

## ZOOLOGY 2016

- 1. Y-shaped chevron bone is present in**
  - (1) thoracic vertebrae of mammal
  - (2) cervical vertebrae of bird
  - (3) caudal vertebrae of reptile
  - (4) lumbar vertebrae of amphibian
- 2. Edema noticed in patients suffering from Kwashiorkor disease is due to deficiency of**
  - (1) gamma globulin
  - (2) albumin
  - (3) transferrins
  - (4) serum creatinine
- 3. What is meant by the term 'Darwinian fitness'?**
  - (1) The ability to survive and reproduce
  - (2) High aggressiveness
  - (3) A strong, healthy appearance
  - (4) Physical strength
- 4. Dedifferentiation of cells is referred to as**
  - (1) necrosis
  - (2) anaplasia
  - (3) dysplasia
  - (4) atrophy
- 5. Which of the following would not induce a change in the gene ratios of a population?**
  - (1) mutation
  - (2) random mating
  - (3) sexual selectiveness
  - (4) immigration and emigration among members of a population
- 6. The age of pyramid with broad base indicates**
  - (1) low percentage of young individuals
  - (2) high percentage of old individuals
  - (3) low percentage of old individuals
  - (4) high percentage of young individual
- 7. SYBR Green is useful in real time PCR because it**
  - (1) fluoresces only when bound to single-stranded DNA
  - (2) stops fluorescing when bound to double-stranded DNA
  - (3) fluoresces only when bound to double-stranded DNA
  - (4) stop fluorescing when bound to RNA
- 8. Triple repeat sequence occurs in**
  - (1) Tay Sachs disease
  - (2) Huntington's disease
  - (3) Cystic fibrosis
  - (4) Hemophilia
- 9. Holandric genes are part of**
  - (1) Y chromosome
  - (2) X chromosome
  - (3) X and Y chromosomes
  - (4) Autosomes
- 10. A housekeeping gene that constantly transcribed is also known as**
  - (1) basic gene
  - (2) structural gene
  - (3) constitutive gene
  - (4) cistron
- 11. The most popular and widely used engineered plasmid vector is**
  - (1) pUC
  - (2) pBR332
  - (3) pSC101
  - (4) pUC19
- 12. The initial stages of insect development are determined by**
  - (1) homeobox genes
  - (2) paternal genes
  - (3) maternal genes
  - (4) zygotic genes
- 13. Sickle cell disease illustrates the**
  - (1) dominance
  - (2) incomplete dominance
  - (3) multiple pairing
  - (4) recessiveness
- 14. Which of the following is a bacterial disease?**
  - (1) Leprosy
  - (2) Polio
  - (3) Chicken pox
  - (4) Influenza
- 15. Steroid hormones remain in circulation longer than the other groups of hormones because they are bound to specific**
  - (1) plasma membrane of lymphocytes
  - (2) transport proteins in the plasma
  - (3) chylomicrons in the plasma
  - (4) receptor proteins in the plasma
- 16. Which system is active under stress?**
  - (1) Parasympathetic nervous system
  - (2) Sympathetic nervous system
  - (3) Somatic nervous system
  - (4) Complete autonomic nervous system
- 17. Name the mosquito - borne disease caused by a viral pathogen**
  - (1) Japanese encephalitis
  - (2) Filariasis
  - (3) Typhus
  - (4) Plague



