KCET 2024 Biology Question Paper

1. Which among the following is used to treat Emphysema?
(A) Human Hormone - α – Antitrypsin
(B) Human α – Interferon
(C) Human protein - α – Antitrypsin
(D) Human α – Lactalbumin

Ans. C

2. Homeostasis is a condition where the organisms
(A) Maintain a constant internal environment in everchanging external environment
(B) do not maintain a constant internal environment
(C) Change their internal environment according to their external environment
(D) Change their internal environment when the external environment is constant

Ans. A

3. Which of the following is **not** a parasitic adaptation?
(A) Loss of unnecessary sense organs
(B) Absence of adhesive organs or suckers
(C) Loss of digestive system
(D) High reproductive capacity

Ans. B

4. DNA polymerase of Thermus aquaticus is
(A) Thermolabile
(B) Thermophobic
(C) Exonuclease
(D) Thermostable

Ans. D

5. If a recombinant DNA bearing gene for resistance to Ampicillin transferred into E.coli cells, host cells become transformed into Ampicillin resistant cells. What happens when these E.coli are grown on medium containing Ampicillin?
(A) Non-transformants will grow and transformants will die
(B) Non-transformants will die and transformant will grow
(C) Both non-transformants and transformant will die
(D) Both non-transformant and transformant will grow

Ans. B

6. Which of the following based upon the principle of antigen-antibody interaction?
(A) PCR
(B) ELISA
(C) rDNA technology
(D) Gel Electrophoresis

Ans. B

7. A strict protection of biodiversity hotspots could reduce the ongoing mass extinction by almost
(A) 20%
(B) 25%
(C) 30%
(D) 35%

Ans. C

8. Identify the ***incorrect*** match respect to recently extinct animals and their place extinction according to IUCN Red list
(A) Dodo-Mauritius
(B) Quagga – Africa
(C) Thylacine – Australia
(D) Steller's Sea Cow – North America

Ans. D

9. According to the hypothesis proposed by environmental biologists, a relatively constant environment in tropics promotes
(A) Niche specialization and lesser species diversity
(B) Niche specialization and greater species diversity
(C) Niche diversity and lesser species specialization
(D) Niche diversity and greater species specialization

Ans. B

10. In the prevention of air pollution, the role of scrubber is to remove
(A) Particular SO_2
(B) Liquid SO_2
(C) Gaseous SO_2
(D) Liquid SO_3

Ans. C

11. Match List-I with List-II and choose the correct answer.

List-I	List-II
1) Nitrogen rich fertilizers	p) Ozone depletion
2) Carbon dioxide	q) Eutrophication
3) Carbon monoxide	r) Greenhouse effect
4) CFC's	s) Air pollutant

(A) 1-p, 2-q, 3-r, 4-s
(B) 1-q, 2-r, 3-s, 4-p
(C) 1-r, 2-s, 3-p, 4-q
(D) 1-s, 2-p, 3-q, 4-r

Ans. B

12. Following representations P, Q and R denote few steps of Griffith Experiment. Identify the correct one(s)
P. R strain → Inject into mice → Mice die
Q. S strain (Heat killed) → Injected into mice → Mice die
R. R strain → Inject into mice → Mice live
(A) P only
(B) R only
(C) P and R
(D) Q and R

Ans. B

13. In tRNA the region that binds with mRNA is
(A) Anticodon loop of tRNA
(B) Amino acid acceptor end tRNA
(C) Amino acyl synthetase loop of tRNA
(D) Ribosomal binding loop of tRNA

Ans. A

14. The mRNA has Untranslated Regions (UTRs)
(A) At 3'-end beyond Terminator codon
(B) At 5'-end before AUG
(C) At both 3'-end and 5'-end beyond Terminator codon and before AUG respectively
(D) AUG and Terminator codon flanks the UTR

Ans. C

15. In Structural gene, the template DNA strand has nucleotide sequences
3'– ATGCATGCATGCATGC – 5'.
Find the correct and complimentary nucleotide sequence on coding strand.
(A) 5'– ATGCATGCATGCATGC – 3'
(B) 3'– GCATGCATGCATGCAT – 5'
(C) 5'– TACGTACGTACGTACG – 3'
(D) 3'– TACGTACGTACGTACG – 5'

