

MOCK CET PAPER (BIOLOGY) 3

1. A characteristic feature of tRNA is that

- (1) Its molecular weight is generally lesser than that of mRNA
- (2) More than one form of tRNA exist for each kind of amino acid
- (3) It initiates translation by binding to DNA
- (4) It has the shortest life span among all other kinds of RNA

2. Wildlife conservation aims at

- I. Maintaining the ecological process
- II. To enrich the wildlife diversity with exotic species
- III. Preventing migration of species
- IV. Maintaining the diversity of life

The correct statements are-----

- (1) I and II
- (2) II and III.
- (3) III and IV
- (4) I and IV

3. RQ is defined as-----

- (1) Volume of CO₂ evolved = Volume of CO₂ consumed
- (2) $\frac{\text{Volume of O}_2 \text{ consumed}}{\text{Volume of CO}_2 \text{ evolved}}$
- (3) $\frac{\text{Volume of CO}_2 \text{ evolved}}{\text{Volume of O}_2 \text{ consumed}}$
- (4) $\frac{\text{Volume of O}_2 \text{ evolved}}{\text{Volume of CO}_2 \text{ consumed}}$

4. Rare (R) species are those-----

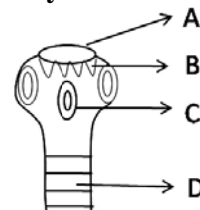
- (1) Which are in danger of extinction
- (2) With small population in certain geographical area
- (3) Which are found in larger geographical area
- (4) Which are found in silent valley of Kerala

5. Protein helping in opening of DNA double helix in front of replication fork is _____

- (1) DNA gyrase
- (2) DNA polymerase – I
- (3) DNA ligase
- (4) Restriction endonucleases

6. In the diagram given by the side, different parts are indicated by alphabets. Choose the answer in which these alphabets correctly match with the parts they indicate.

- (1) A-Rostellum, B-Hooks, C-Sucker, D-Proglottids
- (2) A-Suctorial mouth, B-Hooks, C- Sucker, D-Segments
- (3) A-Mouth, B-Tentacles, C-Sucker, D-Segments
- (4) A-Sucker, B- Hairs, C-Ring, D-Proglottids



7. There are 64 codons in the genetic dictionary-----

- (1) As there are 3 nonsense codons and 61 sense codons
- (2) There are 64 different types of tRNA
- (3) There are 64 amino acids to be coded
- (4) Genetic code has a triplet nature

- 8. Plants like *Ocimum sanctum* and *Ficus religiosa* are _____**
- (1) Medicinal plant species
 - (2) Lesser known food plants
 - (3) Traditional food crops
 - (4) Sacred species of plants
- 9. The Synthesis of ATP by oxidative phosphorylation is driven by the energy from**
- (1) Coenzyme –A
 - (2) Isomerization of cytochromes
 - (3) Formation of NADH
 - (4) Diffusion of protons from the intermediate space to the matrix of the mitochondrion
- 10. Sequence of cellular layers from the periphery towards the cortex in an old dicot stem is _____ .**
- (1) Epidermis, hypodermis, phellogen, phellogen
 - (2) Epidermis, phellogen, phellem, epidermis
 - (3) Epidermis, hypodermis, cortex, endodermis
 - (4) Epidermis, phellem, phellogen, phellogen
- 11. What is a gene bank ?**
- (1) It is a laboratory, where DNA of diverse plants is isolated and stored
 - (2) An institution, where seeds and vegetative parts of endangered species are preserved in a viable condition for future use
 - (3) It is a garden, where a variety of plants are grown
 - (4) Naturally reserved
- 12. In an attempt to impose the efficiency of photosynthesis and increase crop yield biotechnologists have focussed their efforts on the process of carbon fixation. What is the most logical strategy that would improve this process ?**
- (1) Genetically modify the plant to reduce the loss of carbon dioxide by eliminating respiration
 - (2) Genetically modify the plant to change it from one using C₄ carbon fixation to C₃ carbon fixation
 - (3) Modify the protein ribulose biphosphate (RuBP) carboxylase to increase its affinity to carbon dioxide
 - (4) Genetically modify the plant to increase the rate of photorespiration
- 13. A patient of diabetes mellitus excretes glucose in the urine even when he is kept on carbohydrate free diet. The most likely reasons for this is that _____ .**
- (1) Glycogen from muscles is released into the blood stream
 - (2) Amino acids are catabolised in the urea and form sugar
 - (3) Amino acids are discharged in the blood stream from liver
 - (4) Fats are catabolised to form glucose
- 14. Assertion (A): Long distance flow of photo assimilates in plants occurs through sieve tubes.**
- Reason(R): Mature sieve tubes have parietal cytoplasm and perforated sieve plates.**
- (1) Both A and R are true and R is the correct explanation of A
 - (2) Both A and R are true but R is not the correct explanation of A
 - (3) A is true but R is false
 - (4) Both A and R are false

