model of DNA?
   (1) Thomas Morgan
   (2) Watson-Crick
   (3) Erwin Chargaff
   (4) Oswald Avery

57. Which of these is not a coenzyme?
   (1) NAD  (2) Fe^{+++}
   (3) TPP  (4) FAD

58. In Lineweaver-Burk plot, the y-intercept represents
   (1) V_{max}  (2) K_m
   (3) 1/V_{max}  (4) 1/K_m

59. Which one of these statements is true with reference to enzymes?
   (1) Apoenzyme = Holoenzyme + Coenzyme
   (2) Holoenzyme = Apoenzyme + Coenzyme
   (3) Coenzyme = Apoenzyme + Holoenzyme
   (4) Holoenzyme = Coenzyme + Isoenzyme

60. Which among these is a non-essential amino acid?
   (1) Serine  (2) Threonine
   (3) Lysine  (4) Histidine
61. Which of the following is correct about UV-Vis spectroscopy technique?
(i) Quantitative analysis
(ii) Wavelength between 180 nm to 1100 nm
(iii) Qualitative analysis
Select the correct answer using the codes given below:
Codes:
(1) (i) and (ii)
(2) (i) and (iii)
(3) (i), (ii) and (iii)
(4) (ii) only

62. Which among the following helps us in getting a three-dimensional picture of the specimen?
(1) Transmission Electron Microscope
(2) Scanning Electron Microscope
(3) Compound Microscope
(4) Simple Microscope

63. Which one of the following statement is correct?
(1) Chain of custody means custody of evidence from scene of crime to Forensic lab.
(2) Chain of custody means custody of evidence from scene of crime to Police station.
(3) Chain of custody means custody of evidence from scene of crime to court room.
(4) Chain of custody means custody of the evidence from Police station to Forensic lab.
64. Which one of the following statement is correct?

(1) In mass spectrometer, the sample that has to be analysed is bombarded with alpha particles.

(2) In mass spectrometer, the sample that has to be analysed is bombarded with the protons.

(3) In mass spectrometer, the sample that has to be analysed is bombarded with the electrons.

(4) In mass spectrometer, the sample that has to be analysed is bombarded with the neutrons.

65. Which one of the following is associated with X-ray diffraction technique?

(i) Composition of metal

(ii) Composition of element

(iii) Structure of crystal

Select the correct answer using the codes given below:

Codes:

(1) (i), (ii) and (iii)

(2) (ii) and (iii)

(3) (iii) only

(4) (i) and (ii)
66. The presence of pink needle shaped crystals of pyridine ferroporphyrin are observed in
(1) Takayama test
(2) Teichman test
(3) Barberios test
(4) Florence test

67. The acid phosphatase screening test is used to detect physiological fluid
(1) Urine
(2) Sweat
(3) Semen
(4) Saliva

68. Which one of the following statement is correct?
(1) Luminol reagent reacts with blood in the presence of peroxide to emit light by a chemical process known as florescence.
(2) Luminol reagent reacts with blood in the presence of peroxide to emit light by a chemical process known as chemiluminescence.
(3) Luminol reagent reacts with blood in the presence of peroxide to emit light by a chemical process known as illumination.
(4) Luminol reagent reacts with blood in the presence of peroxide to emit light by a chemical process known as phosphorescence.
69. यदि मां का रक्त वर्ग B है और पिता का रक्त वर्ग B है तो बच्चों का रक्त वर्ग निम्नलिखित होगा :
(1) केवल B
(2) B और O
(3) A, B, O और AB
(4) केवल AB

70. निम्नलिखित में से कौन सा कथन सही है?
(i) अवशोषण शालान तकनीक में, शीतल एन-सलाइन का उपयोग धोने के लिए किया जाता है ताकि सभी अन-निश्चित एंटीबॉडीज धोए जा सकें।
(ii) अवशोषण शालान तकनीक में, शीतल एन-सलाइन का उपयोग धोने के लिए किया जाता है ताकि सभी अवशोषित एंटीबॉडीज धोए जा सकें।
(iii) अवशोषण शालान तकनीक में, शीतल एन-सलाइन का उपयोग धोने के लिए किया जाता है ताकि सभी अवशोषित एंटीबॉडीज ना निकलें।
(iv) अवशोषण शालान तकनीक में, शीतल एन-सलाइन का उपयोग धोने के लिए किया जाता है ताकि सभी अन-अवशीलित एंटीबॉडीज ना निकलें।