18. **Biologically the most active form of thyroid hormone is**  
 (1) Tri-Iodothyronine  
 (2) Di-Iodotyrosine  
 (3) Tetra-Iodothyronine  
 (4) Tri-Iodotyrosine
19. **Which one of the following shows 'super-greenhouse effect'?**  
 (1) Nitrous oxide  
 (2) Carbon monoxide  
 (3) Methane  
 (4) Water vapour
20. **Marsupial mammals moved from South America to Australia via**  
 (1) Antarctica  
 (2) Africa  
 (3) the Galapagos Archipelago  
 (4) Madagascar
21. **Ampullae of Lorenzini are peculiar sense organs to sense**  
 (1) changes in water currents  
 (2) thermal changes in water  
 (3) electric fields in water  
 (4) hydrostatic changes
22. **Cycloheximide inhibits**  
 (1) DNA replication  
 (2) Transcription  
 (3) Translation  
 (4) Glycolysis
23. **'Nitrogen fixation' means, conversion of atmospheric nitrogen to**  
 (1) nucleic acids  
 (2) ammonium ions  
 (3) ammonia  
 (4) proteins
24. **In crocodile, right and left systemic arches communicate through**  
 (1) Foramen of Panizza  
 (2) Foramen magnum  
 (3) Fenestra ovalis  
 (4) Foramen of Monero
25. **Polar bears maintain their body temperature because they have more**  
 (1) transducin protein  
 (2) uncoupling protein  
 (3) myoglobin protein  
 (4) Fo-Fi ATPase
26. **In birds, the pectoralis major muscles help in**  
 (1) upward stroke of wings  
 (2) stretching of wings  
 (3) downward stroke of wings  
 (4) folding of wings
27. **Which of the following sexually transmitted disease is caused by virus?**  
 (1) Gonorrhoea  
 (2) Syphilis  
 (3) Genital herpes  
 (4) Chlamydia
28. **Which of the following processes is a major problem in interpreting molecular phylogen?**  
 (1) Horizontal transfer of genes  
 (2) Gene duplication  
 (3) Synonymous mutations  
 (4) Non-synonymous mutations
29. **Which of the following correctly represents a connecting link?**  
 (1) Archeopteryx between Birds and Mammals  
 (2) Ornithorhynchus between Reptiles and Mammals  
 (3) Amphioxus between Echinodermata and Chordata  
 (4) Peripatus between Arthropoda and Echinodermata
30. **Which of the following statements is not true for G-protein coupled receptors?**  
 (1) These bind to the  $\alpha$ -subunit of trimeric G-protein only after hormone binding  
 (2) The receptors have seven transmembrane  $\alpha$ -helices  
 (3) Autophosphorylation occurs at specific residues  
 (4) They activate the G-protein by converting it to the GTP form
31. **Phagocytic activity is the characteristic of which of the testicular cells?**  
 (1) Peritubular cell  
 (2) Sertoli cell  
 (3) Leydig cell  
 (4) Germ cell
32. **The dentition formula for the rabbit is**  
 (1)  $\frac{2}{1}, \frac{0}{0}, \frac{3}{2}, \frac{3}{3}$   
 (2)  $\frac{1}{1}, \frac{0}{0}, \frac{0}{3}, \frac{0}{3}$   
 (3)  $\frac{2}{2}, \frac{0}{0}, \frac{0}{3}, \frac{0}{3}$   
 (4)  $\frac{2}{2}, \frac{0}{0}, \frac{0}{0}, \frac{1}{3}$







49. The major immunoglobulin family to which a particular immunoglobulin belongs can be determined by sequential analysis of the 10 amino acids beginning from the
- (1) amino terminus of the light chain
  - (2) carboxy terminus of the light chain
  - (3) amino terminus of the heavy chain
  - (4) carboxy terminus of the heavy chain
50. After a high protein meal, most of the nitrogen in amino acids that is targeted for the synthesis of urea biosynthesis is transferred via transamination to
- (1) ornithine
  - (2) acetoacetate
  - (3) citrulline
  - (4) alpha-ketoglutarate
51. Growth hormone is known to have anti-insulin activity, because it
- (1) suppresses the ability of insulin to stimulate uptake of glucose in peripheral tissues
  - (2) enhances the ability of insulin to stimulate uptake of glucose in peripheral tissues
  - (3) suppresses glucose synthesis in the liver
  - (4) stimulates insulin secretion
52. A mechanism that can cause a gene to move from one linkage group to another is
- (1) inversion
  - (2) translocation
  - (3) crossing over
  - (4) duplication
53. In the organ of Corti, apical projections of hair cells are in intimate contact with
- (1) the basilar membrane
  - (2) Reissner's membrane
  - (3) Decemet's membrane
  - (4) the tectorial membrane
54. Schuffner's dots are associated with malaria and exclusively found in
- (1) Plasmodium vivax and Plasmodium falciparum
  - (2) Plasmodium vivax and Plasmodium ovale
  - (3) Plasmodium ovale and Plasmodium malariae
  - (4) Plasmodium malariae and Plasmodium falciparum
55. The part of a nematoblast, which does not allow the capsule of nematocyst to come out, is
- (1) lasso
  - (2) cnidocil
  - (3) fibril
  - (4) stylet
56. Triglycerides travel through lymphatic vessels in the form of small particles called
- (1) micelles
  - (2) ascites fluid
  - (3) lipid globules
  - (4) chylomicrons
57. The end product of glycolysis in RBC is
- (1) Lactic acid
  - (2) Pyruvic acid
  - (3) 3-Phosphoglycerate
  - (4) Acetyl CoA
58. The amino acids that carry negative charge upon ionization are
- (1) Arginine and Aspartate
  - (2) Lysine and Glutamate
  - (3) Aspartate and Glutamate
  - (4) Histidine and Lysine
59. Which of the following combination of properties hold true for the structure of DNA proposed by Watson and Crick?
- (i) It is double stranded right handed helical structure.
  - (ii) The two chains are parallel in polarity.
  - (iii) The diameter of the helix is 2.0 nm and pitch of helix is 3.4 nm.
  - (iv) There are 10 base pairs in each run.
  - (v) The degree of rotation for each base pair is minus 36 degrees.
- (1) (i), (iii), (iv), (v)
  - (2) (i), (ii), (iv), (v)
  - (3) (i), (iii), (iv)
  - (4) (i), (iv), (v)
60. Peking man is known as
- (1) Australopithecus
  - (2) Paranthropus
  - (3) Pithecanthropus
  - (4) Sinanthropus
61. The unrestricted reproductive capacity of a population is called its
- (1) ultimate level
  - (2) biotic potential
  - (3) proximate level
  - (4) carrying capacity
62. Centrum in 8th vertebra of frog is
- (1) opisthocoelous
  - (2) acoelous
  - (3) procoelous
  - (4) amphicoelous



