

**COMBINED TECHNICAL SERVICES EXAMINATION
(INTERVIEW POST)**

COMPUTER BASED TEST

DATE OF EXAM: 21.07.2025 FN

**PAPER – II – ZOOLOGY AND MEDICAL
ENTOMOLOGY (PG DEGREE STD.)
(CODE: 567)**

1. Calcium is referred as second messenger because
- (A) it is related to RNA
 - (B) many hormones mediate their action through calcium
 - ☒ (C) it is involved in nerve impulse transmission
 - (D) it brings message from outside to inside of cell
 - (E) Answer not known
2. The co-enzyme which does not involve in hydrogen transfer is
- (A) FAD
 - (B) NADP⁺
 - ☒ (C) FH₄
 - (D) FMN
 - (E) Answer not known
3. The hormone essentially required for the implantation of fertilized ovum and maintenance of pregnancy
- (A) Estrogens
 - (B) Cortisol
 - (C) Prolactin
 - ☒ (D) Progesterone
 - (E) Answer not known
4. Choose the right answer among type :
- Copper is essential for the
- (i) Synthesis of melanin and phospholipids
 - (ii) Development of bone and nervous system
 - (iii) The transmission on nerve impulse
- (A) (i) only
 - (B) (ii) and (iii) only
 - ☒ (C) (i) and (ii) only
 - (D) (ii) and (iii) only
 - (E) Answer not known

5. The abnormally high storage levels of vitamins K in the body

- (i) is caused by demineralization of the bones
- (ii) is due to hypervitaminosis K
- (iii) leads to hemolytic anemia and jaundice

- (A) (i) only
- (B) (i) and (ii) only
- (C) (iii) only
- ☒ (D) (ii) and (iii) only
- (E) Answer not known

6. Choose the right answer :

Oxaloacetate and α -ketoglutarate are precursors for the synthesis of

- (A) Cytosine and uracil only
- (B) Thymine only
- ☒ (C) Purines and pyrimidines only
- (D) Purines only
- (E) Answer not known

7. Choose the right matches among type :

- (1) Thiamine – coenzyme for α -ketoglutarate dehydrogenase
- (2) Riboflavin – a electron acceptor for isocitrate dehydrogenase
- (3) Pantothenic acid – coenzyme, attached to active carboxylic residues, acetyl coA
- (4) Niacin – coenzyme for succinate dehydration
- ☒ (A) (1) and (3) are correct
- (B) (1) and (2) are correct
- (C) (2) and (3) are correct
- (D) (3) and (4) are correct
- (E) Answer not known

8. The enzymes present in the membrane of mitochondria are

- ☒ (A) Flavoproteins and cytochromes
- (B) Fumarase and lipase
- (C) Catalase and lipase
- (D) Zymase and cytochromes
- (E) Answer not known

9. Assertion and Reason type :

Assertion [A] : Ergosterol is an important precursor for vitamin 'D'.

Reason [R] : When exposed to light the ring B of ergosterol opens and its converted to ergocalciferol, a compound containing vitamin D activity

(A) [A] is true but [R] is false

☒ (B) Both [A] and [R] are true; and [R] is the correct explanation of [A]

(C) [A] is false, [R] is true

(D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]

(E) Answer not known

10. Choose the right answer :

The α and β cyclic forms of D-glucose are

(A) Ketoenol pair

(B) Tautomers

(C) Enantiomers

☒ (D) Anomers

(E) Answer not known

11. Chemical composition of chromomere is

☒ (A) DNA and proteins

(B) DNA and lipids

(C) DNA and carbohydrates

(D) Proteins and lipids

(E) Answer not known

12. A molecule acting as a “second messenger” in biological system

- (A) cDNA
(B) ☒ cAMP
(C) tRNA
(D) hnRNA
(E) Answer not known

13. Mention the function of the following cellular components :

- | | |
|---------------------|-------------------------------|
| (a) Cell wall | 1. Processing of proteins |
| (b) Golgi apparatus | 2. Transport protein molecule |
| (c) Ribosomes | 3. DNA Molecule |
| (d) Chromatin | 4. rRNA Molecule |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 1 | 2 | 3 | 4 |
| (B) | 3 | 4 | 2 | 1 |
| ☒ (C) | 2 | 1 | 4 | 3 |
| (D) | 4 | 3 | 2 | 1 |
| (E) | Answer not known | | | |

14. The basic unit of DNA packaging, where DNA is wrapped around histone proteins

- (A) Operon
(B) ☒ Nucleosome
(C) Chromosome
(D) Locus
(E) Answer not known

15. The amount of adenine is proportional to the amount of thymine and the amount of guanine is proportional to cytosine residues

- (A) Watson's rule
(B) ☒ Chargaff's rule
(C) Franklin's rule
(D) Bragg's rule
(E) Answer not known

16. One statement is true regarding food vacuole of amoeba?
- (A) medium is acidic
 - (B) medium is alkaline
 - ☒ (C) medium is first acidic, then alkaline
 - (D) medium is first alkaline then acidic
 - (E) Answer not known
17. Linnaeus discovered the _____ nomenclature.
- (A) Binomial, Trinomial
 - (B) Trinomial
 - (C) Trinomial, Binomial
 - ☒ (D) Binomial
 - (E) Answer not known
18. Collar pores are present in the members of phyla
- (A) Echinodermata
 - (B) Coelenterata
 - (C) Ctenophora
 - ☒ (D) Chordata
 - (E) Answer not known
19. The connecting link between Annelida and Mollusca is
- (A) Limnaea
 - (B) Chaetoderma
 - (C) Nautilus
 - ☒ (D) Neoplina
 - (E) Answer not known

20. Echinoderms are considered highest invertebrates because
- (A) They are widely distributed
 - ☒ (B) They show resemblances with chordates in their embryonic development
 - (C) Coelom is enterocoel in both groups
 - (D) They are marine
 - (E) Answer not known
21. Spermatogonia in the testis develop in the
- (A) Leydig cell
 - (B) Sertoli cell
 - (C) Sustentacular cells
 - ☒ (D) Seminiferous tubules
 - (E) Answer not known
22. [A] : LH hormone act on the Leydig cells and regulates testosterone secretion after puberty and in new born babies.
- [R] : Leydig cells are numerous in newborn male baby and in adult male. But in childhood these cells are scanty.
- (A) [A] is false [R] is not correct explanation
 - ☒ (B) Both [A] and [R] true
 - (C) [A] is false, [R] is true
 - (D) [A] is true but [R] is false
 - (E) Answer not known

23. Which statement is correct

- (i) Chorionic stimulate secretion of testosterone by developing testis in xy embryo
- (ii) Relaxin help softens the cervix in preparation for cervical dilation of parturition
- (iii) Progesteron encourage utrine contraction to provide quite environment for fetus
- ☒ (A) (i) and (ii)
- (B) (i) only
- (C) (ii) only
- (D) (iii) and (iv) only
- (E) Answer not known

24. Match the following :

- | | |
|------------------|-------------------------|
| (a) Lung | 1. Nephrocalcinosis |
| (b) Kidney | 2. Dyspnoea |
| (c) Arteriole | 3. Hyper parathyroidism |
| (d) Parathormone | 4. Blood pressure |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 2 | 4 | 3 | 1 |
| (B) | 2 | 4 | 1 | 3 |
| ☒ (C) | 2 | 1 | 4 | 3 |
| (D) | 2 | 1 | 3 | 4 |
| (E) | Answer not known | | | |

25. The nerve impulse velocity can be measured with the help of a

- (A) Electrocardiogram
- ☒ (B) Cathode-ray oscilloscope
- (C) Sphygmomanometer
- (D) Glucometer
- (E) Answer not known

26. The sequence of events during irritability

- (i) (a) Stimulation (b) Excitation (c) Conduction (d) Response
 - (ii) (a) Stimulation (b) Excitation (c) Conduction (d) Blocking
 - (iii) (a) Stimulation (b) Excitation (c) Response (d) Conduction
 - (iv) (a) Stimulation (b) response (c) conduction (d) Excitation
- ☒ (A) (i) only
 - (B) (ii) and (iii) only
 - (C) (i) and (ii) only
 - (D) (i) and (iii) only
 - (E) Answer not known

27. Permeability of the neuron's membrane

[A] : Na^+ ions are found in higher concentration out side the cell and low concentration inside the cell

[R] : Na^+ ions do not migrate inside along their concentration gradient.

