KCET 2018 BIOLOGY QUESTION PAPER

1. The correct sequence of taxonomic hierarchy is
   a) Genus → Family → Class → Order Phylum → Kingdom → Species
   b) Species → Genus → Family → Order → Class → Phylum → Kingdom
   c) Species → Family → Genus → Kingdom → Order → Class → Phylum
   d) Species → Genus → Family → Class → Order Phylum → Kingdom

2. Match the animals of Column I with their respective classes in Column II and choose the correct answer:

Column – I	Column II
1. Aptenodytes	I. Aves
2. Hemidactylus	II. Chondrichthyes
3. Carcharodon	III. Mammalia
4. Pteropus	IV. Reptilia
	V. Osteichthyes

Select the code for the correct answer from the options given below:

	1	2	3	4		1	2	3	4
a)	V	II	IV	I	b)	I	IV	III	II
c)	V	I	II	III	d)	I	IV	II	III

3. Choose the correct floral formula of the given floral diagram

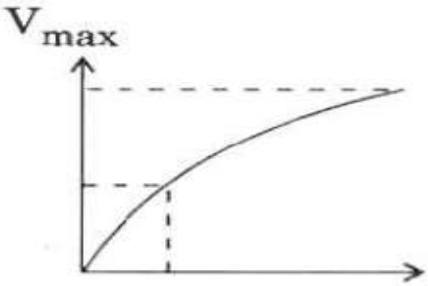
a. $\oplus \, ♀ \, K_{(2+2)} C_4 A_{4+2} G_{(2)}$
b. $\oplus \, ♀ \, K_{(3+2} \overset{\frown}{C_4 A_4} G_{(2+1)}$
c. $\oplus \, ♂ \, K_{2+2} C_4 A_{2+4} G_{(2)}$
d. $\oplus \, ♂ \, K_{2+2} C_4 A_{2+4} G_2$

4. In which type of vascular bundles are Xylem and Phloem present at the same radius?
   a) Radial b) Closed
   c) conjoint d) Exarch

5. Conjunctive tissue is present between (i) and (ii) in (iii)
   a) (i) Pericycle (ii) Endodermis (iii) Dicot root
   b) (i) Xylem (ii) Phloem (iii) Dicot root
   c) (i) Palisade parenchyma (ii) Spongy parenchyma (iii) Dicot leaf
   d) (i) Xylem (ii) Phloem (iii) Dicot stem

6. Identify the major site of biosynthesis of lipids
   a) Golgi apparatus
   b) Mitochondria
   c) Smooth endoplasmic reticulum (SER)
   d) Rough endoplasmic reticulum (RER)

7. The following graph shows concentration of substrate on enzyme activity:



What does the Y-axis represent?
   a) Temperature b) Velocity of reaction
   c) pH d) Pressure

8. In the maize plant, CO_2 fixation occurs in both mesophyll and bundle sheath cells. The enzymes involved in these cells for the process respectively are
   a) RuBisCO and PEP Kinase
   b) PEP Kinase and Pepsin
   c) RuBisCO and PEP Carboxylase
   d) PEP Carboxylase and RuBisCO

9. In the following reaction, identify X and Y respectively

$$\text{Pyruvic acid} + \text{CoA} + \text{NAD}^+ \xrightarrow[X]{Mg^{2+}} Y + CO_2 + NADH + H^+$$

   a) Water, Acetyl CoA
   b) Acetyl CoA, Pyruvate dehydrogenase
   c) Pyruvate dehydrogenase, Acetyl CoA
   d) Pyruvate dehydrogenase, Oxalo-acetic acid

10. Which of the following factors favorable for the formation oxyhaemoglobin in the alveoli human lungs?
   a) High pCO_2
   b) Lower temperature
   c) High H^+ concentration
   d) Low pO_2

11. Digestion of both starch and proteins is carried out by enzymes of
a) Gastric juice b) Saliva
c) Bile Juice d) Pancreatic juice

12. The type of epithelium found in the inner lining of PCT is
a) Squamous epithelium
b) Cuboidal epithelium
c) Glandular epithelium
d) Ciliated epithelium

13. Select the correct Rh-blood groups of the parents, whose child is affected with erythroblastosis foetalis
a) Both Father and Mother are Rh +ve
b) Mother is Rh +ve and Father is Rh –ve
c) Both Father and Mother are Rh –ve
d) Father is Rh +ve and Mother is Rh –ve