63. **The order of evolutionary pattern of nitrogen excretion in vertebrates**  
 (1) Urea, uric acid, ammonia  
 (2) Ammonia, urea, uric acid  
 (3) Urea, ammonia, uric acid  
 (4) Ammonia, uric acid, urea
64. **The basic function of an ecosystem is to**  
 (1) capture and utilize energy  
 (2) maximize the growth of all species  
 (3) ensure maximum primary production  
 (4) maintain a balance between prey and predators
65. **Which of the following is NOT a typical event associated with cell signaling?**  
 (1) Production of the second messengers cAMP and IP3  
 (2) Release of calcium ions from cell membranes  
 (3) Stimulation of apoptosis  
 (4) Activation of protein kinases
66. **Which of the following forms pons and cerebellum in adult vertebrate's brain?**  
 (1) Prosencephalon  
 (2) Mesencephalon  
 (3) Rhombencephalon  
 (4) Spinal cord
67. **When a bacteriophage is integrated into a cellular genome it is called a**  
 (1) prophage  
 (2) transducing virus  
 (3) lytic virus  
 (4) virulent virus
68. **Mitochondrial DNA differs from nuclear DNA in**  
 (1) being linear  
 (2) having unique bases  
 (3) being non-transcriptive  
 (4) lacking repetitive sequences
69. **Which one of the following proteins circulate(s) in blood and coat(s) the surfaces of microbes to form a membrane attack complex?**  
 (1) Histamine  
 (2) Complement proteins  
 (3) Interferon  
 (4) Antigen
70. **With reference to the pituitary, which of the following statements is true?**  
 (1) Neurohypophysis secretes vasopressin and oxytocin  
 (2) Neurohypophysis secretes TSH and STH  
 (3) Neurohypophysis collects and stores vasopressin and oxytocin  
 (4) Adenohypophysis secretes vasopressin and oxytocin
71. **Which of the following blood cells develops into a macrophage in loose connective tissue?**  
 (1) monocyte  
 (2) lymphocyte  
 (3) neutrophil  
 (4) platelet
72. **Which of the following patterns indicate resource limitation?**  
 (1) Exponential  
 (2) Logistic  
 (3) Logarithmic  
 (4) Geometric
73. **In response to increase in the osmolality of blood**  
 (1) ADH secretion decreases  
 (2) blood volume tends to increase  
 (3) ADH secretion as well as blood volume decrease  
 (4) ADH secretion and blood volume do not change
74. **A  $0.02 \text{ mol.l}^{-1}$  solution may also be correctly expressed as**  
 (1) 20 micromolar solution  
 (2) 2 micromolar solution  
 (3) 20 millimolar solution  
 (4) 20 millimolar solution
75. **The end point of a cell's migration in embryo development is determined by the concentration of chemicals called**  
 (1) Meristems  
 (2) Morphogens  
 (3) Organizers  
 (4) Regulators
76. **The absorbance of UV light (280 nm) by a protein is largely due to the presence of**  
 (1) methionine  
 (2) phenylalanine  
 (3) tryptophan  
 (4) hydroxyproline
77. **If a protection of species indirectly protects the many other species that make up the ecological community of its habitat, then the species is referred to as**  
 (1) indicator species  
 (2) keystone species  
 (3) flagship species  
 (4) umbrella species