(A) [A] is true [R] is false

(B) Both [A] and [R] is false

☒ (C) Both [A] and [R] is true

(D) [A] is false but [R] is true

(E) Answer not known

28. Match the following :

- | | |
|------------------------|--------------------|
| (a) Gustatory receptor | 1. Sense of smell |
| (b) Olfactor receptor | 2. Taste buds |
| (c) Gravity receptor | 3. Neuromast organ |
| (d) Audio receptor | 4. Statocysts |

(a) (b) (c) (d)

☒ (A) 2 1 4 3

(B) 2 1 3 4

(C) 2 3 4 1

(D) 2 4 3 1

(E) Answer not known

29. Which is the strongest muscle in the human body and also major muscle of mastication?
- (A) Temporalis
 - (B) Medial pterygoid
 - ☒ (C) Masseter
 - (D) Lateral pterygoid
 - (E) Answer not known
30. Which of the following buffers will be most effective in blood (PH=7.4)?
- ☒ (A) Carbonic acid – Bicarbonate buffer system
 - (B) Phosphate buffer system
 - (C) Hemoglobin buffer system
 - (D) Protein buffer system
 - (E) Answer not known
31. What triggers the release of calcium from the sarcoplasmic reticulum into the cytoplasm of muscle cell?
- ☒ (A) Trigger of an action potential
 - (B) Decrease in pH
 - (C) Increase in oxygen concentration
 - (D) Presence of glucose
 - (E) Answer not known

32. During muscle contraction which region of the sarcoma decreases in length
- (A) A-band
(C) Z-line
(E) Answer not known
- (B) ☒ H-zone
(D) M-line
33. Which of the following is the correct equation for the conversion of prothrombin to thrombin
- (A) ☒ Prothrombin + Ca^{2+} + prothrombinase $\rightarrow$ Thrombin
(B) Prothrombin + Fibrinogen $\rightarrow$ Thrombin
(C) Prothrombin + Vitamin K $\rightarrow$ Thrombin
(D) Prothrombin + platelets $\rightarrow$ Thrombin
(E) Answer not known
34. When red blood cells are placed in 2% sodium chloride solution
- (A) Cells undergo hemolysis
(B) Endosmosis takes place
(C) ☒ Cells undergo crenation
(D) Cells maintains normal shape
(E) Answer not known
35. Reticulocytes develop into mature red blood cells within _____ after their release from red bone marrow
- (A) ☒ 1 to 2 days
(C) 3 to 4 days
(E) Answer not known
- (B) 2 to 3 days
(D) 4 to 5 days

36. Read the following statements :

Assertion [A] : Erythrocytes contain the oxygen carrying protein Hemoglobin.

Reason [R] : RBC lack mitochondria and generate ATP anaerobically.

Choose the correct option.

- (A) [A] is true but [R] is false
 - (B) Both [A] and [R] are true
 - (C) [A] is false, [R] is true
 - ☒ (D) Both [A] and [R] are true, but [R] is not the correct explanation of [A]
 - (E) Answer not known
37. The forceful movement of the bolus from the mouth and pharynx into the Oesophagus and then to stomach is called
- (A) Digestion
 - ☒ (B) Deglutition
 - (C) Eating
 - (D) Propulsion
 - (E) Answer not known
38. The cells of the islets of langerhans that produce glucagon and insulin respectively are
- ☒ (A) α and β cells
 - (B) β and α cells
 - (C) β and δ cells
 - (D) α and δ cells
 - (E) Answer not known

39. What is the role of the pancreas in protein digestion?
- ☒ (A) secretes trypsinogen and chymotrypsinogen
 - (B) secretes bile salts
 - (C) absorbs amino acids
 - (D) produces intrinsic factor
 - (E) Answer not known
40. Given below are the location of the salivary glands. Which of them is matched correctly.
- (1) Parotid glands – Anterior to the ears
 - (2) Submandibular glands – Beneath the tongue
 - (3) Sublingual glands – Floor of the mouth
- (A) (1) and (2) are correct
 - (B) (2) and (3) are correct
 - (C) (3) and (1) are correct
 - ☒ (D) (1) only correct
 - (E) Answer not known
41. Which of the following is not the substage of meiotic phase of Oogenesis?
- ☒ (A) Synthesis of ribosomes
 - (B) Growth of oocyte
 - (C) Yolk synthesis
 - (D) Egg membrane deposition
 - (E) Answer not known

42. Why are egg cells become large sized and immotile?
- (1) To supply half of the chromosomal complement
 - (2) To supply cytoplasm to the future embryo
 - (3) To supply food reserves to the embryo
 - (4) To give beauty to the embryo
 - (A) (2), (3) and (4)
 - ☒ (B) (1), (2) and (3)
 - (C) (4) only
 - (D) (1), (2) and (4)
 - (E) Answer not known
43. In which phase spermatagonia doubles in volume?
- ☒ (A) Growth phase
 - (B) Maturation phase
 - (C) Multiplication phase
 - (D) Spermiogenesis
 - (E) Answer not known
44. Which cell phagocytose excess cytoplasm cast off by spermatids?
- (A) Leydig cell
 - ☒ (B) Sertoli cell
 - (C) Interstitial cell
 - (D) Seminiferous tubule
 - (E) Answer not known

45. Pick out the wrong statement from the following :

- (1) Spermatogonia are resistant to high temperature.
- (2) Mature spermatozoa are sensitive to high abdominal temperature.
- (3) In bats the testes persist within the abdominal cavity throughout the life.
- (4) In monotremes, the testes exist in the abdominal cavity.
- (A) (1) and (2) only
- (B) (2) and (3) only
- ☒ (C) (3) only
- (D) (4) only
- (E) Answer not known

46. From the following statement find out the incorrect one.

- (1) No proliferating Oogonia are seen in an adult ovary of mammals.
- (2) In fish and amphibians, the proliferative phase is seasonal throughout the life.
- (3) All oogonia are matured into functional eggs.
- (4) Primordial germ cells multiply by meiosis
- (A) (2) only
- (B) (1) and (3) only
- (C) (2) and (4) only
- ☒ (D) (4) only
- (E) Answer not known

47. Pick out correct statement about haploid syndrome.

- (1) Parthenogenetic embryos are haploid and die during development.
- (2) Amictic produce haploid eggs and develop into haploid male.
- (3) The Diploid queen bees lay haploid eggs after meiosis.
- (4) In wasp the squeezed eggs produce haploid male.
- ☒ (A) (1) only
- (B) (3) only
- (C) (2) and (4) only
- (D) (1) and (3) only
- (E) Answer not known

48. In Rotifers the Ameiotic female eggs develop into

- (A) Haploid male
- (B) Haploid female
- (C) Diploid male
- ☒ (D) Diploid female
- (E) Answer not known

49. Low vitality of sperms in the semen is known as

- ☒ (A) Asthenospermia
- (B) Necrozoospermia
- (C) Taratozoospermia
- (D) Azoospermia
- (E) Answer not known