Ans. C

16. Read the following statements
Statement I : All vertebrates develop a row of vestigial gill slits during embryonic stage.
Statement II : Embryos always pass through the adult stages of other animals.
Which of the following options is correct with reference to these statements.?
(A) Statement I is correct, Statement II is incorrect.
(B) Statement I is incorrect, Statement II is correct.
(C) Both Statements I and II are correct.
(D) Both Statements I and II are incorrect.

Ans. A

17. Which of the following exhibits haplodiplontic lifecycle ?
(A) *Fucus*
(B) *Chlamydomonas*
(C) *Gelidium*
(D) *Ectocarpus*

Ans. D

18. Identify, the phylum which shows the following characteristics:
1. Animals are exclusively marine, radially symmetrical and diploblastic.
2. Body bears eight external rows of ciliated comb plates which help in locomotion.
3. Digestion is both extracellular and intracellular.
4. Reproduction only by sexual modes.
(A) Coelenterate
(B) Mollusca
(C) Arthropoda
(D) Ctenophora

Ans. D

19. When a flower has both stamens and carpels it is described as
(A) Asexual
(B) Unisexual
(C) Bisexual
(D) Dioecious

Ans. C

20. Ciliated epithelial cells are present in
(A) Kidneys
(B) Intestines
(C) Blood Vessels
(D) Bronchioles

Ans. D

21. Which of the following statements is correct with reference to vacuoles?
(A) It is membrane bound and contains storage proteins and lipids.
(B) It is membrane bound and contains water and excretory substances.
(C) It lacks membrane and contains air.
(D) It lacks membrane and contains water and excretory substances

Ans. B

22. Exoskeleton of Arthropods is made up of unique complex polysaccharide known as
(A) Hyaluronic Acid
(B) Chitin
(C) Waxes
(D) Cellulose

Ans. B

23. The enzyme Recombinase is required at which stage of Meiosis I?
(A) Pachytene
(B) Zygotene.
(C) Diplotene
(D) Diakinesis

Ans. A

24. The water potential of pure water is
(A) One
(B) Mote than one
(C) Zero
(D) less than zero

Ans. C

25. Match the pigments given in List I with their colour in chromatogram given in List II.

List I (Pigments)	**List II (Colour in chromatogram)**
1. Chlorophyll 'b'	p. Yellow orange
2. Carotenoids	q. Orange red
3. Chlorophyll 'a'	r. Yellow
4. Xanthophylls	s. Blue green
	t. Yellow green

Choose the correct option from the following :
(A) 1-s, 2-t, 3-r, 4-q
(B) 1-p, 2-q, 3-r, 4-t
(C) 1-t, 2-p, 3-s, 4-r
(D) 1-t, 2-p, 3-r, 4-s

Ans. B

26. Which is the intermediate compound that links the end product of Glycolysis with TCA Cycle?
(A) Acetyl CoA
(B) Pyruvic Acid
(C) OAA
(D) Citric Acid

Ans. A

27. Auxins : Apical dominance : : Gibberellins : _____
(A) Adventitious shoot formation
(B) Accelerates abscission
(C) Closure of stomata
(D) Bolting

Ans. D

28. The term Uremia refers to
(A) Accumulation of Urea in blood.
(B) Presence of Glucose in the urine.
(C) Accumulation of Uric acid in blood.
(D) Accumulation of Uric acid in kidneys.