- 15. Which one of the following statements is correct with reference to a test tube baby ?**
- (1) A prematurely born baby is reared in an incubator.
 - (2) Fertilization of the egg and growth of the embryo are effected in a large test tube.
 - (3) Fertilised egg is placed in the womb of the mother where the gestation is completed.
 - (4) Fertilization of the egg is effected in the female genital tract; it is then taken out and grown in a large test tube
- 16. Which of the following statements is accurate with regards to the process of meiosis in human males and females ?**
- (1) Male meiosis results in diploid sperm formation, female meiosis results in haploid egg formation
 - (2) Male meiosis results in four sperm cells, female meiosis results in one egg cell
 - (3) Male meiosis results in the formation of haploid sperms; female meiosis results in the formation of diploid egg
 - (4) Male meiosis results in the formation of double stranded chromosome; female meiosis results in single-stranded chromosomes
- 17. In which of the following groups, all are polysaccharides?**
- (1) Glycogen, cellulose and starch
 - (2) Glycogen, sucrose and maltose
 - (3) Sucrose, glucose and fructose
 - (4) Maltose, lactose and fructose
- 18. The sequence of nitrogen bases in a particular region of the coding strand of a DNA molecule was found to be CATGTTTATCGC. What would be the sequence of nitrogen bases in the mRNA that is synthesized by the corresponding region of the non-coding strand in that DNA ?**
- (1) CAU, GUU, UAU, CGC
 - (2) CAA, GAA TAU, GUC
 - (3) CUA, CAA, AUA, GCC
 - (4) GTA, CAA, ATA, GCC
- 19. In a photoactive plant during day time, the following ionic flux of guard cell directly involves the expenditure of energy.**
- (1) Outward movement of malate
 - (2) Inward movement of potassium ions
 - (3) Outward movement of protons
 - (4) Inward movement of chloride
- 20. What prevents the atria and the ventricles from contracting at the same time ?**
- (1) Pace-maker cells located in the atria fire before the pace-maker cells in the ventricles
 - (2) It takes time for epinephrine to diffuse from the atria to the ventricles to trigger contraction
 - (3) The electrical signal generated in the right atrium is delayed at the AV – node before passing to the ventricles
 - (4) The Na⁺ channels responsible for initiating ventricular contraction are inactivated and need to return to activated configuration to be electrically stimulated
- 21. Arrange the following respiratory volumes in the order of increasing volume;**
A – Tidal volume, B – Residual volume, C – Expiratory reserve volume, D – Vital capacity
- (1) A < B < C < D
 - (2) A < C < B < D
 - (3) A < D < C < B
 - (4) A < D < B < C
- 22. With regards to large intestine which of the following statements are correct ?**
- I. The longer food residue remains in the large intestine, the greater the quantity of water absorbed.

- II. It secretes acidic mucus that facilitates stool passage through the intestine.
- III. Stretch receptors of the walls are stimulated as a result of mass movements.
- IV. Defecation occurs when relaxation of the smooth muscle of the internal anal sphincter and relaxation of the skeletal muscle of the external anal sphincter occurs.

