

BHU BIOLOGY+ZOOLOGY Question Paper

1. A prokaryotic cell lacks

- (a) nucleus (b) nuclear membrane
- (c) membrane bound organelles (d) all of these

2. Extranuclear inheritance is a consequence of the presence of genes in

- (a) ER and mitochondria (b) lysosomes and ribosomes
- (c) ribosomes and chloroplast (d) mitochondria and chloroplasts

3. Vesicles of smooth endoplasmic reticulum (SER) are most likely on their way to

- (a) plastids (b) lysosomes
- (c) nucleolus (d) golgi apparatus

4. Lysosomes are the store house of

- (a) ATP (b) sugar
- (c) proteins (d) hydrolytic enzymes

5. Lipids are insoluble in water, because lipid molecules are

- (a) neutral (b) zwitter ions
- (c) hydrophobic (d) hydrophilic

6. Which of the following is the simplest amino acid?

- (a) glycine (b) alanine

(c) tyrosine (d) asparagine

7. Carbohydrates, ingested in the diet, are hydrolyzed by the enzyme

(a) pepsin (h) cellulase

(c) cc-amylase (d) glycosidase

8. Stomach is the site of digestion mainly for

(a) fats (b) proteins

(c) carbohydrates (d) all of these

9. Which proteolytic enzyme induces lysis of fibrin during fibrinolysis ?

(a) fibrin (b) thrombin

(c) plasmin (d) plate let factor VII

10. Which of the following enzymes is used to join bits of DNA ?

(a) ligase (b) primase

(c) endonuctease (d) DNA polymerase

11. Ail eukaryotic genes contain two kinds of base sequences. Which of the following plays role in protein synthesis ?

(a) introns (b) exons .

(c) electrons (d) both 'a` and 'b'

12. The genetic material of prokaryotic cell is called

(a) nucleus (b) nucleolus

(c) nucleoid (d) centromere

13. In prokaryotes, the genetic material is

- (a) linear DNA with histones
- (b) circular DNA with histones
- (c) linear DNA without histones
- (d) circular DNA without histones

14. The direction of DNA replication is from

- (a) amino acid end (b) 3' end towards 5' end
- (c) 5' end towards 3' end (d) amino terminus to carboxy terminus

15. In operon concept, regulator gene functions as

- (a) repressor (b) regulator
- (c) inhibitor (d) initiator

16. The importance of meiosis lies in

- (a) bringing discontinuous variations
- (b) addition in the number of chromosomes
- (c) reduction in the number of chromosomes
- (d) maintaining the number of chromosomes

17. In mitotic cell division, the division of centromere and the division of chromatid occurs between

- (a) anaphase and telophase (b) prophase and metaphase
- (c) telophase and interphase (d) anaphase and metaphase

18. In which stage of the first meiotic division, each chromosome undergoes longitudinal division to give rise to two sister chromatids ?

- (a) zygotene (b) diplotene
- (c) diakinesis (d) pachytene

19. *Mirabilis jalapa* is an example of .

- (a) complete dominance (b) supplementary gene
- (c) incomplete dominance (d) complementary gene

20. Which of the following is dominant character according to Mendel?

- (a) dwarf plant and yellow fruit
- (b) terminal fruit and wrinkled seed
- (c) white testa and yellow pericarp
- (d) green coloured fruit and rounded seed

21. Lack of independent assortment of genes A and B in fruit fly *Drosophila* is due to

- (a) repulsion (b) linkage
- (c) crossing-over (d) recombination

22. When two mutations are located in the same functional unit or in different functional units, then it is confirmed by

- (a) test cross (b) back cross
- (c) reciprocal cross (d) complementation test

23. Prototherians are connecting links between

- (a) amphibians and aves (b) reptiles and mammals
- (c) fish and amphibians (d) reptiles and amphibians

24. The pioneers in the field of 'organic evolution' are

- (a) Karl Landsteiner, Hugo de Vries, Malthus
- (b) Darwin, Hugo de Vries, Lamarck, Huxley
- (c) Lamarck, Karl Landsteiner, Malthus, Hugo de Vries
- (d) Darwin, Lamarck, Karl Landsteiner, Hugo de Vries

