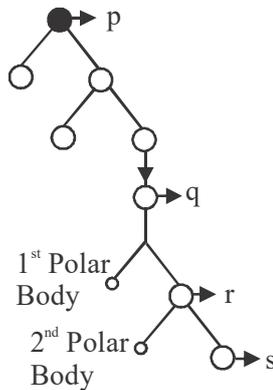


**KCET – 2020 TEST PAPER WITH ANSWER KEY  
(HELD ON THURSDAY 30 JULY ,2020)**

**BIOLOGY**

1. Identify the cells represented as p, q, r and s in the schematic representation of Oogenesis, shown below and choose the correct option.



- (A) p - Ovum, q - Oogonia, r - Primary oocyte, s - Secondary Oocyte  
 (B) p - Secondary Oocyte, q - Primary Oocyte, r - Ovum, s - Oogonia  
 (C) p - Ovum, q - Secondary Oocyte, r - Primary Oocyte, s - Ovum  
 (D) p - Oogonia, q - Primary Oocyte, r - Secondary Oocyte, s - Ovum

**Ans. D**

2. When the fallopian tube is blocked at ampullary region, the ovum fails to move from
- (A) Isthmus to infundibulum  
 (B) Ovary to ampulla  
 (C) Isthmus to Uterus  
 (D) Infundibulum to Isthmus

**Ans. D**

3. Choose the correct statement regarding GIFT (Gamete Intrafallopian Tube Transfer) procedure.
- (A) Ova collected from a female donor are transferred to the fallopian tube to facilitate zygote formation in the recipient.  
 (B) Zygote is collected from female donor and transferred to the fallopian tube of recipient.  
 (C) Zygote is collected from female donor and transferred to the uterus of recipient.  
 (D) Ova are collected from a female donor and are transferred to the uterus of recipient.

**Ans. A**

4. Which of the following characters not studied by Mendel in his Pea plant experiment?
- (A) Stem height (B) Pod shape  
 (C) Seed shape (D) Leaf shape

**Ans. D**

5. Which of the following contraceptives could be effective in avoiding pregnancy if used in 72 hours after casual unprotected intercourse?
- (A) Androgen - FSH combination  
 (B) Testosterone - Relaxin combination  
 (C) Relaxin - Oxytocin combination  
 (D) Progestogen - Estrogen combination

**Ans. D**

6. A pure breeding pea plant with round yellow seeds was crossed with pea plant having wrinkled green seeds. On selfing of  $F_1$  hybrid of his cross, 64 progenies were obtained in  $F_2$  generation. Find out the number of  $F_2$  progenies showing non-parental characters.
- (A) 36 (B) 4  
 (C) 12 (D) 24

**Ans. D**

7. A man with blood group A marries a woman having blood group. The maximum possible blood groups among their progenies are
- (A) AB only (B) A, B, AB  
 (C) A, B (D) A, B, AB, O

**Ans. D**

8. In an Organism, mutation in a single gene exhibits multiple phenotypic expression. Identify the underlying genetic mechanism in the above instance.
- (A) Pleiotropy (B) Incomplete dominance  
 (C) Polygenic inheritance (D) Multiple allelism

**Ans. A**

9. Which of the following types of RNA carries amino acids towards ribosome during translation?
- (A) rRNA (B) dsRNA  
 (C) tRNA (D) mRNA

**Ans. C**

10. In eukaryotes, the entire base sequence of a gene do not appear in mature RNA because
- (A) Transcription in eukaryotes consumes more energy.  
 (B) Coding sequences are removed during processing.  
 (C) Introns are removed during processing.  
 (D) Some gene sequences are removed by exonuclease.

Ans. C

11. Suppose DNA samples collected for DNA fingerprinting analysis are less than the required quantity. Which of the following techniques is helpful to make the samples sufficient for above analysis?