- (1) I and II
- (2) I, II and III
- (3) I, III and IV
- (4) I, and IV

23. Many present day female contraceptive drugs mimic by supplying which function(s) primarily by which usually

- (1) The developing follicle; progesterone and oestrogen; blocking FSH/LH release; prevents ovulation
- (2) The corpus luteum; progesterone and oestrogen; blocking FSH/LH release; prevents ovulation
- (3) The corpus luteum; blocking FSH/LH release oestradiol and progesterone; prevents luteinisation (formation of corpus luteum)
- (4) The proliferative phase; oestradiol and progesterone; blocking FSH/LH release; prevents ovulation

24. Radial symmetry, in general, is observed in

- A – Flat worms; B – Coelenterates; C – Nematodes; D – Annelids; E – Echinoderms
- (1) B, C and E
- (2) A, B, C and E
- (3) B and E
- (4) A, C and E

25. Ultrafiltration occurs in the glomerulus when

- (1) Hydrostatic pressure exceeds osmotic pressure
- (2) Osmotic pressure exceeds hydrostatic pressure
- (3) Capsular hydrostatic pressure exceeds glomerular hydrostatic pressure
- (4) Sum of colloidal osmotic pressure and capsular pressure remains less than glomerular hydrostatic pressure

26. An enzyme that is common to C₃, C₄, and CAM plants during carbon fixation is

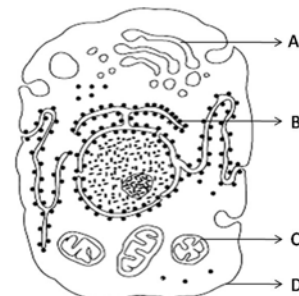
- (1) Phospho-enol pyruvate carboxylase
- (2) Pyruvate decarboxylase
- (3) Ribulose biphosphate carboxylase
- (4) Phospho-glycero kinase

27. Populations of peppered moths (*Biston betularia*) of England changed from 1% dark and 99% light individuals to 99% dark and 1% light individuals between 1848 and 1898. The selective agent causing the change was _____ .

- (1) Humans
- (2) Toxins from smoke
- (3) Birds
- (4) Tree bark

28. In the diagram given below, which structure performs a function similar to a function of the human lungs ?

- (1) A
- (2) B
- (3) C
- (4) D

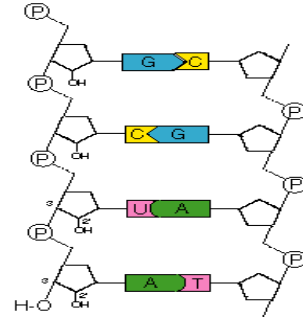


29. If you place an animal cell in pure water, which of the following will happen ?

- (1) Water molecules will move out of the cell, and it will shrink and die from lack of water
- (2) There will be no change
- (3) Water molecules will move into the cell, and it will swell and may burst
- (4) The entire cell's energy will be used to prevent the movement of water molecule into the cell

30. The diagram below represents a portion of an organic molecule. This molecule controls cellular activity by directing the synthesis of

- (1) Carbohydrates
- (2) Fats
- (3) Minerals
- (4) Proteins



31. Plants do not store carbohydrates as glucose, because it _____ .

- (1) Dissolves in water and alters osmotic balance
- (2) Attracts insect herbivores
- (3) Is an unstable molecule
- (4) Would replace ribose in DNA synthesis

32. It is important that centromere not divide until the end of metaphase because it _____ .

- (1) Contains the genes that control prophase
- (2) Holds the replicated DNA molecules together
- (3) Is connected to the nuclear membrane
- (4) Produces the spindle fibres

33. Spontaneous generation of bacteria from decomposing broth was disproved in 1860 by _____ .

- (1) Francesco Redi
- (2) Charles Darwin
- (3) Louis Pasteur
- (4) Marie Curie

34. Oxytocin is released by the pituitary in response to;

- (1) Foetal movements
- (2) Dislodging of the mucus plug from the cervix
- (3) Uterine contractions
- (4) Secretions from placenta

35. This group of animals exhibits dual intracellular as well as extracellular digestion:

- (1) Ciliate
- (2) Sponges
- (3) Cnidarian
- (4) Nematode

36. Blood vessels near the wound dilate and become more permeable in response to which material released from the damaged cells?