50. In sea urchin embryo, micromeres implanted into the side of another 32-cell embryo resulted in
- ☒ (A) the formation of another gut at the implantation site
 - (B) the formation of another brain at the implantation site
 - (C) the formation of a normal larva
 - (D) the formation of another heart at the implantation site
 - (E) Answer not known
51. The success of vaccination depends on what?
- (A) presence of antigens in the serum
 - (B) generation of new diseases
 - ☒ (C) generation of memory cells
 - (D) death of the patient
 - (E) Answer not known
52. Advantage of use of secondary antibody in indirect ELISA.
- (1) Provides an additional step for signal amplification.
 - (2) Used with a wide variety of primary antibodies.
 - (3) Time consuming and expensive.
 - (4) Increase the overall sensitivity of the assay.
- (A) (1), (2) and (3)
 - ☒ (B) (1), (2) and (4)
 - (C) (2), (3) and (4)
 - (D) (1), (3) and (4)
 - (E) Answer not known

53. Which statement is TRUE about the advantage of Homogeneous EIA over Heterogenous EIA?

- (1) Reagents are added at a time
- (2) Reagents are added at different steps
- (3) Requires washing steps
- (4) Never requires washing steps

- ☒ (A) (1) and (4) are correct
- (B) (1) and (3) are correct
- (C) (2) and (4) are correct
- (D) (3) and (2) are correct
- (E) Answer not known

54. Match the following :

- | | |
|---------------------|--|
| (a) Lymphokines | 1. Communicate between cells |
| (b) Cytokines | 2. Produced by lymphocytes |
| (c) Isoleukines | 3. Humoral immune response |
| (d) Immunoglobulins | 4. Influence the activity of other cells |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 4 | 1 | 2 | 3 |
| (B) | 1 | 2 | 3 | 4 |
| ☒ (C) | 2 | 4 | 1 | 3 |
| (D) | 3 | 2 | 1 | 4 |
| (E) | Answer not known | | | |

55. Which statement of a secondary immune response is INCORRECT

- (1) Re-exposure to same antigens
- (2) Production of larger amounts of antibodies
- (3) Activity of Specific Memory Cells
- (4) When an antigen enters the body

- (A) (1) only
- (B) (2) only
- (C) (3) only
- ☒ (D) (4) only
- (E) Answer not known

56. Match the following :

- | | |
|-------------------------------|--|
| (a) Heterophil antigens | 1. Staphylococcal enterotoxins |
| (b) Iso antigens | 2. Polysaccharides |
| (c) Super antigens | 3. Streptococcus pyogenes
M-protein and human heart
muscle protein |
| (d) T cell dependent antigens | 4. HLA antigen |

- | | | | |
|---|-----|-----|-----|
| (a) | (b) | (c) | (d) |
| (A) (3) | (1) | (2) | (4) |
| (B) (1) | (2) | (3) | (4) |
| (C) (2) | (1) | (4) | (3) |
| ☒ (D) (3) | (4) | (1) | (2) |
| (E) Answer not known | | | |

57. Which is the very potent Chemotactic factory for Neutrophils?

- (A) C4a
- (B) C3b
- (C) C2a
- ☒ (D) C5a
- (E) Answer not known

58. Which protein released by cytotoxic T cells are toxic to cancer cells?
- (A) Cytokines (B) Lymphokines
☒ (C) Lymphotoxin (D) Interleukins
 (E) Answer not known
59. Which of the following statement is true about Immune System?
- (A) Does not react to own antigens
 (B) Does not react to foreign antigens
☒ (C) React to own antigens in cancerous cells
 (D) React to own antigens in normal cells
 (E) Answer not known
60. Which is incorrect according to the virulence of the pathogenic culture?
- (1) Oxidized
 (2) Aged
 (3) Fresh
 (4) Air-dried
- (A) (3) only ☒ (B) (1), (2) and (4) only
 (C) (1), (3) and (4) only (D) (2) only
 (E) Answer not known

61. Match the following type :

Match the categories assigned for protected Areas (PAs) by the commission of National Parks and Protected Areas (CNPPA) of IUCN.

Categories		Protected Areas	
(a)	I	1.	Natural Monument
(b)	II	2.	Habitat/Species Management Areas
(c)	III	3.	National Park
(d)	IV	4.	Strict Nature Reserve/Wilderness Areas

	(a)	(b)	(c)	(d)
(A)	4	1	3	2
(B)	4	2	3	1
☒ (C)	4	3	1	2
(D)	4	3	2	1
(E)	Answer not known			

62. Match the following type :

Match correctly the Animal species protected with reference to schedule list of Wild Life (Protection) Act, 1975.

Schedule List	Animal species protected
(a) Schedule I	1. Common Langur
(b) Schedule II	2. Golden Langur
(c) Schedule III	3. Hedge Hog
(d) Schedule IV	4. Chital

- | | | | | |
|---|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) | (1) | (3) | (4) | (2) |
| ☒ (B) | (2) | (1) | (4) | (3) |
| (C) | (2) | (4) | (1) | (3) |
| (D) | (2) | (3) | (1) | (4) |
| (E) | Answer not known | | | |

63. Section 12 of Chapter III in the "Environment (Protection) Act, 1986" describes about

- (A) Government Analysts
- (B) Reports of Government Analysts
- ☒ (C) Environmental Laboratories
- (D) Powers of entry and inspection
- (E) Answer not known

64. Which chapter of the Environment (Protection) Act, 1986 describes about "Prevention, control and Abatement of Environmental Pollution"?

- (A) Chapter I
- (B) Chapter II
- ☒ (C) Chapter III
- (D) Chapter IV
- (E) Answer not known

65. Choose the right answer among type:

Find the true statement about Chernobyl Nuclear Power Plant accident

- (i) The chernobyl nuclear power plant accident took place on 26th April, 1986.
- (ii) Explosion occurred in Reactor No. 4 of chernobyl nuclear power plant killing 106 workers instantly.
- (iii) An enormous concrete and steel shell or "Sarcophagus" was erected over the damaged reactor to prevent the escape of radioactive materials.

- (A) (i) and (ii) only
- ☒ (B) (i) and (iii) only
- (C) (ii) and (iii) only
- (D) (i), (ii) and (iii)
- (E) Answer not known

66. Self purification is the process by which _____ can carry out purification of polluted water to bring it back to its original state.

(i) Backwater

(ii) Brackish water

(iii) River

(A) (i) only

(B) (ii) only

☒ (C) (iii) only

(D) (i) and (ii) only

(E) Answer not known

67. Match the following :

River

Pollution

(a) Kali

1. DDT factors, power station

(b) Kula

2. Tanneries, rayon mills

(c) Yamuna

3. Rubber factories

(d) Dajora

4. Sugar, paint, silk

(a) (b) (c) (d)

(A) (4) (2) (3) (1)

(B) (4) (1) (2) (3)

☒ (C) (4) (2) (1) (3)

(D) (4) (3) (2) (1)

(E) Answer not known

68. Abnoxious gas which is liberated from automobiles an exhaust is known as _____.

(A) Carbon dioxide

☒ (B) Carbon monoxide

(C) Carbon

(D) Dust and odours

(E) Answer not known

69. Identify ozone depleters from the list of chemicals given below:

(i) CFC

(ii) Freons

(iii) PVC

(iv) HBA

☒ (A) (i) and (ii) only

(B) (i) and (iii) only

(C) (ii) and (iv) only

(D) (ii) and (iii) only

(E) Answer not known

70. All the following are endemic species of western ghats except

(A) Lion – tailed macaque (*Macaca silenus*)

☒ (B) Hoolock Gibbon (*Hoolock hoolock*)

(C) Nilgiri Tahr (*Hemitragus hylocrins*)

(D) Brown plam civet (*Paradoxurus jerdoni*)