Ans. A

29. The typical 'lub-dub' sounds heard during heartbeat are produced due to
(A) Closure of semilunar valves
(B) Closure of bicuspid and tricuspid valves
(C) Closure of bicuspid and tricuspid valves followed by semilunar valves
(D) Opening of bicuspid and tricuspid valves followed by semilunar valves

Ans. C

30. The functional unit of contraction is a
(A) Portion of myofibril between two successive Z-lines"
(B) Portion of myofibril between two successive M-lines
(C) Centre of the H-zone
(D) Centre of the I-band

Ans. A

31. Match the parts of the brain given in List I with their functions given in List II.

List I (Parts of the brain)	List II (Functions)
1. Medulla oblongata	p. Body temperature
2. Hypothalamus	q. Olfaction
3. Cerebral cortex	r. Respiration
4. Limbic system	s. Motor function

Choose the correct option from the following:
(A) 1-p, 2-r, 3-s, 4-q
(B) 1-q, 2-s, 3-r, 4-p
(C) 1-s, 2-p, 3-q, 4-r
(D) 1-r, 2-p, 3-s, 4-q

Ans. D

32. Hydra reproduces asexually by producing
(A) Zoospores
(B) Conidia
(C) Buds
(D) Gemmule

Ans. C

33. When male and female gametes are morphologically distinct, the condition is known as
(A) Homogametes
(B) Heterogametes
(C) Hermaphrodites
(D) Sexual Dimorphism

Ans. B

34. The role of Filiform apparatus in synergids is to
(A) Protect the egg apparatus
(B) Endosperm formation
(C) Guide the entry of pollen tube.
(D) Prevention of gamete entry

Ans. C

35. Transfer of pollen grains from the anther to the stigma of another flower of the same plant, is called
(A) Xenogamy
(B) Autogamy
(C) Cleistogamy
(D) Geitonogamy

Ans. D

36. Match the content of List I with List II:

List I	List II
1. Polyembryony	p. Black pepper
2. Perisperm	q. Banana
3. False fruit	r. Lemon
4. Parthenocarpy	s. Apple

Choose the correct option from the following:
(A) 1-r, 2-p, 3-s, 4-q
(B) 1-p, 2-r, 3-s, 4-q
(C) 1-q, 2-p, 3-s, 4-r
(D) 1-r, 2-s, 3-p, 4-q

Ans. A

37. Which of the following hormones is ***not*** secreted by human placenta?
(A) Progestogen
(B) HCG
(C) Estrogen
(D) LH

Ans. D

38. In human females, the endometrium of uterus consists of
(A) Smooth muscle
(B) Glandular layer
(C) Adipose layer
(D) Cartilaginous layer

Ans. B

39. If two primary spermatocytes and two primary oocytes undergo meiosis simultaneously, what will be the ratio of spermatozoa and ova produced at the end of the gametogenesis?
(A) 2:1
(B) 4:1
(C) 6:2
(D) 1:2

Ans. B

40. The Government of India legalised MTP with some strict regulations in the year
(A) 1951
(B) 1961
(C) 1971
(D) 2001

Ans. C

41. The process in which a small part of the vas deferens is removed or tied up through a small incision, is called
(A) MTP
(B) Vasectomy
(C) Tubectomy
(D) GIFT

Ans. B

42. Test cross in pea plant is
(A) A cross between F_2 tall plant and recessive parent.
(B) A cross between F_2 dwarf plant and recessive parent
(C) A cross between F_2 tall plant with dominant parent.
(D) A cross between two F_1 plants.

Ans. A

43. The genotype ratio of incomplete dominance is
(A) 3:1
(B) 1:2:1
(C) 1:1:2
(D) 9:3:3:1

Ans. B

44. Find the ***incorrect*** statement among the following:
(A) In sex linked recessive traits the gene is transmitted from unaffected carrier female to some of male progeny.
(B) Accumulation of phenylpyruvic acid in brain results in mental retardation
(C) Individuals affected by Down's Syndrome will have congenital heart defect and are more intelligent.
(D) Turner's Syndrome is caused due to the absence of one X- chromosome.