सही उत्तर चुने:
कोड:
(1) (i) और (ii) (2) (ii) और (iv)
(3) (i) और (iii) (4) (i) और (iv)

71. निम्नलिखित में से शरीर के त्वच्छों (Body fluids) के मध्य में प्रजाति जांच हेतु कौन सा परीक्षण किया जाता है?
(1) एलिसा (Elisa)
(2) जेल प्रसार (Gel Diffusion)
(3) एमाइलेज (Amylase) परीक्षण
(4) केंस्टल-मेयर परीक्षण

69. The blood group of mother is B and father is B, the blood group of children could be
(1) B only
(2) B and O
(3) A, B, O and AB
(4) AB only

70. Which of the following statement is correct?
(i) In absorption elution technique, chilled n-saline is used for washing so that all unabsorbed antibodies are washed.
(ii) In absorption elution technique, chilled n-saline is used for washing so that all absorbed antibodies are washed.
(iii) In absorption elution technique, chilled n-saline is used for washing so that all absorbed antibodies are not washed.
(iv) In absorption elution technique, chilled n-saline is used for washing so that all unabsorbed antibodies are not washed.

Select the correct answer:
(1) (i) and (ii)
(2) (ii) and (iv)
(3) (i) and (iii)
(4) (i) and (iv)

71. Species identification of body fluid stains is generally done by
(1) ELISA
(2) Gel diffusion
(3) Amylase test
(4) Kastle-Meyer test
72. निम्नपरिचित में से कौन सा कथन सही है?
(1) जानवरों की प्रजाति की जाँच के लिए क्रोसोवर वेबुटकणसंचलन में, केसोड की तरफ एंटीसीरम रखा जाता है।
(2) जानवरों की प्रजाति की जाँच के लिए क्रोसोवर वेबुटकणसंचलन में एंडोड की तरफ एंटीसीरम रखा जाता है।
(3) जानवरों की प्रजाति की जाँच के लिए क्रोसोवर वेबुटकणसंचलन में, एंटीसीरम को केसोड और एंडोड दोनों पक्ष पर रखा जाता है।
(4) जानवरों की प्रजाति की जाँच के लिए क्रोसोवर वेबुटकणसंचलन में, एंटीसीरम केसोड और एंडोड दोनों पक्ष पर नहीं रखा जाता है।

73. गैर-साइक वह व्यक्ति है जो एबीएच (ABH) पदार्थों को गर्मी द्वारा संयोग नहीं करता है:
(i) लार
(ii) पसीना
(iii) बीर्ध
नीचे लिख गए कोड का उपयोग करके सही उत्तर चुने:
कोड:
(1) (i) और (ii)
(2) (i) और (iii)
(3) (i), (ii) और (iii)
(4) (ii) और (iii)

72. Which one of the following statement is correct?
(1) In crossover electrophoresis for species of origin test, antiserum is loaded on cathode side.
(2) In crossover electrophoresis for species of origin test, antiserum is loaded on anode side.
(3) In crossover electrophoresis for species of origin test, antiserum is loaded on both cathode and anode side.
(4) In crossover electrophoresis for species of origin test, antiserum is not loaded on both cathode and anode side.

73. Non-secretor is a person who does not secretes ABH substances in the following body fluids:
(i) Saliva
(ii) Sweat
(iii) Semen
Select the correct answer using the codes given below:
Codes:
(1) (i) and (ii)
(2) (i) and (iii)
(3) (i), (ii) and (iii)
(4) (ii) and (iii)

74.

75.

76.
74. Which one of the following is correct?

1. In the ABO system, blood group A is characterised by the presence of antigen A and antibody B.
2. In the ABO system, blood group A is characterised by the presence of antigen B and antibody A.
3. In the ABO system, blood group A is characterised by the presence of both antigen A and antibody A.
4. In the ABO system, blood group A is characterised by the absence of antigens and antibodies.