(E) Answer not known

71. The spread of air pollution from an industrial source can be determined by the following

(A) Algae

(B) Fungi

☒ (C) Lichens

(D) Bryophytes

(E) Answer not known

72. Which of the following statement on environmental education is false?
- (i) To educate sustainable and ethical development both at local and global level
 - (ii) To prepare the next generation to plan appropriate strategies
 - (iii) It does not advocate a particular view point or course of action
 - (iv) It is essential for younger generation only
- (A) (i), (ii) and (iv) only
☒ (B) (iv) only
(C) (ii) only
(D) (ii) and (iii) only
(E) Answer not known
73. Which country is prime in utilizing solar power?
- (A) America (B) India
☒ (C) Japan (D) Korea
(E) Answer not known
74. The soil profile which contains a mixture of partially decomposed organic matter is known as
- ☒ (A) A horizon (B) B horizon
(C) C horizon (D) E horizon
(E) Answer not known

75. Coal-burning power plant converts
- (A) Mechanical energy into thermal energy
 - (B) Mechanical energy into electrical energy
 - ☒ (C) Chemical energy into thermal energy
 - (D) Chemical energy into mechanical energy
 - (E) Answer not known
76. Which is not the benefits of forest resource?
- (1) Lungs of the earth
 - (2) Storehouse of water
 - (3) Producers of food chain
 - (4) Universal solvent
- (A) (1) only
 - (B) (2) only
 - (C) (3) and (4)
 - ☒ (D) (4) only
 - (E) Answer not known

77. Arrange the following assessment process for environment

- (1) Basics
- (2) Description of environmental setting
- (3) Selection of proposed action
- (4) Preparation of environmental impact statement
- (5) Impact prediction and assessment

(A) (1) (2) (5) (4) (3)

☒ (B) (1) (2) (5) (3) (4)

(C) (1) (2) (3) (4) (5)

(D) (1) (2) (4) (3) (5)

(E) Answer not known

78. Find out non renewable resources from the following

- (i) Petroleum, Coal, Lignite, Fuel gases
- (ii) Petroleum, Coal, Wind, Fuel gases
- (iii) Petroleum, Coal, Wind, Solar
- (iv) Petroleum, Coal, Wind, Lignite

(A) (ii) only

☒ (B) (i) only

(C) (i) and (ii) only

(D) (iii) and (iv) only

(E) Answer not known

79. Wind mills convert wind energy in to mechanical energy by converting its ——— energy

(A) Electric

☒ (B) Kinetic

(C) Chemical

(D) Potential

(E) Answer not known

80. Arrange the following events in sequence of Anaerobic digestion

- (1) Waste water feed
- (2) digester
- (3) biogas storage
- (4) biogas
- (5) generator

- ☒ (A) (1) (2) (4) (3) (5)
- (B) (1) (2) (3) (4) (5)
- (C) (1) (2) (5) (4) (3)
- (D) (1) (2) (3) (5) (4)
- (E) Answer not known

81. Choose the right matches among type :

- | | |
|--|--------------------------|
| (a) The reproductive system well organised | 1. Fasciola hepatica |
| (b) Only smaller Quantities of eggs are released by female worm | 2. Ascaris |
| (c) Primary medical problem in man and economically important in cattle and domesticated animals | 3. Schistomes |
| (d) Each proglottid has the ability to reproduce | 4. Ancylostoma duodenale |

- (A) (1) and (2) are correct
- (B) (1) and (3) are correct
- ☒ (C) (1), (3) and (4) are correct
- (D) (2) and (4) are correct
- (E) Answer not known

82. Choose the wrong matches type

Which of the following is in correct

1. King stage – Amoeboid stage – Schizonts – Merozoites
2. Gametes – Zygote – Ookinete – Oocyst – Sporozoites
3. LD body – Leptomonad form – LD body – binary fission
4. Trypanasoma form – Metacyclic form – Crithidial form – Trypanasoma form – binary fission

- (A) (1) and (2)
(B) (2) and (3)
(C) (3) and (4)
☒ (D) (4) alone
(E) Answer not known

83. Which are true about amoebic dysentery?

1. Acidic stools
2. Stools with blood and mucus
3. High fever
4. Stools with swarms of amoeba

- (A) (1) and (3) are correct
(B) (2) and (4) are correct
(C) (3) only
☒ (D) (1), (2) and (4) are correct
(E) Answer not known

84. Name the vector of visceral Leishmaniasis
- (A) *Mansonia annulifera*
 - ☒ (B) *Phlebotomus argentipes*
 - (C) *Xenopsylla astia*
 - (D) *Culex vishnui*
 - (E) Answer not known
85. Which is the smallest tape worm infecting man?
- (A) *Taenia Saginata*
 - ☒ (C) *Hymenolopsis nana*
 - (E) Answer not known
- (B) *Taenia Solium*
 - (D) *Diphyllobothrium latum*
86. Which of the following is not true about the symptoms of Gambia fever
1. Head-ache
 2. Asleep
 3. Fever
 4. Dysentery
- (A) (1) and (2)
 - (B) (1) only
 - ☒ (C) (4) only
 - (D) (3) only
 - (E) Answer not known

87. Assertion [A] : Infestation with fly maggots cause a condition known as "myiasis".

Reason [R] : In human, following types of myiasis is described, enteric myiasis, dermal myiasis, ocular, auricular, urinary and other locations of fly larva.

- ☒ (A) [A] and [R] are true
- (B) [A] and [R] are false
- (C) [A] is true [R] is false
- (D) [A] and [R] are false
- (E) Answer not known

88. Major symptoms of Bubonic plague are

- (i) Inflammation of lymph glands.
- (ii) Bacteria spreads to liver and spleen
- (iii) Affect brain and vision.
- (iv) Bacteria enters to blood stream.

- (A) (i), (iii), (iv) are correct
- ☒ (B) (i), (ii), (iv) are correct
- (C) (i), (ii), (iii), (iv) are correct
- (D) only (i) is correct
- (E) Answer not known

89. Why do sand fly eggs require a microhabitat with high humidity?

- (A) To avoid predators
- ☒ (B) To prevent desiccation (drying out)
- (C) To encourage rapid movement
- (D) To attract adult flies
- (E) Answer not known

90. In transovarial transmission, where is the pathogen located
- (A) On the surface of the egg
 - (B) In the saliva of the arthropod
 - (C) In the host's blood stream
 - ☒ (D) Inside the developing ovum (egg)
 - (E) Answer not known
91. What is the typical duration from egg to adult for Anopheles Mosquitoes in tropical condition?
- (A) 1-3 days
 - (B) 4-7 days
 - ☒ (C) 10-14 days
 - (D) 20-30 days
 - (E) Answer not known
92. Pestis bubonic (Plague) is transmitted by the pathogen
- (A) Virus
 - ☒ (B) Bacteria
 - (C) Bacteriophage
 - (D) Plagueophage
 - (E) Answer not known

93. Which of the following are true :

- (i) Mosquitoes have piercing and sucking mouthparts.
 - (ii) Female mosquitoes suck blood by piercing the skin tissue.
 - (iii) Older male mosquitoes suck blood of man.
 - (iv) Culex male mosquitoes take blood meal.
- (A) (i) and (iv) are true (B) (i) and (iii) are true
☒ (C) (i) and (ii) are true (D) (ii) and (iii) are true
(E) Answer not known

94. Which of the following are true?

- (i) Taenia solium is a helminth parasite of man
 - (ii) Onchosphere contains six hooks for attachment in the body of pig.
 - (iii) Cysticercus larva is the infective stage
 - (iv) Man is the secondary host for the development of the parasite Taenia
- (A) (i) only true (B) (i) and (ii) are true
(C) (i), (iii) and (iv) are true ☒ (D) (i) and (iii) are true
(E) Answer not known

95. Name the organism which transmits infections pathogens from one host to another?

- (A) Plasmids ☒ (B) Vectors
(C) Producers (D) Consumers
(E) Answer not known

96. Which of the following mosquito species are known to transmit yellow fever?
- (A) *Anopheles Stephensi* (B) *Culex pipiens*
☒ (C) *Aedes aegypti* (D) *Glossina palpalis*
(E) Answer not known
97. What is the scientific name of the sand fly that transmits Kale-azar in India?
- (A) *Phlebotomus papatasi*
☒ (B) *Phlebotomus argentipes*
(C) *Phlebotomus verrucarum*
(D) *Phlebotomus brunetti*
(E) Answer not known
98. Which mosquito species is a major vector for lymphatic filariasis and thrives in organically polluted water?
- (A) *Aedes aegypti* ☒ (B) *Culex quinquefasciatus*
(C) *Mansonia dives* (D) *Psorophora columbiae*
(E) Answer not known

99. Which of the following statements about adult bedbugs are true?

- (i) The proboscis is slender and held closely under the head and prothorax when not feeding.
- (ii) The proboscis is large and extended forward when the bedbug is not feeding.
- (iii) Adult bedbugs have functional wings used for flying.
- (iv) When feeding, the Proboscis swings forward and downward to pierce the skin.