- (A) Electrophoresis      (B) Chromatography  
 (C) PCR                      (D) DNA probing

Ans. C

12. The length of DNA helix in a typical nucleosome is
- (A) 200 bp                      (B) 1000 bp  
 (C)  $3.2 \times 10^6$  bp              (D)  $6.6 \times 10^9$  bp

Ans. A

13. For the given sequence of DNA, identify the complementary sequence of bases on its mRNA from the options given below:

DNA 3' – ATGCATGCATGC – 5'

- (A) 5' – UACGUACGUACG – 3'  
 (B) 5' – TACGTACGTACG – 3'  
 (C) 3' – UACGUACGUACG – 5'  
 (D) 5' – GCATGCATGCAT – 3'

Ans. A

14. Which among the following was the biggest land dinosaur?
- (A) Stegosaurus              (B) Tyrannosaurus rex  
 (C) Brachiosaurus              (D) Triceratops

Ans. C

15. In a population of plants, some water extremely tall and the remaining were extremely dwarf. No plants of the population showed intermediate height. The type of operation of natural selection in the above case is
- (A) Balancing                      (B) Directional  
 (C) Stabilizing                      (D) Disruptive

Ans. D

16. When *Escherichia coli* cells are cultured in a medium where Lactose is absent, the 'i' gene of *Lac Operon* continues to produce repressor mRNA, because it is
- (A) A non-coding gene      (B) An operator gene  
 (C) A constitutive gene      (D) A structural gene

Ans. C

17. Certain tumors are called malignant, because,
- (A) They are confined to specific locations.  
 (B) They invade and damage surrounding tissues.  
 (C) They show contact inhibition.  
 (D) They are not neoplastic.

Ans. B

18. The transport of which neurotransmitter is interfered by cocaine?
- (A) Acetylcholine              (B) Serotonin  
 (C) GABA                          (D) Dopamine

Ans. D

19. In the life cycle of plasmodium, fertilization takes place in
- (A) Salivary glands of mosquito  
 (B) RBC's of humans  
 (C) Stomach of mosquito  
 (D) Liver cells

Ans. C

20. Injection of an antidote against snakebite is an example of
- (A) Innate immunity              (B) Active immunity  
 (C) Passive immunity              (D) Auto immunity

Ans. C

21. Which of the following plants tissues cannot be used as explant in tissue culture?
- (A) Meristem                      (B) Parenchyma  
 (C) Sclerenchyma              (D) Collenchyma

Ans. C

22. The hybridization between naturally incompatible plants Potato and Tomato can be achieved through
- (A) Artificial pollination  
 (B) Somatic hybridisation  
 (C) Conventional breeding  
 (D) Mutation breeding

Ans. B

23. A chilly plant was severely infected with Chilly Mosaic Virus (CMV). Identify the technique that helps to raise virus free plants in the next generation from the above virus infected plant.

- (A) Artificial hybridisation
- (B) Meristem culture
- (C) Self pollination
- (D) Hydroponics

**Ans. B**

24. White rust resistant variety of Brassica is

- (A) Pusa Sadabahar      (B) Pusa Swarnim
- (C) Pusa Shubhra      (D) Pusa Komal

**Ans. B**

25. Ruminant animals can digest cellulose in their food, where as human beings are unable to do so. This is because.

- (A) Methanogens are present in human gut.
- (B) Cellulose is a complex sugar.
- (C) Cellulose is a complex sugar.
- (D) Methanogens are absent in human gut.

**Ans. D**

26. In sewage treatment, secondary treatment is considered highly significant, because

- (A) It helps to remove debris from the sewage.
- (B) It reduces the BOD level of sewage.
- (C) It helps in the production of biogas.
- (D) It increases the organic content of sewage.

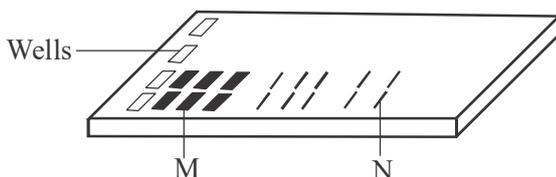
**Ans. B**

27. Biolistics method is suitable for gene transfer into \_\_\_\_\_.

- (A) Viruses                      (B) Animal cells
- (C) Bacteria                    (D) Plant cells

**Ans. D**

28. Identify the labels M and N in the following Agarose gel electrophoresis representation.



- (A) M – Digested DNA bands, N – Undigested DNA bands.
- (B) M – Hybridized DNA bands, N – Unhybridised DNA bands.

(C) M – Largest DNA bands, N – Smallest DNA bands.

(D) M – Smallest DNA bands, N – Largest DNA bands.