14. In which of the following groups do the male and female gametophytes have independent free living existence?
a) Bryophytes and Gymnosperms
b) Bryophytes and Pteridophytes
c) Pteridophytes and Gymnosperms
d) Algae and Gymnosperms

15. The hormones of "Fright, Fight and Flight" are
a) Thyroxin and Oxytocin
b) Thyroxin and Melatonin
c) Adrenaline and Nor-adrenaline
d) Gastrin and Secretin

16. In the given options, which one cannot propagate by vegetative means?
a) A marginal piece of bryophyllum leaf
b) A middle piece of sugarcane internode
c) A piece of potato tuber with eyes
d) A piece of ginger rhizome

17. Among the following statements related to pollens, choose the correct one.
Statement I: In 40% of angiosperms pollen grains are shed at 3-celled stage.
Statement II: Intine is made of cellulose and pectin and it is discontinuous with germ pores.
a) Both I and II are correct
b) Both I and II are incorrect
c) I is correct and II is incorrect
d) I is incorrect and II is correct

18. Match the animals of Column I with the Column II and select the correct options among the following:

Column – I	Column – II
1. DNA replication	I. RNA polymerase
2. Translation	II. DNA polymerase
3. Transcription	III. Reverse transcriptase
4. Reverse transcription	IV. Aminoacyl synthetase

Select the code for the correct answer from the options given below

	1	2	3	4		1	2	3	4
a)	II	IV	III	I	b)	II	IV	III	I
c)	II	III	IV	I	d)	II	I	III	IV

19. When pollen grain is shed at 3-celled stage, name the cells it contains
a) 1 vegetative cell and 2 male gametes
b) 2 vegetative cells and 1 male gamete
c) 2 generative cells and 1 male gamete
d) 2 male gametes and 1 generative cell

20. Even in the absence of pollinators, assured seed set will be there in
a) Chasmogamous flowers
b) Geitonogamy
c) Cleistogamous flowers
d) Xenogamy

21. The process of conversion of non-motile spermatids into motile spermatozoa is called
a) Spermiogenesis b) Oogenesis
c) Sporogenesis d) Spermatogenesis

22. Several mammary ducts join to form a wider structure called
a) Lactiferous duct b) Mammary lobe
c) Mammary ampulla d) Mammary tubules

23. The signals for the population process originate from
a) Muscles of uterus
b) Fully developed foetus and placenta
c) Placenta
d) Hormones of ovaries and uterus

24. Match the following Column I with Column II

Column – I	Column – II
1. Surgical methods	I. Condom
2. Barrier methods	II. Pills
3. Natural methods	III. Tubectomy
4. Chemical methods	IV. Lactational amenorrhea

Select the code for the correct answer from the options given below:

	1	2	3	4		1	2	3	4
a)	III	I	IV	II	b)	III	IV	I	II
c)	IV	III	II	I	d)	II	I	III	IV

25. The following factors indicate improved reproductive health of the society. Choose the correct option
1. Better detection and cure of disease
2. Better post-natal care
3. Medically assisted deliveries
4. Increased MMR

Select the code for the correct answer from the options given below:
a) 2, 3 and 4 only b) 1, 2 and 3 only
c) 1, 3 and 4 only d) 1, 2and 4 only

26. ABO blood type in man is an example of
1. Pleiotropy
2. Incomplete dominance
3. Co-dominance
4. Multiple allelism

Select the code for the correct answer from the options given below
a) 1, 2 and 3 only b) 1, 3 and 4 only
c) 3 and 4 only d) 1, 2 and 4 only

27. The codon on mRNA are
CAU — CCU — AAA — CUG
Identify the correct sequence of amino acids
a) His — Pro — Lys — Leu
b) Pro — His — Lys — Leu
c) His — Pro — Leu — Lys
d) Pro — Leu — Lys — His

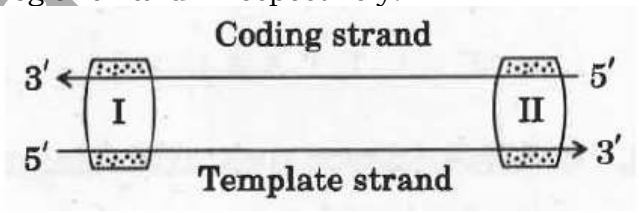
28. Choose the possible genotypes responsible for lightest skin colour in human beings.
a) AABBCC b) AaBbCc
c) aabbcc d) AABbCc

29. Both male and female have normal vision though their fathers were colour blind, and mothers did not have any gene for colour blindness. The probability of their daughter becoming colour blind is
a) 0% b) 15%
c) 25% d) 50%