- ☒ (A) (i) and (iv) only
- (B) (ii) and (iii) only
- (C) (i), (iii) and (iv) only
- (D) (i) and (ii) only
- (E) Answer not known

100. Stylete antenae is found in which of the following insect?

- (A) Mosquitoes
- (B) Wasps
- ☒ (C) Tabanus fly
- (D) Moths
- (E) Answer not known

101. National malaria eradication programme launched in the year

- (A) 1955
- ☒ (B) 1958
- (C) 1953
- (D) 1956
- (E) Answer not known

102. Zika virus infection during pregnancy is a cause of _____ and other congenital abnormalities in the developing fetus.

- (A) Skeeter syndrome
- ☒ (B) Guillain Barre syndrome
- (C) Cystic fibrosis
- (D) Fetal Hydantoin syndrome
- (E) Answer not known

103. Relapsing fever a bacterial diseases is transmitted by the insect family.

- (A) Eriophyidae
- (B) Muscidae
- ☒ (C) Ixodidae
- (D) Argasidae
- (E) Answer not known

104. Choose the right answer :

Zika virus belongs to the genus.

- (A) Herpes virus
- (B) Orthopox viruses
- ☒ (C) Flavi viruses
- (D) Hepatitis virus
- (E) Answer not known

105. Assertion [A] : Anopheles sp. are vectors of filariasis caused by Wuchereria Bancrofti.

Reason [R] : But they are absent in India.

- (A) [A] and [R] are correct
- (B) [A] and [R] are incorrect
- ☒ (C) [A] is correct but [R] is incorrect
- (D) [A] is incorrect but [R] is correct
- (E) Answer not known

106. Which is the most effective preventive measure against yellow fever?

- (A) Antibiotic treatment
- (B) Bed nets and insecticides
- ☒ (C) Vaccination
- (D) Antiviral drugs
- (E) Answer not known

107. To which genus and family does the chikungunya virus belong?

- (A) Falvivirus, Flaviviridae
- ☒ (B) Alphavirus, Togaviridae
- (C) Orthomyxovirus, Orthomyxoviridae
- (D) Lentivirus, Retroviridae
- (E) Answer not known

108. Which of the following is not a common control measure for culex mosquitoes?

- (A) Eliminating standing water
- (B) Mosquito Larviodal oils usage
- (C) Using insecticides in urban drainage system
- ☒ (D) Using bed during daytime
- (E) Answer not known

109. Which diseases are primarily transmitted by Aedes mosquito?

- (A) Malaria, Zika virus, Filoriasis
- ☒ (B) Yellow fever, Dengue, Chikungunya, Zika virus
- (C) Japanese encephalitis, west nile virus, Dengue
- (D) Malaria, Chikungunya, Lyme Disease
- (E) Answer not known

110. Assertion [A] : Vectors are essential in the spread of many infectious diseases.

Reason [R] : Vectors act as carriers that transport pathogens from an infected host to a susceptible one.

- ☒ (A) Both [A] and [R] are true, [R] is the correct explanation of [A]
- (B) Both [A] and [R] are true, but [R] is not the correct explanation of [A]
- (C) [A] is true, but [R] is false
- (D) [A] is false, but [R] is true
- (E) Answer not known

111. What are the animals acts as a main reservoirs for Japanese Encephalitis virus?

- (A) Dogs and cats
- (B) ☒ Pigs and Migratory fowls
- (C) Cattle and horses
- (D) Humans
- (E) Answer not known

112. Where was the West Nile virus first identified?

- ☒ (A) West Nile District, Uganda
- (B) West Nile State, Nigeria
- (C) West Nile Region, Kenya
- (D) West Nile Province, Tanzania
- (E) Answer not known

113. Name the two countries which have been certified as Malaria free in 2015 and 2016 respectively?

- (A) Sri Lanka and Maldives
- (B) Singapore and Malaysia
- (C) India and China
- ☒ (D) Maldives and Sri Lanka
- (E) Answer not known

114. Which of the following biological processes is directly synonymous with, or the fundamental event of syngamy?

- (A) Meiosis
- (B) Mitosis
- ☒ (C) Fertilization
- (D) Gametogenesis
- (E) Answer not known

115. Assertion [A] : Most Zika virus infections are asymptomatic.
Reason [R] : Zika virus causes severe neurological complications in all infected individuals.
- (A) Both [A] and [R] are true, and [R] explains [A]
(B) Both [A] and [R] are true, but [R] does not explain [A]
☒ (C) [A] is true [R] is false
(D) [A] is false [R] is true
(E) Answer not known
116. Assertion [A] : Zika virus was 1st identified in human in 1947.
Reason [R] : It was discovered during yellow fever surveillance in a monkey in the Zika forest.
- (A) Both [A] and [R] are true, and [R] explains [A]
(B) Both [A] and [R] are true, but [R] does not explain [A]
☒ (C) [A] is false, but [R] is true
(D) Both [A] and [R] are false
(E) Answer not known
117. How many species of Anopheles mosquitoes are major vectors of Malaria in India?
- (A) About 4
(C) About 30
(E) Answer not known
- ☒ (B) About 6
(D) About 400

118. Assertion [A] : Dengavaxia vaccine efficacy is higher in seropositive individuals than in seronegative individuals.

Reason [R] : Vaccine efficacy in seropositive individuals is approximately double that in seronegative individuals.

- ☒ (A) Both [A] and [R] are true, and [R] explains [A]
- (B) Both [A] and [R] are true, but [R] does not explain [A]
- (C) [A] is true, but [R] is false
- (D) Both [A] and [R] are false
- (E) Answer not known

119. Which of the following is considered the most effective method for preventing the spread of Vector-Borne diseases?

- (A) Mass media awareness
- ☒ (B) Vector control techniques line IVM
- (C) Antibiotic administration
- (D) Genetic testing
- (E) Answer not known

120. The Dipteran insect legs consist of five sections. Arrange the chronological order

- (A) Coxa, Trochanter, Tibia, Femur and Tarsus
- (B) Trochanter, Coxa, Tibia, Femur and Tarsus
- (C) Trochanter, Coxa, Tarsus, Femur and Tibia
- ☒ (D) Coxa, Trochanter, Femur, Tibia and Tarsus
- (E) Answer not known

121. Choose the right matches :

- | | |
|-----------------------------|---|
| (1) Rat flea | – Beetle |
| (2) Natural enemies | – Dragon fly |
| (3) Butterfly | – Honey bee |
| (4) Parasite | – Infected farm animals |
| (A) (1) and (3) are correct | ☒ (B) (1) and (4) are correct |
| (C) (3) and (4) are correct | (D) (2) and (3) are correct |
| (E) Answer not known | |

122. Bubonic plague is caused by

- | | |
|--|-------------|
| (A) Aphis | (B) Grub |
| ☒ (C) Rat flea | (D) Opisina |
| (E) Answer not known | |

123. Insects that live on the scalp and feed on human blood are called as

- | | |
|--|-------------|
| ☒ (A) Lice | (B) Termite |
| (C) Ants | (D) Flea |
| (E) Answer not known | |

124. Louse belongs to the order

- | | |
|----------------------|--|
| (A) Coleoptera | (B) Hemiptera |
| (C) Lepidoptera | ☒ (D) Phthiraptera |
| (E) Answer not known | |

125. A vector borne disease Kala azar is caused by

- (A) House flies
- (B) ☒ Sand flies
- (C) Dragon flies
- (D) Mosquitoes
- (E) Answer not known

126. Choose the right answer among type :

Which of the following statements are true about vibrio cholerae?