25. Darwin finches are related to which of the following evidences ?

- (a) fossils (b) embryology
- (c) anatomy (d) geographical distribution

26. Allopatric speciation is due to

- (a) geographical separation of population
- (b) hybridization between closely related species
- (c) migration of the members of species from one to other population
- (d) both 2 and 3

27. Evolutionary convergence is characterized by

- (a) development of characteristics by random mating
- (b) replacement of common characteristic in different groups
- (c) development of dissimilar characteristics in closely related groups
- (d) development of a common set of characteristics in groups of different ancestry

28. How many sub-phyla are available in Tracheata, according to Tippo's classification of kingdom plantae ?

(a) 4 (b) 6

(c) 8 (d) 10

29. The usage of binomial names, for plant species, was accepted by all after the publication of the works by

(a) Hooker (b) Linnaeus

(c) Bentham (d) Darwin

30. What is a key stone species ?

(a) a rare species that has minimal impact on biomass and on other species in community

(b) a dominant species that constitutes a large proportion of biomass, -which affects many other species

(c) a common species that has plenty of biomass, yet has a fairly low impact on the community's organization

(d) a species which makes up only a small proportion of the total biomass of a community, yet has a huge impact on the community's organization and survival

31. In biotic community, which of the following can be called protective device ?

(a) mimicry (b) symbiosis

(c) competition (d) parasitism

32. In which of the following population, genetic drift operates

(a) island (b) smaller

(c) larger (d) continental

33. The driving force of an ecosystem is

(a) producers (b) biomass

(c) solar energy (d) grassland

34. The correct match of atmospheric gases is

(a) nitrogen-0.03%, oxygen-78.08%, argon-0.93% and CO₂-20.95%

(b) nitrogen-78.08%, oxygen-20.95%, argon-0.03% and CO₂-0.03%

(c) nitrogen-0.03%, oxygen-78.08%, argon-20.95% and CO₂-0.93%

(d) nitrogen-78.08%, oxygen-20.95%, argon-0.93% and CO₂-0.03%

35. Zooplanktons are

(a) parasites (b) primary producers

(c) primary consumers (d) primary decomposers

36. Photochemical smog formed in congested metropolitan cities mainly consists of

(a) hydrocarbons, ozone and SO_x

(b) hydrocarbons, SO₂ and CO₂

(c) smoke, peroxyacetyl nitrate and SO₂

(d) ozone, peroxyacetyl nitrate and NO_x

37. Acid rain is due to increase in atmospheric concentration of

(a) ozone (b) CO₂ and CO

(c) SO₃ and CO (d) SO₂ and nitrogen oxide

38. The true statement about 'green-house effect' is that it is caused by

(a) CO₂ only (b) SO₂ only

(c) CO₂ and SO₂ (d) CO₂, CFC, CH₄ and NO₂ gases

39. Which of the following statement about viruses is correct ?

- (a) viruses are obligate parasites
- (b) viruses contain both RNA and DNA
- (c) nucleic acid of viruses is known as capsid
- (d) viruses possess their own metabolic system

40. The virus, that infects bacteria, are made up of

- (a) protein only (b) RNA and protein
- (c) DNA and lipid (d) DNA and protein

41. The first transgenic crop was

- (a) pea (b) flax
- (c) tobacco (d) cotton

42. One of the major difficulties in the biological control of insect pests is the

- (a) practical difficulty of introducing the predator to specific areas
- (b) method is less effective as compared with the use of insecticides
- (c) predator does not always survive when transferred to a new environment
- (d) predator develops a preference to other diets and may itself become a pest

43 Casparian strips are present in

- (a) cortex (b) epidermis
- (c) endodermis (d) hypodermis

44. The function of microvilli is

- (a) cellular movement
- (b) specialized uptake of macro molecules , -
- (c) increase in surface area for absorption
- (d) extensive movement of substances over cell surface

45. Chemiosmotic theory of ATP synthesis, in the chloroplast and mitochondria, is based on

- (a) proton gradient (b) membrane potential
- (c) accumulation of K ions (d) accumulation of Na ions

