

ROY'S INSTITUTE OF COMPETITIVE EXAMINATION

The West Bengal Central School Service Commission

2nd SLST 2025

BIOLOGICAL SCIENCE

[CLASSES : XI - XII]

- The second-order neuron in the optic pathway-
(A) Photoreceptors
(B) Bipolar cells
(C) Ganglion cells
(D) Horizontal cells
- Which of the following pair of amino acids contain sulphur?
(A) Methionine and Tryptophan
(B) Tryptophan and Glycine
(C) Methionine and Cysteine
(D) Cysteine and Valine
- Which living tissue provides both mechanical strength and elasticity to young stems?
(A) Xylem
(B) Phloem
(C) Collenchyma
(D) Sclerenchyma
- What type of radiation is used in CT-scan imaging?
(A) Infra-red ray
(B) Ultraviolet ray
(C) X-ray
(D) Gamma-ray
- From extracellular site to cytoplasmic site the plasma membrane serially consists of following layers:
(A) Carbohydrate – Protein – Lipid – Protein
(B) Protein – Lipid – Carbohydrate – Protein
(C) Lipid – Protein – Protein – Carbohydrate
(D) Carbohydrate – Lipid – Protein – Protein
- The first known fossil evidence of flowering plants (angiosperms) was found in which period?
(A) Devonian
(B) Triassic
(C) Cretaceous
(D) Silurian
- Which of the following statements is *not* true about melatonin?
(A) Secreted from anterior pituitary
(B) Control sleep-wakefulness cycle
(C) Synthesized from serotonin
(D) Exhibits nocturnal-surge in secretion
- What parameter is used for tiger census in our country's National Parks and Sanctuaries?
(A) Pugmarks only
(B) Pugmarks and Faecal matters
(C) Faecal matters only
(D) Actual Head Count only
- Which of the following is a direct method of pathogen penetration into host cell?
(A) Enzymatic break-down of host cell wall
(B) Through wounds
(C) Through stomata
(D) Through lenticels

Disclaimer : Every effort has been made to ensure that the answer keys provided herein are accurate to the best of our understanding. These are for reference purpose only and should not be considered as the official answers. The purpose is to help the examinees to analyse their performance in competitive examinations.

10. Which nucleus of hypothalamus is the 'Satiety Centre'?
(A) Ventromedial nucleus
 (B) Lateral nucleus
 (C) Dorsomedial nucleus
 (D) Medial preoptic nucleus
11. In a normal ECG, the atrial depolarisation is denoted by which of the following waves?
(A) P-wave
 (B) QRS complex
 (C) T-wave
 (D) U-wave
12. Which of the following process is directly stimulated by insulin?
(A) Glycogenesis
 (B) Glycogenolysis
 (C) Lipolysis
 (D) Gluconeogenesis
13. Which of the following anticoagulants prevents intravascular clotting?
 (A) Plasminogen
 (B) Fibrinogen
(C) Antithrombin-III
 (D) Prothrombin
14. The Filarial larvae can be detected from the sample of—
 (A) liver
 (B) normal blood smear
 (C) spleen
(D) peripheral blood smear at midnight
15. Which of the following immunoglobulins (Ig) takes part in allergic reaction?
 (A) IgD
(B) IgE
 (C) IgG
 (D) IgM
16. Which of the following is not a part of renal medulla?
 (A) Collecting duct
 (B) Loop of Henle
 (C) Vasa recta
(D) Juxta-glomerular apparatus
17. The body of Sponges is
(A) Asymmetrical
 (B) Radially symmetrical
 (C) Bilaterally symmetrical
 (D) Biradially symmetrical
18. The type of bacteria that use light as source of energy and CO₂ as source of carbon are called
 (A) Chemoautotrophs
(B) Photoautotrophs
 (C) Chemoorganotrophs
 (D) Photoorganotrophs
19. Which of the following is not true about plasmids?
 (A) Can replicate independently
(B) Always integrate into host genome
 (C) R-factors carry antibiotic resistance gene
 (D) Are circular or linear in structure
20. Minamata and Itai-itai diseases are caused respectively by
(A) Mercury and Cadmium
 (B) Cadmium and Calcium
 (C) Mercury and Arsenic
 (D) Iron and Mercury
21. Which autonomic division is responsible for sweat secretion?
 (A) Sympathetic adrenergic
 (B) Parasympathetic post-ganglionic
 (C) Parasympathetic pre-ganglionic
(D) Sympathetic cholinergic
22. The non-proteinaceous enzyme is
 (A) Amylase
 (B) Lipase
(C) Ribozyme
 (D) Trypsin