- (i) Gram negative and curved rods shaped
 - (ii) V. Cholerae has a distinctive curved or round shaped appearance under a microscope
 - (iii) V. Cholerae's motility is facilitated by its single polar flagellum
- (A) (i) only
 - (B) ☒ (i) and (iii) only
 - (C) (i) and (ii) only
 - (D) (ii) and (iii) only
 - (E) Answer not known

127. Which strain of Vibrio cholerae is mainly responsible for epidemics in India?

- (A) Vibrio Cholerae 0139
- (B) Vibrio Cholerae 0157
- (C) ☒ Vibrio Cholerae 01
- (D) Vibrio Cholerae 02
- (E) Answer not known

128. The four life stages of a Tick is

- (A) Egg, Larva, Pupa, Adult
- (B) Egg, Larva, Nymph, Pupa
- (C) Larva, Nymph, Pupa, Adult
- ☒ (D) Egg, Larva, Nymph, Adult
- (E) Answer not known

129. Choose the right answer

One of the following is the primary mechanism of immune response to typhoid fever:

- ☒ (A) Cell mediated immunity mediated by T-lymphocytes
- (B) Antibody production by B lymphocytes
- (C) Macrophages of innate immune response
- (D) Innate immune response in complement activation
- (E) Answer not known

130. Which of the following is a common source of infection for paratyphoid fever

- (A) Infected blood
- ☒ (B) Contaminated water and food
- (C) Direct skin contact
- (D) Under cooked meat
- (E) Answer not known

131. Choose the right answer

The term 'Vector' in infectious diseases refers to

- (A) An antiviral drug
- (B) A type of bacterial strain
- ☒ (C) An organisms that transmit pathogens
- (D) A type of virus causes diseases
- (E) Answer not known

132. Choose the right answer among type

Which of the following statements are true about E .histolytica

- (i) E. histolytica exists in two forms, trophozoite and cystic forms
 - (ii) The trophozoites are short-lived outside the human body; They are highly susceptible to environmental conditions, like temperature and moisture
 - (iii) Cysts release trophozoites in Environment
- | | |
|------------------------|---|
| (A) (i) only | ☒ (B) (i) and (ii) only |
| (C) (i) and (iii) only | (D) (ii) and (iii) only |
| (E) Answer not known | |

(i) Cholera is a chronic disease

(ii) The majority of infections are mild or asymptomatic

(iii) Infected individuals can spread the bacteria through their faeces

(A) (i) only

(B) (i) and (iii) only

(C) (i) and (ii) only

☒ (D) (ii) and (iii) only

(E) Answer not known

The mites responsible for transmitting the disease known as scrub typhus is called

(A) *Demodex folliculorum* ✓ (B) Trombiculid mite
(C) *Ixodes scapularis* (D) *Sarcoptes scabies*
(E) Answer not known

(A) Plasmodium knowlesi
(B) Flavi virus
(C) Orientia tsutsugamushi
(D) Wuchereria bancrofti
(E) Answer not known

136. The hard ticks are under the family of

- (A) Argasidae
- (B) ☒ Ixodidae
- (C) Hyalomma
- (D) Dermacentor
- (E) Answer not known

137. Tick paralysis primarily caused by a neurotoxin called

- (A) Exotoxins
- (B) Biotoxins
- (C) Haemotoxins
- (D) ☒ Holocyclotoxin
- (E) Answer not known

138. The sequence which correctly represents the life cycle stages of cyclops:

- (a) Egg → Larva → Pupa → Adult
- (b) Egg → Nauplius → Copepodid → Adult
- (c) Egg → Nymph → Adult
- (d) Egg → Hatchlings → Adult
- (A) (a) and (c) only
- (B) ☒ (b) only
- (C) (d) only
- (D) (c) and (d) only
- (E) Answer not known

139. Choose the right answer

Name the developmental stage where a mite moults its skin multiple times before becoming an adult.

- (A) Egg
- (B) Larva
- (C) Pupa
- (D) ☒ Nymph
- (E) Answer not known

140. Tsutsugamushi is a disease also known as

- ☒ (A) Scrub typhus
- (B) Lyme disease
- (C) Rocky Mountain spotted fever
- (D) Rickettsial pox
- (E) Answer not known

141. The district in Tamilnadu reported as free from malaria is

- (1) Coimbatore
 - (2) Erode
 - (3) Nilgris
 - (4) Ramanathapuram
- | | |
|----------------------|---|
| (A) 2 | (B) 1 |
| (C) 4 | ☒ (D) 3 |
| (E) Answer not known | |

142. New Drug policy regarding Malaria Treatment was introduced during the year

- | | |
|----------------------|--|
| (A) 2017 | ☒ (B) 2013 |
| (C) 2008 | (D) 2006 |
| (E) Answer not known | |

143. National Vector Borne Disease Control Programme (NVBDCP) become integral part of _____ in 2005
- (A) World Health Organisation (WHO)
 - ☒ (B) National Rural Health Mission (NRHM)
 - (C) New Policy of Health (NPH)
 - (D) National Nutrition Policy (NNP)
 - (E) Answer not known
144. Malaria eradication defines
- (1) Reducing the 'Malaria disease'
 - (2) Reduction of malaria endemicity
 - (3) Permanent reduction to 'zero'
 - (4) Sanitizing the environment
- (A) (1) and (4) only
 - (B) (2) and (4) only
 - ☒ (C) (3) only
 - (D) (1) and (2) only
 - (E) Answer not known
145. Which of the following is not part of the three pronged strategy of National Vector Borne Disease Control Programme (NVBDCP)?
- (1) Community engagement
 - (2) Disease management
 - (3) Integrated vector management
 - (4) Supportive interventions
- (A) (4) only
 - ☒ (B) (1) only
 - (C) (3) and (4) only
 - (D) (1) and (2) only
 - (E) Answer not known

146. Vaccination of humans with ————— yellow fever vaccine is the only control measure.

- ☒ (A) 17 D
- (B) 17 E
- (C) 18 D
- (D) 16 D
- (E) Answer not known

147. Insecticides moving through vascular system and poisoning are known as

- (A) Contact insecticides
- (B) Stomach insecticides
- ☒ (C) Systemic insecticides
- (D) Fumigants insecticides
- (E) Answer not known

148. The enzymes is decreased in insecticide poisoning due to organophosphate.

- (i) Oximes
- (ii) Atropine
- (iii) Acetyl choline esterase
- (iv) All the above

Which of the above is/are correct?