- (1) Interferons
- (2) Histamine
- (3) Heparin
- (4) Antibodies

46. Bryophytes are dependent on water because

- (1) Archegonium has to remain filled with water for fertilization
- (2) Water is essential for fertilization for their homosporous nature
- (3) Water is essential for their vegetative propagation
- (4) Sperms can easily reach up to egg in the archegonium

47. The following floral formula describes the flower of members belonging to the family



- (1) Liliaceae
- (2) Musaceae
- (3) Apocynaceae
- (4) Malvaceae

48. Which class of protein is synthesized during spermiogenesis ?

- (1) Histones
- (2) Acidic proteins
- (3) Protamines
- (4) Globulins

49. The Wobble effect is the

- (1) Lack of precision with regard to the third base in the codon and anticodon
- (2) Instability of the DNA molecule when unwound
- (3) Instability of pairing when a purine pairs with another purine
- (4) Undulating movements of mRNA

50. $2n = 20$ in a cell which is about to undergo meiosis. What shall be the total number of chromatids in each daughter cell after meiosis I ?

- (1) 5
- (2) 10
- (3) 20
- (4) 40

51. Select the correct pathway of absorption of water.

- (1) Soil water → root hair → passage cells → cortical cells → pericycle → xylem
- (2) Soil water → root hair → pericycle → cortical cells → xylem → passage cells
- (3) Soil water → root hair → pericycle → cortical cells → passage cells → xylem
- (4) Soil water → root hair → cortical cells → passage cells → pericycle → xylem

52. Cells of human blood can be arranged in a series of increasing number per cubic millimetre of blood as follows;

- (1) Erythrocytes < lymphocytes < platelets < basophils < neutrophils.
- (2) Basophils < lymphocytes < neutrophils < platelets < erythrocytes.
- (3) Lymphocytes < basophils < platelets < neutrophils < erythrocytes.
- (4) Neutrophils < basophils < lymphocytes < platelets < erythrocytes.

53. The natural function of a restriction enzyme is to

- (1) Cut foreign DNA
- (2) Remove introns from the RNA transcript
- (3) Remove exons from the RNA transcript
- (4) Facilitate mRNA synthesis from nucleotides

54. Match the different types of spores listed in the column-I with the names given under column-II; Choose the correct answer which gives the correct combination of the alphabets of the two columns.

	Column- I		Column -II
A	Ground nut	P	<i>Cicer arietinum</i>
B	Jower	Q	<i>Helianthus annus</i>
C	Rice	R	<i>Sorghum vulgare</i>
D	Sunflower	S	<i>Oryza sativa</i>
		T	<i>Arachis hypogea</i>

- (1) A—Q, B—S, C—T, D—P
(3) A—T, B—S, C—P, D—Q

- (2) A—T, B—R, C—S, D—Q
(4) A—S, B—T, C—S, D—P

55. Match the different types of spores listed in their column-I with the names given under column-II; Choose the correct answer which gives the correct combination of the alphabets of the two columns.

	Column- I		Column -II
A	Ascospore	P	Diatoms
B	Endospore	Q	<i>Agaricus</i>
C	Auxospore	R	Bacteria
D	Basidiospore	S	Yeast
		T	<i>Nephrolepis</i>

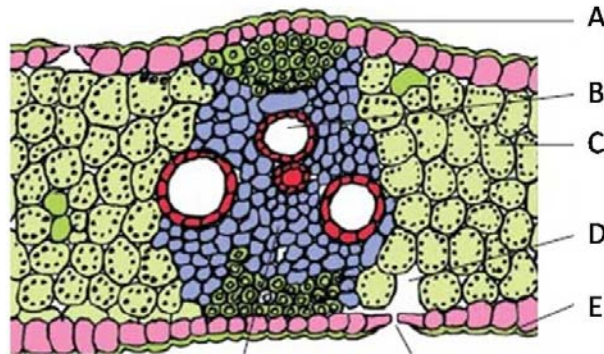
- (1) A—S, B—P, C—R, D—Q
(3) A—S, B—T, C—P, D—Q

- (2) A—S, B—R, C—P, D—Q
(4) A—S, B—P, C—T, D—Q

56. Tremors, bradykinesia, shuffling gait and progressive rigidity of limbs are due to degeneration of brain neurons involved in movement control that use the neurotransmitter