23. The cellular organelle responsible for lipid synthesis is
 (A) Rough endoplasmic reticulum
(B) Smooth endoplasmic reticulum
 (C) Golgi apparatus
 (D) Mitochondria
24. In an energy pyramid, the maximum energy is found at the level of
 (A) Secondary consumers
(B) Producers
 (C) Tertiary consumers
 (D) Decomposers
25. The chemical nature of the active principle of *Andrographis paniculata* is
 (A) Disaccharide
(B) Diterpenoid
 (C) Dipeptide
 (D) Dinucleotide
26. The type of inversion that includes the centromere is termed as
 (A) Paracentric
 (B) Acentric
(C) Pericentric
 (D) Acrocentric
27. Which one is involved in the organification of thyroglobulin?
 (A) Iron
 (B) Magnesium
(C) Iodine
 (D) Zinc
28. Which of the following statements is incorrect about mitochondrial DNA?
 (A) Double stranded circular DNA
 (B) Inherited from mother only
(C) Single stranded linear DNA
 (D) Lack histone proteins
29. The hormone responsible for gallbladder contraction to release bile-
 (A) VIP
 (B) Gastrin
 (C) Secretin
(D) CCK
30. A, B, O blood grouping is done on the basis of
(A) presence of A and B antigens on the membrane of RBC.
 (B) presence of A, B and O antigens on the membrane of RBC.
 (C) absence of A, B and O antigens on the membrane of WBC.
 (D) presence of A, B and O antigens in the serum of blood.
31. Which of the following blood vessel has the highest resistance to blood flow?
 (A) Artery
 (B) Capillaries
 (C) Vein
(D) Arteriole
32. Binding of oxygen with haemoglobin does not depend upon
 (A) Partial pressure of oxygen.
(B) Blood pressure.
 (C) H^+ ion concentration.
 (D) Temperature.
33. Formation of pollinia is a characteristic feature of the family –
 (A) Poaceae
 (B) Alismataceae
(C) Orchidaceae
 (D) Nymphaeaceae
34. Which of the following codon pairs represents initiation and termination codon respectively?
(A) AUG-UAA
 (B) GUA-UGA
 (C) AGA-UAG
 (D) AGU-UAA