46. The plants respond to photoperiods due to the presence of

- (a) enzymes (b) stomata
- (c) phytochromes (d) phytohormones

47. Mesophyll cells, which liberate malic acid at night time, are ,'

- (a) C₄-plants (b) C₃-plants .
- (c) C₄-plants (d) C₃-plants

48. Photorespiration in C₃-plants starts from

- (a) glycine (b) glycerate
- (c) phosphoglycolate. (d) phosphoglycerate

49. Anaerobic respiration is also called

- (a) fermentation (b) fragmentation

(c) multiplication (d) fermentation

50. Biological oxidation in Krebs's cycle involves

(a) O₂ . . (b) N₂

(c) CO₂ (d) SO₂

51. The name of process of aerobic respiration, in which energy is provided in steps in electron transport chain, is

(a) EMP-pathway (b) decarboxylation

(c) photophosphorylation (d) oxidative phosphorylation

52. Asthma is caused due to

(a) infection of lungs (b) infection of trachea

(c) bleeding into pleural cavity (d) spasm in bronchial muscles

53. A person breathing normally at rest, takes in and expels approximately half a litre of air during each respiratory cycle. This is called

(a) tidal volume (b) vital capacity

(c) inspiratory reserve volume (d) expiratory reserve volume

54. The Largest quantity of air that can be expired, after maximal inspiration, is called

(a) tidal volume (b) vital capacity

(c) residual volume (d) total lung volume

55. Rate of heart beat is determined by

(a) AV-node (b) SA-node

(c) Purkinje fibres (d) papillary muscles

56. The first heart sound is produced when

(a) diastole begins

(b) semilunar valve close quickly

(c) interventricular pressure decreases

(d) bicuspid and tricuspid valve close quickly

57. Which of the following layer of heart wall consists cardiac muscles ?

(a) endocardium (b) myocardium

(c) epicardium (d) all of these

58. If heart beats 75 beats/min then what is time for cardiac cycle ?

(a) 0.5 sec (b) 0.8 sec

(c) 1 sec (d) 1.5 sec

59. Blood pressure increases and heart rate decreases in response to

(a) exercise (b) haemorrhage

(c) exposure to high altitude (d) increased intracranial pressure

60. 'P' wave of ECG occurs before the

(a) onset of ventricular ejection

(b) end of arterial contraction

(c) beginning of atrial contraction

(d) none of these

61. Liver in our body stores

(a) vitamin-A (b) vitamin-D

(c) vitamin-B12 (d) all of these

62. Secretin hormone is secreted by

(a) liver (b) pancreas

(c) intestine (d) Brunner's glands

63. The contraction of gall bladder is due to

(a) gastrin (b) secretin

(c) enterogastrone (d) cholecystokinin

64. Which of the following is the character of the bile juice?

(a) it has trypsin (b) it has no enzyme

(c) it has enterogastrone (d) it has tripophnomide

65. Average pH of human urine is

(a) 6.0 (b) 9.0

(c) 3.0 (d) 7.0

66. Cells present in the inner lining of kidneys are

(a) podocytes (b) choanocytes

(c) pinocytes (d) nephrocytes

67. Which of the following is impermeable to water?

- (a) vertical limb of loop of Henle
- (b) descending limb of loop of Henle
- (c) ascending limb of loop of Henle
- (d) both 'a' and 'b'

68. Ducts of Bellini are present in

- (a) liver (b) kidney
- (c) intestine (d) medulla oblongata

69. Human brain has greater development of

- (a) cerebrum (b) cerebellum
- (c) optic lobes (d) medulla oblongata

70. The 'end organs of Raffini' are receptors of

- (a) heat (b) cold
- (c) pressure (d) touch

71. Which of the following part of human brain is associated with integration of sympathetic and parasympathetic activities ?

- (a) cerebrum (b) neopallium
- (c) hypothalamus (d) medulla oblongata

72. The unidirectional transmission of a nerve impulse through nerve fibre is due to

- (a) neurotransmitters are released by axon endings
- (b) neurotransmitters which are released by dendrites

- (c) nerve fibre which is insulated by a medullary sheath
- (d) sodium pump which starts operating into the nerve fibre

73. In the myopia eye defect, the rays of light

- (a) do not enter the eye at all
- (b) meet at a focus in front of the retina
- (c) come to a focus at back of retina
- (d) come to a focus in between retina and iris

74. Sensory receptor of warmth located principally at the tip of fingers is known as

- (a) Weber's organ (b) organ of Giraldes
- (c) Ruffini's corpuscles (d) organ of Zuckerkandl