78. Which of the following combinations of chromosome number (N) and DNA content (C) is true for the diplotene stage of a mammalian oocyte?
- (1) 1N and 2C
  - (2) 2N and 2C
  - (3) 2N and 4C
  - (4) 1N and 4C
79. Each molecule of fat has
- (1) one glycerol molecule and one fatty acid
  - (2) one glycerol molecule and three fatty acids
  - (3) three glycerol molecules and one fatty acid
  - (4) the glycerol molecules and three fatty acids
80. Receptors for neurotransmitters are located on the
- (1) cell surface
  - (2) nucleus
  - (3) endosome
  - (4) Golgi apparatus
81. A man with blood group 'A' marries a woman with 'B' blood group. Their first child has blood group 'O'. What is the probability that the second child will have the blood group 'AB'?
- |                   |                   |
|-------------------|-------------------|
| (1) $\frac{1}{2}$ | (2) $\frac{1}{4}$ |
| (3) None          | (4) $\frac{3}{4}$ |
82. The use of living organisms to degrade environmental pollutant is known as
- (1) micro-remediation
  - (2) bioremediation
  - (3) nano-remediation
  - (4) all of these
83. Oxidative phosphorylation refers to
- (1) alcoholic fermentation
  - (2) the citric acid cycle production of ATP
  - (3) production of ATP by chemiosmosis
  - (4) anaerobic production of ATP
84. Preganglionic fibers of parasympathetic nervous system is
- (1) adrenergic
  - (2) peptidergic
  - (3) cholinergic
  - (4) serotonergic
85. The inner cell mass of mammalian blastocyst develops into
- (1) embryonic endoderm
  - (2) yolk-sac placenta
  - (3) all embryonic structures
  - (4) chorio-allantoic placenta
86. Volkmann's canals connect
- (1) Haversian canals to the external surface of a bone
  - (2) Two adjacent lacunae containing bone cells
  - (3) Haversian canals with lacunae
  - (4) lacunae with bone marrow cavity
87. Origin of modern fish and placental mammals occurred during the
- (1) triassic period
  - (2) jurassic period
  - (3) cretaceous period
  - (4) tertiary period
88. The main determinant of blood pressure is
- (1) elasticity of arteries
  - (2) cardiac output
  - (3) peripheral resistance
  - (4) blood volume
89. The QRS complex of ECG corresponds to which event in the cardiac cycle?
- (1) Depolarisation of the pacemaker
  - (2) Repolarisation of the ventricles
  - (3) Closure of the aortic valves
  - (4) Depolarisation of the ventricles
90. In which national park can one expect to find the Hoolock gibbon?
- (1) Ranthambore
  - (2) Bandipur
  - (3) Corbett
  - (4) Kaziranga
91. DNA, isolated from wild type (W) and mutant (M) *E. coli* cells, was separated by density gradient centrifugation technique. DNA from M strain acquired a higher position. This indicates that the mutation is caused by:
- (1) Insertion
  - (2) Missense mutation
  - (3) Point mutation
  - (4) Deletion
92. The enzyme which builds a mRNA strand complimentary to the DNA transcription unit is called:
- (1) DNA Polymerase
  - (2) RNA Polymerase
  - (3) Helicase
  - (4) DNA ligase

93. When a man and woman carrying the allele for phenylketonuria but not having this disease marry, and have a normal child without disease, then what is the probability that their child is a carrier of this disease?
- (1) 0.25                      (2) 0.50  
(3) 0.75                      (4) 1.00
94. In Type I diabetes, the target of the autoimmune attack is
- (1) PP cells in the islets of Langerhans  
(2)  $\beta$ -cells in the islets of Langerhans  
(3)  $\alpha$ -cells in the islets of Langerhans  
(4)  $\alpha$  and cells both in the islets of Langerhans
95. The hot spots concept has been proposed by
- (1) Norman Myers  
(2) Alfonso Corti  
(3) Robert Brown  
(4) Hugo von Mohl
96. An animal cell shows no change in volume if placed in 0.15 M sodium chloride. The same cell if placed in 0.15 M glucose will
- (1) shrink  
(2) swell  
(3) show no change in volume  
(4) get plasmolysed
97. Parasites that ultimately kill their hosts are known as
- (1) parasitoids  
(2) polyxenous parasites  
(3) monoxenous parasites  
(4) definitive parasites
98. The tickbird on a rhinoceros, or the sea-anemone on hermit crab would exemplify
- (1) parasitism  
(2) mutualism  
(3) commensalism  
(4) predation
99. Alternate mRNA structures that regulate translation are
- (1) riboswitches  
(2) leader regions  
(3) RNA enhancers  
(4) iron responsive elements
100. The sodium-potassium pump transports
- (1)  $\text{Na}^+$  and  $\text{K}^+$  out of the neuron  
(2)  $\text{Na}^+$  into the neuron and  $\text{K}^+$  out of the neuron  
(3)  $\text{Na}^+$  out of the neuron and  $\text{K}^+$  into the neuron  
(4)  $\text{Na}^+$  and  $\text{K}^+$  into the neuron