**Ans. C**

29. From the given combinations of steps in PCR, identify the enzyme dependent step/s.

- (A) Annealing and extension
- (B) Annealing and denaturation
- (C) Denaturation and extension
- (D) Extension only

**Ans. D**

30. Now-a-days, the early diagnosis of bacterial or viral infection in humans is possible using

- (A) Serum analyser      (B) DNA sequencer
- (C) PCR                      (D) CT Scan

**Ans. C**

31. Which of the following features of plants is not helpful in adapting to desert life?

- (A) Presence of thick cuticle on the leaf surface
- (B) Leaves modified into spines
- (C) Presence of sunken stomata
- (D) Absence of trichomes on leaf surface

**Ans. D**

32. In the following equation of Verhulst - Pearl logistic growth, the letter 'r' denotes \_\_\_\_\_ .

$$\frac{dN}{dt} = rN \left( \frac{K - N}{K} \right)$$

- (A) Extrinsic rate of natural increase
- (B) Intrinsic rate of natural increase
- (C) Carrying capacity
- (D) Population density

**Ans. B**

33. In RNA interference, the dsRNA molecule prevents \_\_\_\_\_ .

- (A) Transcription of mRNA
- (B) Transport of RNA from nucleus to cytoplasm.
- (C) Translation of mRNA
- (D) Aminoacylation

**Ans. C**

34. Identify the possible link 'M' in the following food chain:

Plant → Insect → **M** → Snake → Eagle

- (A) Rabbit (B) Wolf  
(C) Frog (D) Ichthyophis

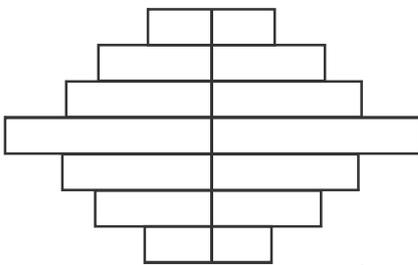
Ans. C

35. The organisms which invade a bare area to initiate an ecological succession are known as

- (A) Key stone species (B) Climate species  
(C) Endemic species (D) Pioneer species

Ans. D

36. The shape of the pyramids reflects the growth status of the population. Identify the type of age pyramid represented below for human population.



- (A) Ascending (B) Expanding  
(C) Stable (D) Declining

Ans. D

37. Which one of the following is a wrong statement?

- (A) Most of the forests have been lost in tropical areas  
(B) Green house effect is a natural phenomenon.  
(C) Eutrophication is a natural phenomenon in fresh water lakes.  
(D) Ozone in upper part of the atmosphere is harmful to animals.

Ans. D

38. According to Supreme Court of India, ruling with respect to 'Bharat Stage VI' Norms, from which date, these are supposed to be implemented in the country?

- (A) 1<sup>st</sup> April, 2020 (B) 1<sup>st</sup> June, 2021  
(C) 1<sup>st</sup> January, 2021 (D) 10<sup>th</sup> December, 2020

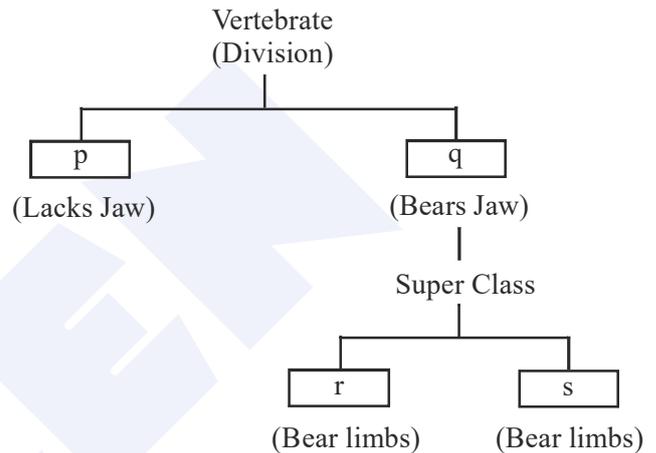
Ans. A

39. Which one of the following is not included under in-situ conservation?

- (A) National Park (B) Sanctuary  
(C) Botanical Garden (D) Biosphere Reserve

Ans. C

40. Observe the following simplified scheme and choose the correct option that matches with the letters given in the boxes.