30. Find the nucleotide sequence of the mRNA which codes for the sequence of amino acids
`Met - Leu - Val - Arg - Ala' and choose the correct option from below
a) AUG - GAU - GAA - UAU – UGU
b) AUG - GAU - GAA - CGU – GCC
c) AUG - CUA - GUG - UAU – UGU
d) AUG - CUA - GUG - CGU – GCC

31. Sickle-cell anaemia is due to the following mutant gene
a) CTC – CAC b) CTC – GAG
c) CAC – GUG d) GAG – GUG

32. In the given transcription unit, identify the regions I and II respectively.



a) Promoter and Terminator
b) Rho factor and Sigma factor
c) Terminator and Promoter
d) Operator and Inhibitor

33. Which of the following sequences of mRNA are required for translation process but are not translate?
a) Stop codons b) Anticodons
c) Sense codons d) UTR

34. Identify the palindromic sequence in the following base sequences

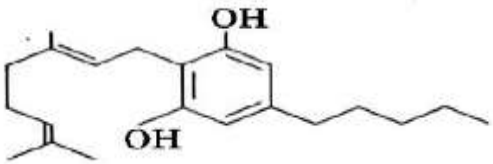
a. 5′-CGATA-3′ / 3′-GCTAT-5′
b. 5′-GGATCC-3′ / 3′-CCTAGG-5′
c. 5′-CCTGC-3′ / 3′-GGACG-5′
d. 5′-GAATTG-3′ / 3′-CTTAAC-5′

35. NA, present in the nucleus, was named as `Nuclein' by
a) James Watson and Crick
b) Friedrich Miescher
c) Maurice Wilkins
d) Rosalind Franklin

36. When does the lac-operon in E. coli become "switched on"?
a) Repressor binds to operator
b) RNA polymerase binds to operator
c) Lactose is present and it binds to the repressor
d) Lactose is present and it binds to RNA polymerase

37. Lactose is present and it binds to RNA polymerase
a) $CH_4NH_3H_2O, H_2$ b) CH_4CO_2, N_2, SO_2
c) CH_4CO_2, N_2, NH_3 d) CH_4, N_2, NH_3, H_2

38. From which of the given plants is the drug whose skeletal structure is given below extracted?



a) Papaver somniferum
b) Atropa belladonna
c) Cannabis sativa
d) Erythroxylum coca

39. The allele frequency of 'A' and 'a' in a population are 0.6 and 0.4 respectively. The expected frequency of heterozygous individuals is
a) 48% b) 36%
c) 16% d) 24%

40. Identify the odd one from the following
a) a-Interferon b) Oncogenic virus
c) Proto-oncogenes d) UV rays

41. During replication of retrovirus
a) Viral protein is introduced into the host cell.
b) Viral RNA is introduced into the host cell.
c) Viral DNA is introduced into the host cell.
d) Transcriptase enzyme is introduced into the host cell

42. In malignant tumors, the cells divide rapidly and move to distant parts of the body and cause new tumors. This property is called
a) Metastasis b) Metagenesis
c) Teratogenesis d) Teratogenesis

43. The breeding technique that is useful to expose harmful recessive genes is
a) Outbreeding
b) Artificial insemination
c) Inbreeding
d) MOET

44. Germplasm collection refers to
a) Collection of all alleles for all genes in a crop.
b) Collection of all alleles for few genes in a crop
c) Collection of different alleles for all genes in different crop plants
d) Collection of few alleles for all genes in several crop plants

45. The microorganisms involved in floc formation during sewage treatment are
a) Anaerobic bacteria and fungus
b) Aerobic bacteria and fungus
c) Autotrophic bacteria and yeast
d) Fungus and algae

46. Match the following bacteria of List-I with their commercial products of List-II:

List – I	List – II
1. Lactobacillus	I. Butyric acid
2. Aspergillus niger	II. Acetic acid
3. Acetobacteraceae	III. Lactic acid
4. Clostridium butyricum	IV. Citric acid

Select the code for the correct answer from the options given below:

	1	2	3	4		1	2	3	4
a)	III	II	IV	I	b)	I	IV	III	I
c)	III	IV	II	I	d)	III	IV	I	II

47. The technique of bombarding plant cells with high velocity micro particle's of gold or tungsten, coated with DNA, is
a) Microinjection
b) Biolistic method
c) Heat shock method
d) By disarmed pathogen vector