- (A) (i) and (ii)
- (B) (ii)
- ☒ (C) (iii)
- (D) (iv)
- (E) Answer not known

149. Choose the false answer among the following sign/symptoms of the organophosphorus poisoning

- (i) Cyanosis
- (ii) Abdominal cramp
- (iii) Pulmonary edema
- (iv) Dilated pupil
- (A) (i) only
- (B) (ii) and (iii) only
- (C) (i) and (ii) only
- ☒ (D) (iv) only
- (E) Answer not known

150. Which among the following is not a potential symptom of insecticide poisoning?

- (i) Breathing difficulties
- (ii) Increased appetite
- (iii) Vomitting
- (iv) Headache
- (A) (i) and (ii) only
- (B) (ii) and (iv) only
- (C) (iii) and (i) only
- ☒ (D) (ii) only
- (E) Answer not known

151. DDT was first synthesized by

- (A) Hymen
- (B) Faraday
- ☒ (C) Zedler
- (D) D. Herelle
- (E) Answer not known

152. Choose the right option(s) among the following

- (i) Methonol is the specific antidote for poisoning by organophosphorus insecticides
 - (ii) Atropine is the specific antidote for poisoning by organophosphorus insecticides
 - (iii) Organophosphate interfere with mechanism of transmission of nerve impulses
 - (iv) Neostigmine is the antidote for organophosphorus
- (A) (i) and (iv) only (B) (iii) only
☒ (C) (ii) and (iii) only (D) (ii) and (iv) only
(E) Answer not known

153. Assertion [A] : DDT is very insoluble in water and persistent in the environment many years.

Reason [R] : The half life will be 2 to 15 years thus it affect long term effect on organisms.

- (A) [A] is true but [R] is false
- (B) Both [A] and [R] are true and [R] is not the correct explanation of [A]
- (C) [A] is false, [R] is true
- ☒ (D) Both [A] and [R] are true and [R] is the correct explanation of [A]
- (E) Answer not known

154. Assertion [A] : IPM is integrated Pest Management.

Reason [R] : IPM signifies the combination of all. Pertinent methods - chemical cultural, biological use of resistant varieties.

(A) [A] is true but [R] is false

(B) Both [A] and [R] are true and [R] is the correct explanation of [A]

(C) [A] is false [R] is true

☒ (D) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(E) Answer not known

155. Match the diseases with disease producing insect of the following.

- | | |
|------------------|--------------|
| (a) Malaria | 1. Anophelus |
| (b) Wuchereria | 2. Aedes |
| (c) Yellow fever | 3. Flies |
| (d) Diarrhoea | 4. Culex |

(a) (b) (c) (d)
☒ (A) 1 4 2 3

(B) 1 2 3 4

(C) 2 1 4 3

(D) 3 1 2 4

(E) Answer not known

☒ (A) Nerve poison (B) Respiratory poison
 (C) Physical poison (D) Protoplasmic poison
 (E) Answer not known

The plague commission was appointed in the following year

158. Match the following type

(a) Lead	1. Termites
(b) Sodium arsenate	2. Moth and potato beetle
(c) Sodium fluoride	3. Shoes and greenland
(d) Cryolite	4. Poultry rice

	(a)	(b)	(c)	(d)
(A)	2	1	4	3
(B)	1	2	3	4
(C)	1	4	3	2
(D)	2	3	4	1
(E)	Answer not known			

159. Choose the right answer among type forms of adulticides

- (i) Coils
- (ii) Foggers
- (iii) Yard spray or aerosols
- (A) (i) only
- (B) (ii) and (iii) only
- (C) (i) and (iii) only
- ☒ (D) (i), (ii) and (iii)
- (E) Answer not known

160. Match the following type :

Match correctly the order of the important species of the class insecta.

- | | |
|----------------|--------------|
| (a) Bed bug | 1. Hemiptera |
| (b) Human lice | 2. Anoplura |
| (c) Crab lice | 3. Anoplura |
| (d) Flies | 4. Diptera |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| ☒ (A) | 1 | 2 | 3 | 4 |
| (B) | 2 | 1 | 4 | 3 |
| (C) | 4 | 3 | 1 | 2 |
| (D) | 3 | 1 | 2 | 4 |
| (E) | Answer not known | | | |

161. Which of the following technique involves sedimentation coefficients?

- (A) Autoradiography
- (B) Spectroscopy
- (C) PCR
- ☒ (D) Centrifugation
- (E) Answer not known

162. The UV absorption of nucleic acid is almost entirely due to the following

- ☒ (A) Nucleotide bases (B) Sugar molecule
(C) RNA (D) Phosphodiester bond
(E) Answer not known

163. In centrifugation ' F ' is expressed as a multiple of earth's gravitational field (g) then what is the value of ' g '?

- ☒ (A) 981 cms^{-2} (B) 9.81 cms^{-7}
(C) 981 cms^4 (D) 98.1 cms^4
(E) Answer not known

164. Which of the following is correctly paired?

- (1) TLC – Thick Layer Chromatography
(2) HPLC – High Pumping Liquid Chromatography
(3) GLC – Glucose Liquid Chromatography
(4) CCC – Counter Current Chromatography
(A) (1) and (3) correct (B) (2) and (3) correct
☒ (C) (4) only correct (D) (1) only correct
(E) Answer not known

165. Choose the wrong match type :

Which of the following is incorrectly paired :

- (i) RFLP – Restriction Fragment Length Polymorphism
 - (ii) RAPD – Randomly Amplified Polymorphic DNA
 - (iii) AFLP – Amplified Length Polymorphism
 - (iv) FISH – Fluorescence in situ hybridization
- (A) (i) and (ii) (B) (iii) and (iv)
(C) (i), (ii), (iv) ☒ (D) None of the above
(E) Answer not known

166. Find the statement related to centrifugation :

- (i) Follows sedimentation principle
 - (ii) Used to separate sub cellular organelles
 - (iii) Centrifugal force is operated when the rotor rotates at greater speed along with gravitational pull
- (A) (i) and (ii) only (B) (i) and (iii) only
☒ (C) (i), (ii) and (iii) (D) (ii) and (iii) only
(E) Answer not known

167. Which rotor type is best suited for pelleting bacterial cells quickly?

- ☒ (A) Fixed angle rotor (B) Swinging – Bucket rotor
(C) Vertical rotor (D) Continuous slow rotor
(E) Answer not known

168. Find the state about osmium tetra oxide used in electron microscopy :

- (A) Fixing agent
- (B) Mordant
- ☒ (C) Staining agent
- (D) Precipitator
- (E) Answer not known

169. The sectioning of woody materials for histo enzymological study is made through

- (A) Rotary microtome
- ☒ (B) Sledge microtome
- (C) Cryotome
- (D) Rocking microtome
- (E) Answer not known

170. What is the purpose of cross-linking proteins during fixation?

- (A) To increase the size of cells
- ☒ (B) To stabilize cell structures
- (C) To destroy cell membranes
- (D) To increase the rate of cell division
- (E) Answer not known

171. The dye eosinate of methylene blue belongs to which group?

- (A) Acidic dye
- (B) Basic dye
- ☒ (C) Neutral dye
- (D) Oxazine dye
- (E) Answer not known

172. Assertion [A] : Carnoy's fluid is most commonly used for the fixation of the nucleoproteins and chromosomes.

Reason [R] : It has combined properties of Ethanol and acetic acid.

- (A) [A] is true but [R] is false
- ☒ (B) Both [A] and [R] are true, and [R] is the correct explanation
- (C) [A] is false, [R] is true
- (D) Both [A] and [R] are true but [R] is not the correct explanation of [A] is correct
- (E) Answer not known

173. The tissue, cell or cellular component taking acidic stains is known as

- ☒ (A) Acidiphilic tissue
- (B) Basiphilic tissue
- (C) Metachromasia
- (D) Mordant
- (E) Answer not known

174. What is the typical thickness range of sections produced by an ultramicrotome?

- (A) 1 – 10 μm
- ☒ (B) 30 – 70 nm
- (C) 1 – 5 mm
- (D) 500 – 1000 nm
- (E) Answer not known

175. Which of the following is not a component of basic polarizing microscope?

- (A) Polarizer
- (B) Analyzer
- (C) Rotating stage
- ☒ (D) Excitation filter
- (E) Answer not known