Ans. C

45. In a dihybrid cross between a true breeding round yellow seeded and true breeding wrinkled green seeded pea plant, the ratio of segregation of round and wrinkled seed traits in F_2 is
(A) 9:1
(B) 3:1
(C) 9:3
(D) 3:3

Ans. B

46. Stanley Miller simulated the conditions of pre – biotic earth using spark – discharge apparatus. Which organic compounds were observed by him on analysing the end product of his experiment?
(A) Pigments
(B) Fats
(C) Nitrogen bases
(D) Amino acids

Ans. D

47. Most ape - like ancestral primate was
(A) Dryopithecus
(B) Ramapithecus
(C) Australopithecus
(D) Neanderthal man

Ans. A

48. The principle of vaccination is based on which property of immune system?
(A) Memory
(B) Specificity
(C) Diversity
(D) Plasticity

Ans. A

49. Genome of HIV replicates in the macrophages with the help of an enzyme called
(A) DNA Polymerase
(B) RNA Polymerase
(C) Reverse Transcriptase
(D) DNA Ligase

Ans. C

50. Read the following statements:
Statement I: Morphine is obtained by acetylation of Heroin.
Statement II: Cannabinoids are known for their effect on cardiovascular system
Which of the following options is correct with reference to these statements?
(A) Both Statements I and II are correct
(B) Statements I is correct and Statements II is incorrect
(C) Statements I is incorrect and Statements II is correct
(D) Both Statements I and II are incorrect

Ans. C

51. Mule is the result of
(A) Out-crossing
(B) Cross-breeding
(C) Interspecific hybridization
(D) Out-breeding
Ans. C

52. Identify the bacterial disease among the following:
(A) Brown rust of wheat
(B) Tobacco mosaic disease
(C) Black rot of crucifers
(D) Late blight of potato
Ans. C

53. Match the nutrients given in List-I with the source in List-II:

List-I	List-II
1. Vitamin A	p. Bitter gourd
2. Single cell protein	q. Beans
3. Vitamin C	r. Carrots
4. Protein	s. Spirulina spp

Choose the correct option from the following:
(A) 1-p, 2-q, 3-r, 4-s (B) 1-r, 2-s, 3-p, 4-q
(C) 1-p, 2-r, 3-s, 4-q (D) 1-q, 2-s, 3-p, 4-r
Ans. B

54. The chemical substances which are produced by some microbes which can kill or retard the growth of other microbes are known as
(A) Statins (B) Streptokinases
(C) Cyclosporins (D) Antibiotics
Ans. D

55. Select the correct statement from the following:
(A) *Methanobacterium* is an aerobic bacteria found in the rumen of cattle.
(B) Biogas is produced by the activity of aerobic bacteria
(C) Biogas in pure methane.
(D) Activated sludge in sediment tanks is a rich source of aerobic bacteria.
Ans. D

56. Which of these enzymes is required to cleave a plasmid?
(A) Ligase
(B) Endonuclease
(C) Exonuclease
(D) Polymerase
Ans. B

57. The natural reservoir of phosphorus is
(A) Rocks
(B) Soil solution
(C) Detritus
(D) Atmosphere
Ans. A

58. The sequence of communities of primary succession in water is
(A) Phytoplanktons → Scrubs → Free floating hydrophytes → Rooted hydrophytes → Grasses → Trees.
(B) Phytoplanktons → Free floating hydrophytes → Rooted hydrophytes → Trees → scrubs.
(C) Free floating hydrophytes → Scrubs → Phytoplanktons → Rooted hydrophytes → Grasses → Trees
(D) Phytoplanktons → Rooted hydrophytes → Free floating hydrophytes → Reed swamps → Marsh meadows → Scrubs → Trees.
Ans. D

59. Match the type of adaptation given in List-I with their examples given in List-II. Select the option showing correct combination.

	List-1 (Types of adaptation)		List-II (Examples)
1.	Biochemical adaptation	p.	Desert lizards
2.	Behavioural adaptation	q.	Deep sea fishes
3.	Physiological adaptation	r.	Opuntia
4.	Morphological adaptation	s.	Kangaroo rats

(A) 1-q, 2-r, 3-s, 4-p
(B) 1-p, 2-q, 3-r, 4-s
(C) 1-q, 2-p, 3-s, 4-r
(D) 1-s, 2-r, 3-q, 4-p
Ans. C

60. The annual net primary productivity of the biosphere is approximately
(A) 170 billion tons
(B) 55 billion tons
(C) 170 million tons
(D) 55 million tons
Ans. A