48. Choose the bacterium which is not a source of REN:
a) Haemophilus influenza
b) Escherichia coli
c) Agrobacterium tumefaciens
d) Bacillus amyloliquefaciens

49. Silencing of a specific mRNA translation could be achieved through
a) Antisense RNA
b) RNA interference technique
c) Both (A) and (B)
d) Microinjection

50. In which of the following steps in DNA fingerprinting technique are labelled VNTR probes used?
a) During isolation of DNA
b) During digestion of DNA by REN
c) During electrophoresis
d) During hybridization

51. dsRNA is used to develop pest resistant tobacco plant by a technique called
a) Polymerase Chain Reaction (PCR)
b) RNA interference (RNAi)
c) Electrophoresis
d) Insertional Activation

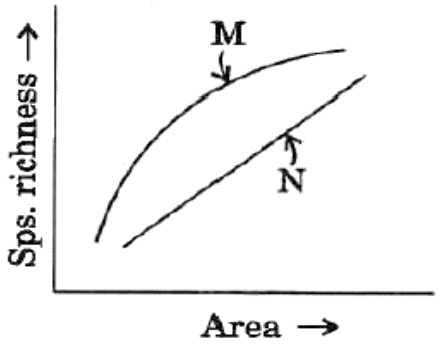
52. The interaction between "Cuckoo and Crow" is an example for
a) Competition b) Predation
c) Brood parasitism d) Mutualism

53. Verhulst-Pearl logistic growth is described by the equation $\frac{dN}{dt} = rN\left[\frac{K-N}{K}\right]$, where 'r' and 'K' present
a) r - intrinsic rate of natural decrease, K - carrying capacity
b) r - intrinsic rate of natural increase, K - carrying capacity
c) r - extrinsic rate of natural increase, K - productive capacity
d) r - extrinsic rate of natural decrease, K - carrying capacity

54. Net primary productivity (NPP) in an ecosystem is
a) GPP – R = NPP b) GPP + R = NPP
c) GPP – NPP = R d) R – NPP = GPP

55. Which among the following is not a functional unit of the ecosystem?
a) Decomposition b) Nutrient cycling
c) Energy flow d) Pollution

56. Match for M and N with species-area relationship shown in the graphic representation below and choose the correct option



a) $M \rightarrow S\,CA^{Z}, N \rightarrow \log S = \log C + Z \log A$
b) $M \rightarrow S\,CZ^{A}, N \rightarrow \log C = \log S + Z \log A$
c) $M \rightarrow S\,CA^{Z}, N \rightarrow \log S = \log C + A \log Z$
d) $M \rightarrow S\,AZ^{C}, N \rightarrow lo\,ZA = \log C + \log S$

57. Select the option from the following which is not a major characteristic feature of biodiversity hotspots :
a) Large number of species
b) Destruction of habitats
c) Abundance of endemic species
d) Large number of exotic species

58. The biomagnification of which pollutant causes a decline in the bird population?
a) Mercury b) SO_2
c) DDT d) NO_2

59. Snow blindness is caused due to

a) Global warming b) Ozone depletion
c) Greenhouse effect d) Biomagnification

60. Match the items of Column-I with those of Column-II and choose the correct answer

Column – I	Column – II
1. Hepatitis B vaccine	I. IgA
2. Preformed antibodies	II. Against Snake venom
3. Colostrum	III. Neutrophilis
4. PMNL	IV. Yeast
	V. Basophils

Select the code for the correct answer from the options given below:

	1	2	3	4		1	2	3	4
a)	IV	II	I	III	b)	I	II	IV	III
c)	IV	II	I	V	d)	V	II	IV	I

ANSWER KEYS

1. (b)	2. (d)	3. (c)	4. (c)	5. (b)	6. (c)	7. (b)	8. (d)	9. (c)	10. (b)
11. (d)	12. (b)	13. (d)	14. (b)	15. (c)	16. (b)	17. (c)	18.(b)	19. (a)	20. (c)
21. (a)	22. (c)	23. (G)	24. (a)	25. (b)	26. (c)	27. (a)	28. (c)	29.(a)	30. (d)
31. (a ,d)	32. (c)	33. (d)	34. (b)	35.(b)	36. (c)	37. (a)	38. (c)	39. (a)	40. (a)
41. (b)	42. (a)	43. (c)	44. (a)	45. (b)	46. (c)	47. (b)	48.(c)	49. (c)	50. (d)
51. (b)	52. (c)	53. (b)	54. (a)	55. (d)	56. (a)	57. (b)	58. (c)	59. (b)	60. (a)