- (A) p - Agnatha, q - Gnathostomata, r - Pisces, s - Tetrapoda  
(B) p - Gnathostomata, q - Agnatha, r - Tetrapoda, s - Pisces  
(C) p - Tetrapoda, q - Pisces, r - Gnathostomata, s - Agnatha  
(D) p - Agnatha, q - Gnathostomata, r - Tetrapoda, s - Pisces

Ans. A

41. Match the following classes of Fungi (Column - I) with the examples (Column - II).

Column I	Column - II
(1) Phycomycetes	(p) Pencillium
(2) Ascomycetes	(q) Alternaria
(3) Basidiomycetes	(r) Albugo
(4) Deuteromycetes	(s) Puccinia

Choose the correct option:

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

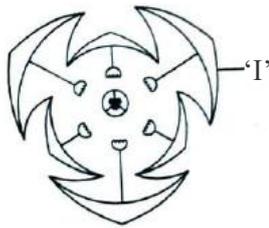
Ans. D

42. A student observes grass and Hibiscus plants in his garden during noon. to his surprise, only the leaves of grass were found rolled inwards. The reason could be

- (A) Presence of more number of stomata on the grass leaves.
- (B) Undifferentiated mesophyll in grass leaves.
- (C) Presence of Bulliform cells in the grass leaves.
- (D) Due to higher rate of transpiration.

**Ans. C**

43. Identify the floral unit 'I' in the given floral diagram.



- (A) Sepal
- (B) Petal
- (C) Tepal
- (D) Perianth

**Ans. C**

44. The element whose percentage weight is highest in both earth's crust and human body is

- (A) Hydrogen
- (B) Carbon
- (C) Oxygen
- (D) Calcium

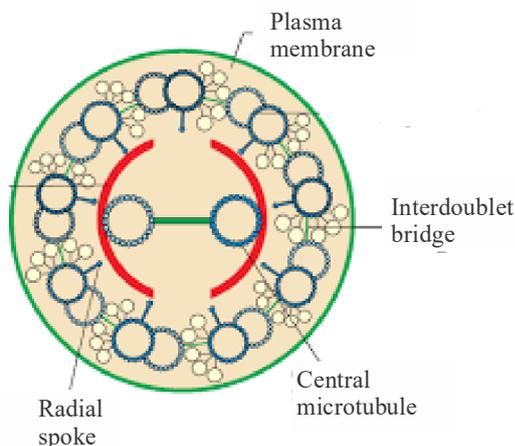
**Ans. C**

45. Identify the event in meiosis mediated by the enzyme recombinase.

- (A) Synaptic pairing
- (B) Terminalization
- (C) Crossing Over
- (D) Interkinesis

**Ans. C**

46. In the below diagram, identify the part which connects the peripheral microtubules to the central sheath.



- (A) Plasma membrane
- (B) Interdoublet bridge
- (C) Central microtubule
- (D) Radial spoke

**Ans. D**

47. In  $C_4$  plants,  $C_3$  cycle takes place in

- (A) Mesophyll cells
- (B) Bulliform cells
- (C) Companion cells
- (D) Bundle sheath cells

**Ans. D**

48. During Citric Acid cycle, the various organic acid undergo decarboxylation. Which of the following organic acids of the above cycle have 4C, 5C and 6C respectively?

- (A) Oxaloacetic acid, Citric acid and Succinic acid.
- (B) Succinic acid,  $\alpha$  - Ketoglutaric acid and Citric acid.
- (C) Pyruvic acid, Malic acid and  $\alpha$  - Ketoglutaric acid.
- (D) Pyruvic acid,  $\alpha$  - Ketoglutaric acid and Citric acid.

**Ans. B**

49. The deficiency of which of these elements interrupts photolysis of water during photosynthesis?

- (A) Mn and Cl
- (B) Zn and Cu
- (C) Ca and K
- (D) N and P

**Ans. A**

50. Match the digestive glands given in Column – I with their respective enzymes given in Column - II and choose the correct combination from the given options,

- | Column - I          | Column - II      |
|---------------------|------------------|
| (1) Pancreas        | (p) Pepsin       |
| (2) Gastric glands  | (q) Enterokinase |
| (3) Small intestine | (r) Ptyalin      |
| (4) Salivary glands | (s) Trypsin      |

Choose the correct option:-

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

**Ans. B**

51. Consider the following statements regarding photosynthesis and respiration in plants and select the correct option.

- I. RuBisCO has high affinity to oxygen in low CO<sub>2</sub> concentration.
- II. The Calvin pathway occurs in the chloroplast of bundle sheath cells of C<sub>4</sub> plants.
- III. Yeast position themselves when the concentration of alcohol reaches 7%.
- IV. Oxygen is a final hydrogen acceptor during aerobic respiration.