35. Example of an aquatic heterosporous pteridophyte is
(A) *Azolla*
 (B) *Dryopteris*
 (C) *Psilotum*
 (D) *Selaginella*
36. Which of the following tissue culture techniques is used for the production of virus-free plant?
 (A) Callus culture
(B) Meristem culture
 (C) Protoplast culture
 (D) Organ culture
37. The Michaelis constant (K_M) represents
 (A) maximum velocity of the enzyme catalysed reaction.
(B) substrate concentration at half-maximal velocity.
 (C) enzyme concentration at half-maximal velocity.
 (D) enzyme affinity for product.
38. Which physiological change is commonly observed following aerobic training?
(A) Increased mitochondrial function in muscle fibre
 (B) Decreased capillary density
 (C) Increased heart rate
 (D) Decreased stroke volume
39. Identify the Amphibia which is Limbless:
(A) *Ichthyophis*
 (B) Salamander
 (C) Frog
 (D) *Necturus*
40. In which type of protein structure more than one polypeptide chains are present?
(A) Quaternary structure
 (B) Tertiary structure
 (C) Primary structure
 (D) Secondary structure
41. Which of the following groups of animals is found in the Zoogeographical realm to which India belongs?
 (A) Elephant, Two-horned Rhinoceros, Buffalo, Lion
 (B) Tapir, Jaguar, Opossum, Deer
(C) Elephant, One-horned Rhinoceros, Tiger, Lion
 (D) Kangaroo, Koala, Wombat, Opossum
42. In *Drosophila*, male flies are born when the ratio of X chromosome: Autosome (A) is as follows:
 (A) 2 : 2
 (B) 2 : 1
(C) 1 : 2
 (D) 1.5 : 1
43. Intrinsic factor of Castle is secreted by
 (A) Chief cell
(B) Parietal cell
 (C) Goblet cell
 (D) Beta cell
44. Which cell is not present in endocrine pancreas?
 (A) Alpha cell
(B) Parafollicular cell
 (C) Beta cell
 (D) Delta cell
45. Which of the following pigments is water-soluble and found mainly in algae?
 (A) Chlorophyll *a*
(B) Phycocyanin
 (C) Xanthophyll
 (D) Beta-carotene
46. In which of the following sets of animals, all four give birth to young?
 (A) Hippopotamus, Whale, Penguin, Bat
 (B) Kangaroo, Dolphin, Ostrich, Shrew
 (C) Lion, Platypus, Python, Camel
(D) Bat, Hedgehog, Seal, Otter
47. Montreal Protocol is related to which of the following?
 (A) Acid rain
 (B) Climate change
(C) Ozone layer protection
 (D) Nuclear hazards

48. The Henderson-Hasselbalch equation is used to
 (A) calculate the rate of enzyme activity.
 (B) determine pigment absorption spectrum.
(C) calculate buffer pH.
 (D) measure transpiration rate.
49. Which type of stele is characterized by overlapping leaf gaps?
 (A) Solenostele
(B) Dictyostele
 (C) Actinostele
 (D) Haplostele
50. Mark the correct one:
 (A) Mammals have four-chambered heart and right aorta.
 (B) Birds have three-chambered heart and left aorta.
 (C) Mammals have three-chambered heart and left aorta.
(D) Birds have four-chambered heart and right aorta.
51. Which of the following is not a characteristic feature of a biodiversity hot spot?
 (A) Dense species diversity
(B) Location in tropical region
 (C) Large number of endemic species
 (D) Large number of threatened species
52. Which of the following techniques was used by Watson and Crick for determination of double helical structure of DNA?
 (A) X-ray
 (B) Spectrophotometry
(C) X-ray Crystallography
 (D) PAGE (Poly Acrylamide Gel Electrophoresis)
53. According to Herdy-Weinberg law, which of the following indicates heterozygous condition?
 (A) q^2
(B) $2pq$
 (C) p^2
 (D) pq
54. Sertoli cells have receptors for
 (A) LH
(B) FSH
 (C) Inhibin
 (D) Progesterone
(Note: Progesterone and Inhibin receptors are also present. However, FSH is common)
55. According to Neo-Darwinism which of the following factors is essential for origin of New Species?
 (A) Variation and Natural Selection
(B) Mutation and Natural Selection
 (C) Mutation
 (D) Hybridization
56. Removal of proximal convoluted tubules from Nephron will result in
(A) more diluted urine.
 (B) more concentrated urine.
 (C) no change in quantity and quality of urine.
 (D) no urine formation
57. Siphonaceous thallus is a characteristic feature of
 (A) *Spirogyra*
(B) *Vaucheria*
 (C) *Fucus*
 (D) *Ulothrix*
58. Function of telomere is
 (A) to control gene expression.
 (B) to anchor spindle fibres.
(C) to protect chromosome ends.
 (D) mRNA replication.
59. Which of the following blood buffers has the highest buffering capacity?
(A) Bicarbonate buffer
 (B) Phosphate buffer
 (C) Haemoglobin buffer
 (D) Protein buffer
60. Skeletal muscle has a resting membrane potential of
 (A) +70 mv
 (B) - 70 mv
(C) - 90 mv
 (D) +90 mv