176. The rapid freezing of tissues is achieved by placing the living tissue in isopentane cooled upto _____ by liquid nitrogen.
- (A) -130°C to -140°C (B) -140°C to -150°C
(C) -150°C to -160°C ☒ (D) -160°C to -190°C
(E) Answer not known
177. In electron microscopy, to detect specific macromolecule or structure such as Spindle Pole Body (SPB), the frequency used procedure is to couple secondary antibody with
- (A) Alexa 568 (B) Cy 5
☒ (C) Gold particle (D) Osmium tetroxide
(E) Answer not known
178. When the power of ocular lens is 10 X and objective lens is 20 X, the magnification observed are
- (A) 30 times (B) 20 times
☒ (C) 200 times (D) 2000 times
(E) Answer not known
179. Which of the following statements are true about the advantages of SEM OVER TEM in electron microscopy?
- (i) Image formation is achieved without objective lens.
(ii) Small spot size reduces the spherical aberration.
(iii) Elaborate sample preparation is not a prerequisite
- (A) (i) and (ii) only (B) (ii) and (iii) only
(C) (i) and (iii) only ☒ (D) (i), (ii) and (iii)
(E) Answer not known

180. In microscopy, the limit of ability of the lens system to distinguish two-point objects, separated above a minimum distance is called as

- (A) Diffraction (B) Magnification
☒ (C) Resolving power (D) Image formation
(E) Answer not known

181. The Bioinformatic tool used to identify introns and exons of Eukaryotes

- (A) Gene Mark (B) BLAST - 2
☒ (C) Gene Scan (D) Gene Tree
(E) Answer not known

182. Match correctly sequences and nomenclature based on IUPAC symbols.

- | | |
|--------------|---------------|
| (a) Alphabet | 1. Gene |
| (b) Words | 2. Nucleotide |
| (c) Sentence | 3. Chromosome |
| (d) Chapter | 4. Operon |

- | | (a) | (b) | (c) | (d) |
|---|-----|-----|-----|-----|
| (A) | 1 | 2 | 3 | 4 |
| ☒ (B) | 2 | 1 | 4 | 3 |
| (C) | 1 | 3 | 4 | 2 |
| (D) | 2 | 4 | 3 | 1 |
- (E) Answer not known

183. Match the following type

- | | |
|-----------------------------|--------------------------|
| (a) Carbohydrate data base | 1. PDB |
| (b) 3D-structure database | 2. Cash Bank |
| (c) Genome database | 3. E.Coli Genome project |
| (d) Model organism database | 4. GOLD |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| ☒ (A) | 2 | 1 | 4 | 3 |
| (B) | 1 | 2 | 3 | 4 |
| (C) | 4 | 3 | 2 | 1 |
| (D) | 1 | 3 | 4 | 2 |
| (E) | Answer not known | | | |

184. A fragment based method used to construct the structural alignments on the basis of patterns of contact similarity between successive hexapeptides is

- ☒ (A) DALI – Distance Matrix Alignment
(B) SSAP – Sequential Structure Alignment Programme
(C) Motif – Profile Analysis
(D) T-Coffee
(E) Answer not known

185. A database of terms that classify protein functions, processes and sub cellular locations are shown in

- ☒ (A) Gene ontology
(B) OMIM
(C) PubMed
(D) BLAST
(E) Answer not known

186. Choose the right expansion of Abbreviation

1. BLAST – Basic Local Alignment Search Tool
 2. SRS – Simple Retrieval System
 3. MMTK – Man Made Tool Kit
 4. NCBI – National Center for Biotechnology Information
- (A) 1 only
(B) 1 and 2 are correct
☒ (C) 1 and 4 are correct
(D) 2 and 4 are correct
(E) Answer not known

187. Match the following :

- | | |
|---------------|---------------------------------|
| (a) SWISSPORT | 1. Liisa Holm and Chris Sander |
| (b) FSSP | 2. Thompson, Higgins and Gibson |
| (c) FASTA | 3. Amos Bairoch |
| (d) CLUSTAL-W | 4. D.J. Lipman and W.R. Pearson |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 3 | 2 | 4 | 1 |
| ☒ (B) | 3 | 1 | 4 | 2 |
| (C) | 1 | 3 | 2 | 4 |
| (D) | 2 | 1 | 4 | 3 |
| (E) | Answer not known | | | |

188. The square root of the arithmetic mean of the squared deviations of the various items is

- (A) ✓ Standard deviation
- (B) Variance
- (C) ANOVA
- (D) Standard Error
- (E) Answer not known

189. The 't' test used to compare between the

- (A) ✓ Two sample means
- (B) Two sample variance
- (C) Positive Skewness
- (D) The normal distribution
- (E) Answer not known

190. Standard deviation is the

- (A) ✓ Square root of arithmetic mean of the squared deviation
- (B) Dispersion of sample mean around the total population mean
- (C) Mean of all deviations in a set of data obtained from an average
- (D) Arithmetic mean of the squares of sum of deviations from the mean value of the data
- (E) Answer not known

191. Student's t-Test for a single population showing normal distribution is calculated by

(A) $t = \frac{\bar{X}}{\frac{S}{\sqrt{n}}}$

(B) $t = \frac{\bar{X} - \mu}{S}$

(C) $t = \frac{\bar{X}_1 - \bar{X}_2}{SE}$

☒ (D) $t = \frac{\bar{X} - \mu_0}{\frac{S}{\sqrt{n}}}$

(E) Answer not known

192. When there is a decrease in the values of one variable the variable increases is said to be a

(A) Positive correlation

☒ (B) Negative correlation

(C) Zero correlation

(D) None of the above

(E) Answer not known

193. Among the following statements, find the incorrect one

(1) Chi-square curve is always positively skewed

(2) Chi-square value decreases with the increase in degree of freedom

(3) Chi-square is a statistic hypothesis and not a parameter

(4) The value of χ^2 (Chi square) lies between zero and infinity

(A) (1) only

☒ (B) (2) only

(C) (3) only

(D) (4) only

(E) Answer not known

194. Which is TRUE about primary data?

- (1) Data collected by somebody and used by the researcher
- (2) Data collected by the researcher specifically
- (3) Data collected from unreliable sources
- (4) Data collected through interviews
- (A) (1) and (3) ☒ (B) (2) and (4)
- (C) (1) and (4) (D) (2) and (3)
- (E) Answer not known

195. Which is not true about Discrete variables?

- (1) The values are countable.
- (2) The values can be in integers or in decimal.
- (3) It has finite number of values.
- (4) It is a qualitative variable.
- (A) (1) and (2) (B) (1), (2) and (3)
- (C) (2) only ☒ (D) (2) and (4)
- (E) Answer not known

196. Match the following :

- | | |
|-----------------|-------------------------------|
| (a) Histogram | 1. Circular graph |
| (b) Bar diagram | 2. Bars without gap |
| (c) Pie chart | 3. Cumulative frequency curve |
| (d) Ogive | 4. Bars with gap |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 3 | 4 | 2 | 1 |
| (B) | 2 | 4 | 3 | 1 |
| ☒ (C) | 2 | 4 | 1 | 3 |
| (D) | 2 | 1 | 3 | 4 |
| (E) | Answer not known | | | |

197. A series arranged according to each and every item is called as

- | | |
|-----------------------|---|
| (A) Time series | (B) Discrete series |
| (C) Continuous series | ☒ (D) Individual series |
| (E) Answer not known | |

198. Find the suitable method of data collection for sampling

- | | |
|---|------------|
| 1. Population is very large. | |
| 2. Definite groups of population. | |
| 3. Indefinite groups of population. | |
| 4. Small population. | |
| (A) 2 and 4 | (B) 1 only |
| ☒ (C) 1 and 3 | (D) 4 only |
| (E) Answer not known | |

199. The characteristics by which individuals differ among themselves is

- (A) Collection of Data
- (B) Population
- (C) Sample of Data
- ☒ (D) Variable
- (E) Answer not known

200. Data obtained by an investigator by performing experiments is called

- ☒ (A) Primary Data
 - (B) Secondary Data
 - (C) Array Data
 - (D) None of the above
 - (E) Answer not known
-