75. Dr. Alec Jeffery is known for

1. ELISA
2. DNA fingerprinting
3. Protein synthesis
4. SNP

76. Which of the following is not correctly matched?

1. Microbiology – Study of microorganisms
2. Anthropology – Study of anthers
3. Serology – Study of antigen and antibody reaction
4. Osteology – Study of bones
77. मल्टिप्लेक्स पीसीआर शब्द किससे संबंधित है?
(i) नकल करने के लिए एक से अधिक क्षेत्र
(ii) प्रतिक्रिया मिश्रण के लिए एक से अधिक प्राइमर का जोड़
(iii) डीएनए के दो या अधिक क्षेत्रों का प्रवर्धन
नीचे दिए गए कोड का उपयोग करके सही उत्तर चुनोः
कोड:
(1) (i), (ii) और (iii) (2) (i) और (ii)
(3) (ii) और (iii) (4) केवल (iii)

78. निम्नलिखित में से विभेदक नियंत्रण किससे संबंधित है?
(i) प्लांट डी.एनए (Plant DNA)
(ii) म्यूटी डीएनए (mt DNA)
(iii) पूर्व और महत्व पूर्व अंशों को अलग करने के लिए
नीचे दिए गए कोड का उपयोग करके सही उत्तर चुनोः
कोड:
(1) (i), (ii) और (iii) (2) (i) और (ii)
(3) (ii) और (iii) (4) केवल (iii)

79. वातावरिक समय पीसीआर (Real time PCR) विधि किस लिए प्रयोग किया जाता है?
(1) डीएनए की मात्रा पता करने के लिए
(2) डीएनए जिनोटाइपिंग के लिए
(3) डीएनए एक्स्ट्रैक्शन (Extraction) के लिए
(4) डीएनए सीक्विंसिंग के लिए

77. The term Multiplex PCR refers to
(i) More than one region to be copied.
(ii) Addition of more than one primer set to the reaction mixture.
(iii) Amplification of two or more regions of DNA.
Select the correct answer using the codes given below:
Codes:
(1) (i), (ii) and (iii) (2) (i) and (ii)
(3) (ii) and (iii) (4) (iii) only

78. Differential extraction is associated with
(i) Plant DNA
(ii) mt DNA
(iii) Separate male and female DNA fractions
Select the correct answer using the codes given below:
Codes:
(1) (i), (ii) and (iii) (2) (i) and (ii)
(3) (ii) and (iii) (4) (iii) only

79. Real-time PCR technique is used for
(1) Quantitation of DNA
(2) Genotyping of DNA
(3) Extraction of DNA
(4) Sequencing of DNA
80. Which one of the following statement is correct?
(1) The structure of mtDNA is linear in shape
(2) The structure of mtDNA is oval in shape
(3) The structure of mtDNA is circular in shape
(4) The structure of mtDNA is rectangular in shape

81. Which one of the following is a bi-allelic marker?
(i) STRs
(ii) RFLPs
(iii) SNPs

Select the correct answer using the codes given below:

Codes:
(1) (i), (ii) and (iii)
(2) (i) and (ii)
(3) (ii) and (iii)
(4) (iii) only

82. The term ‘Chimerism’ is described when
(1) The presence of two genetically distinct cell lines.
(2) Acquired through stem cell transplantations
(3) Acquired through blood transfusion
(4) Acquired through plasma transfusion

83. Sperm nuclei are impervious to digestion without ______ in the process of differential extraction
(1) SDS  (2) Proteinase K  (3) DTT  (4) All of these
84. Which one of the following is a correct statement?

(1) The first organism to arrive on the corpse is blow flies.
(2) The first organism to arrive on the corpse is beetles.
(3) The first organism to arrive on the corpse is pupa.
(4) The first organism to arrive on the corpse is maggots.

85. Forensic entomology is helpful in estimation of

(i) Postmortem interval
(ii) Postmortem injury
(iii) Anti-mortem injury

Select the correct answer using the codes given below:

Codes:

(1) (i) and (ii)  (2) (i), (ii) and (iii)
(3) (i) only  (4) (ii) and (iii)

86. Which of the following is the correct order of life cycle of a blow fly?

(1) 1st egg, 2nd larva, 3rd pupa and 4th adult
(2) Egg, pupa, 1st, 2nd, 3rd, larva, adult
(3) Larva, egg, pupa, adult
(4) Adult, 1st, 2nd, 3rd, larva, egg
87. If one traverses from North to South in India, which one of the following is the correct sequence of National Parks (from North to South) does he observe?