75. Hormones secreted by pancreas are

- (a) ACTH (b) oxytocin
- (c) LH and FSH (d) insulin and glucagon

76. Neurohypophysis secretes

- (a) ADH and oxytocin (b) oxytocin and estrogen
- (c) vasopression and GH (d) vasopressin and estrogen

77. Secretion of androgens by testis is regulated by

- (a) LTH (b) FSH
- (c) ICSH (d) oxytocin

78. Pancreatic duct of a healthy dog is blocked. Which of the functions of pancreas will not be affected ?

- (a) protein digestion (b) carbohydrate digestion
- (c) neutralization of chime (d) maintenance of normal blood sugar level

79. Physiologically active thyroxine exists in which of the follow-ing form?

- (a) unbound (b) bound to albumin
- (c) bound to globulin (d) all of these

80. A flower characterised by monadelphous tubular stamens belongs to

- (a) Solanaceae (b) Liliaceae
- (c) Malvaceae (d) Brassicaceae

81. In Musa, inflorescence is

- (a) spadix (b) corymb
- (c) capitulum (d) polychasial cyme

82. The formation of gametophyte, from sporophyte, without spore formation or without meiosis is known as

- (a) apospory (b) apogamy
- (c) pathenogenesis (d) none of these

83. Anemophilous flowers have

- (a) sessile stigma (b) small and smooth stigma
- (c) coloured-flower (d) large and feathery stigma

84. In oogamy, fertilization involves

- (a) a small non-motile, female gamete and a large motile male gamete
- (b) a large motile female gamete and a small non-motile male gamete
- (c) a large non-motile female gamete and small motile male gamete
- (d) a large non-motile female gamete and a small non-motile male gamete .

85. In angiosperms, triple, fusion results in the formation of

- (a) zygotic nucleus (b) polar nucleus
- (c) secondary nucleus (d) primary endosperm nucleus

86. During a woman's life time, she produces about

- (a) 40-50 eggs , (b) 300-350 eggs
- (c) 400-500 eggs (d) 750-850 eggs

87. The production and maturation of sperm in testis is known as

- (a) oogenesis (b) sporogenesis
- (c) gametogenesis (d) spermatogenesis . :

88. The phase of menstrual cycle in humans that lasts for 7-8 days, is

- (a) menstruation (b) luteal phase
- (c) ovulatory phase (d) follicular phase

89. Which one of the following statements with regard to the embryonic development in humans is correct ?

- (a) cleavage division results in a hollow ball of cells called morula
- (b) cleavage in mammalian ova is unequal holoblastic and horizontal
- (c) rearrangement of blastomeres, a central cavity is formed inside the morula

(d) cleavage divisions bring about considerable increase in the mass of protoplasm

90. The most accepted theory of ageing is

- (a) less RBC in blood
- (b) thymus gland becomes non-functional
- (c) brain cells die with ageing
- (d) all of these

91. Which of the following is not immunised by triple. antigen ?

- (a) typhoid (b) tetanus
- (c) diptheria (d) whooping cough

92. A person with the sex chromosomes XXY suffers from

- (a) Down's syndrome (b) Turner's syndrome
- (c) gynandromorphism (d) Klinefelter's syndrome

93. Which of the following represents Klinefelter's syndrome ?

- (a) XX (b) XO
- (c) XY (d) XXY

94. Which is the closest pet of human being ?

- (a) cat (b) cow
- (d) dog (d) buffalo

95. The bacterial disease which is a found in chickens, is

- (a) rickets (b) ranikhets
- (c) fowl fox (d) fowl cholera

96. Which of the following is viral disease in silkworm ?

- (a) flacherie (b) grasserie
- (c) muscardine (d) pebrinc

97. Which of the following is not the example of marine fishes ?

- (a) Labeo (b) Mugil
- (c) Hilsa (d) Sardines

98. Reproducing new plants by cells, instead of seeds, is known as

- (a) mutation (b) antibiotics
- (c) biofertilizer (d) tissue culture

99. Creosote is used to prevent

- (a) rusts of wheat (b) dry rot of wood
- (c) loose smut of oats (d) brown rust of barley

100. Which of the following insecticide is obtained from the roots of *Denis elliptica* ?

- (a) cinerin (b) nicotine
- (c) rotenone (d) pyrethrum