- (A) Statements II & IV are correct, I is wrong  
 (B) Statements I and II are correct, IV is wrong.  
 (C) Statements I & III are correct, II is wrong  
 (D) Statements I and IV are correct, III is wrong.

Ans. D

52. In which part of the human brain corpora quadrigemina is located?

- (A) Forebrain (B) Hindbrain  
 (C) Midbrain (D) Cerebral hemisphere

Ans. C

53. A girl after attaining sexual maturity shows development of growing ovarian follicles, development of mammary glands and high pitch of voice. These changes are attributed to \_\_\_\_\_ hormones.

- (A) Melatonin (B) Estrogens  
 (C) Progesterone (D) Androgens

Ans. B

54. Match the different types of Leucocytes (Column - I) with their percentage of occurrence (Column II) in a healthy adult human and choose the correct answer.

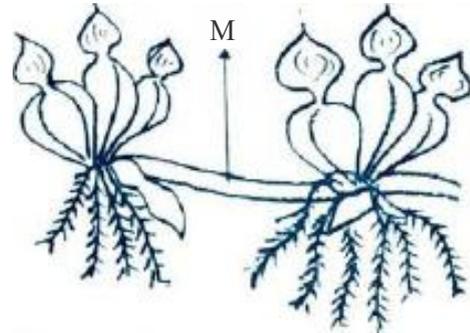
Column - I	Column - II
(1) Neutrophils	(p) 6 – 8 %
(2) Lymphocytes	(q) 60 – 65%
(3) Monocytes	(r) 0.5 – 1%
(4) Basophils	(s) 2 – 3%
(5) Eosinophils	(t) 20 – 25%

Choose the correct option:-

- (A) (1) - (q), (2) - (r), (3) - (s), (4) - (t), (5) - (p)  
 (B) (1) - (r), (2) - (s), (3) - (t), (4) - (q), (5) - (p)  
 (C) (1) - (q), (2) - (t), (3) - (r), (4) - (s), (5) - (p)  
 (D) (1) - (q), (2) - (t), (3) - (p), (4) - (r), (5) - (s)

Ans. D

55. Identify the vegetative propagule 'M' in the following diagram:



- (A) Bulbil (B) Offset  
 (C) Rhizome (D) Runner

Ans. B

56. During an excavation of soil, Pollen fossil were retrieved from deepest layer of soil. the pollen grains remained fossils because:

- (A) The intine of pollen grains is made up of pectin.  
 (B) Exine has spiny Ornamentation.  
 (C) The exine of pollen grains is highly resistant to enzyme action.  
 (D) Pollen grains are asexual reproductive structures.

Ans. C

57. In apple, the chromosome number of gametes is 17. What is the chromosome number in its Primary Endosperm Nucleus (PEN)?

- (A) 34 (B) 68  
 (C) 17 (D) 51

Ans. D

58. Identify the correct order of events in pollen-pistil interaction from the options given below:

- I. Release of male gametes into the embryo sac.
- II. Deposition of pollen grains on stigma.
- III. Entry of pollen tube into embryo sac.
- IV. Development of pollen tube.
- V. Entry of pollen tube into the Ovule.

- (A) IV → III → II → I → V  
 (B) II → IV → V → III → I  
 (C) II → IV → III → V → I  
 (D) V → IV → III → II → I

Ans. B

**59.** Match the months listed in Column - I write the organogenesis of foetus in Column - II.

- | Column - I        | Column - II                |
|-------------------|----------------------------|
| (i) First month   | (a) Separation of eye lids |
| (ii) Second month | (b) Hairs on head          |
| (iii) Fifth month | (c) Heart                  |
| (iv) Six month    | (d) Limbs and Digits       |
- (A) (i) - (c), (ii) - (d), (iii) - (a), (iv) - (b)  
(B) (i) - (b), (ii) - (c), (iii) - (d), (iv) - (a)  
(C) (i) - (d), (ii) - (b), (iii) - (c), (iv) - (a)  
(D) (i) - (c), (ii) - (d), (iii) - (b), (iv) - (a)

**Ans. D**

**60.** Identify the mismatch

- (A) Antipodals - Haploid  
(B) Zygote - Diploid  
(C) Synergids - Diploid  
(D) Primary Endosperm Nucleus Triploid

**Ans. C**