1. Hemis National Park, Sariska Tiger Reserve, Bannerghatta National Park, Mukurthi National Park
2. Hemis National Park, Bannerghatta National Park, Sariska Tiger Reserve, Mukurthi National Park
3. Hemis National Park, Mukurthi National Park, Bannerghatta National Park, Sariska Tiger Reserve
4. Sariska Tiger Reserve, Hemis National Park, Bannerghatta National Park, Mukurthi National Park

88. Blow flies are also known as

(i) Green bottles
(ii) Blue bottles
(iii) House flies

Select the correct answer using the codes given below:

Codes:

1. (i), (ii) and (iii) 2. (i) and (ii) 3. (ii) and (iii) 4. (iii) only
89. The fruit 'Pod' is associated with the narcotic plant

(1) Coca
(2) Tobacco
(3) Opium
(4) Bhang

90. Which one of the following is not correctly matched?

(1) Ivory – Elephant
(2) Horn – Rhino
(3) Skin – Tiger
(4) Musk – Bear

91. Cystolithic hair are present in the leaves of which plant?

(1) Bhang plant
(2) Opium plant
(3) Tobacco plant
(4) Coca plant
92. Which one of the following is not correctly matched?

1. Reid’s osteometric board – Measurement of femur bone
2. Goniometer – Measurement of pelvic girdle
3. Mandibulometer – Measurement on mandible
4. Mollison’s craniophore – Measurement of vertex height in skull

93. Which one of the following is correct?

i. Osteology – Study of bones
ii. Osteogenesis – Ossification of bones
iii. Osteometry – Measurement of long bones

Select the correct answer using the codes given below:

Codes:
1. (i) and (iii)
2. (i) and (ii)
3. (ii) and (iii)
4. (i), (ii) and (iii)

94. Which one is not an example of axial skeleton of man?

1. Vertebral column
2. Skull
3. Radius
4. Ribs
95. Which one of the following is not correctly matched?
(1) Scapula – Glenoid Fossa
(2) Femur – Coronoid Fossa
(3) Ulna – Trochlear notch
(4) Sternum – Jugular notch

96. Which one is not an example of appendicular skeleton?
(1) Cranium
(2) Pelvic girdle
(3) Tarsus
(4) Patella

97. Match List – I with List – II and select the correct answer by using the codes given below:

<table>
<thead>
<tr>
<th>List – I</th>
<th>List – II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Greater trochanter</td>
<td>(i) Trapezoid line</td>
</tr>
<tr>
<td>B. Sacrum</td>
<td>(ii) Femur</td>
</tr>
<tr>
<td>C. Clavicle</td>
<td>(iii) Acetabulum</td>
</tr>
<tr>
<td>D. Pelvis</td>
<td>(iv) Vertebral column</td>
</tr>
</tbody>
</table>

Codes:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
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<td>(2)</td>
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<td>(4)</td>
<td>(ii)</td>
<td>(iii)</td>
<td>(iv)</td>
</tr>
</tbody>
</table>
98. At crime scenes, evidence of high-
velocity blood spatter is frequently
associated with:
(i) Gunshot injury
(ii) Power tool and machinery injuries
(iii) High speed automobile accidents
Select the correct answer using the
codes given below:

Codes:
(1) (i) and (iii)
(2) (i), (ii) and (iii)
(3) (ii) and (iii)
(4) (i) and (ii)

99. Match List – I with List – II and select
the correct answer by using the codes
given below:

List – I
A. Section 45, (i) Facts bearing
IEA upon opinion of
experts
B. Section 46, (ii) Opinion of
IEA experts
C. Section 47, (iii) Grounds of
IEA opinion when
relevant
D. Section 51, (iv) Opinions as to
IEA handwriting when
relevant

Codes:
A  B  C  D
(1) (iv) (i) (ii) (iii)
(2) (ii) (iii) (i) (iv)
(3) (ii) (i) (iv) (iii)
(4) (iii) (ii) (iv) (i)

100. Which one is only associated with
secondary crime scene?
(1) Where body is found after the
incident.
(2) Where victim’s clothes are found
after the incident.
(3) Where body is transported after
occurrence.
(4) Where crime weapon is found by
the initial witness.