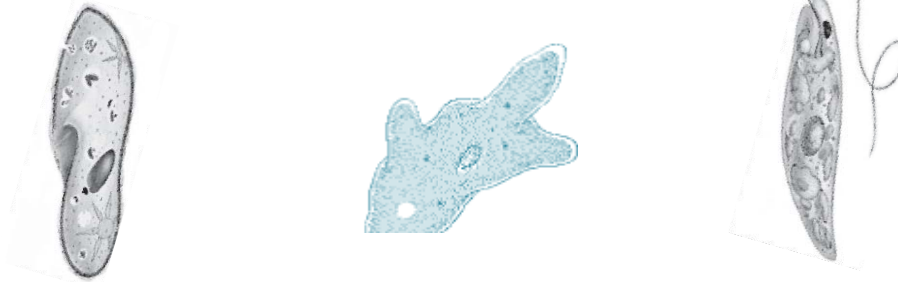
- (1) GABA (2) Dopamine
(3) Acetyl choline (4) Epinephrine

57. In the given diagram of the T/S of the monocot leaf, certain parts have been indicated by alphabets. Choose the answer in which these alphabets have been correctly matched with the parts which they indicate.



- (1) A - adaxial epidermis, B - xylem, C - mesophyll, D - sub-stomatal cavity, E - abaxial surface
(2) A - abaxial epidermis, B - xylem, C - mesophyll, D - sub-stomatal cavity, E - adaxial surface
(3) A - adaxial epidermis, B - xylem, C - mesophyll, D - abaxial surface, E - sub-stomatal cavity
(4) A - adaxial epidermis, B - mesophyll, C - xylem, D - sub-stomatal cavity, E - abaxial surface

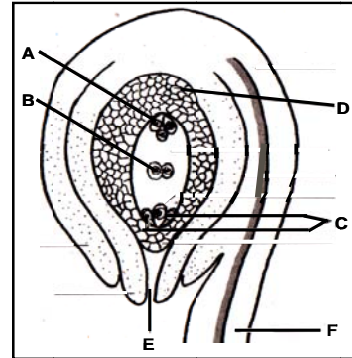
58. The illustration below shows three types of unicellular organisms commonly found in pond water. Based on the illustration which of the following can be used to separate these organisms into three different groups?



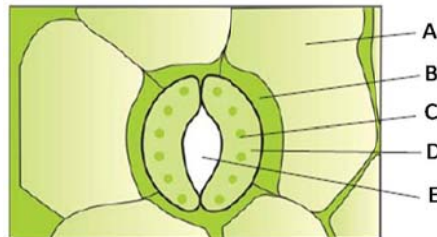
- (1) Length of life span
- (2) Method of movement
- (3) Mode of respiration
- (4) Presence of a nucleus

59. Identify the parts labeled A, B, C, D, E and F in the following diagram

- (1) A = Polar Nuclei, B = Antipodals, C = Nucellus, D = Synergids, E = Funicle, F = Micropyle
- (2) A = Synergids, B = Polar Nuclei, C = Antipodals, D = Funicle, E = Micropyle, F = Nucellus
- (3) A = Antipodals, B = Synergids, C = Polar nuclei, D = Funicle, E = Micropyle, F = Nucellus
- (4) A = Antipodals, B = Polar Nuclei, C = Synergids, D = Nucellus, E = Micropyle, F = Funicle



60. The diagram of the stomata is given below; different parts are indicated by alphabets: choose the answer in which these alphabets have been correctly matched with the parts they indicate.



- (1) A-Epidermal cell, B- Stomatal aperture, C-Chloroplast, D-Guard cell, E- Subsidiary cell
- (2) A-Epidermal cell, B-Subsidiary cell, C- Guard cell, D- Chloroplast, E-Stomatal aperture
- (3) A-Epidermal cell, B-Subsidiary cell, C-Chloroplast, D-Guard cell, E-Stomatal aperture
- (4) A-Subsidiary cell, B- Epidermal cell, C-Chloroplast, D-Guard cell, E-Stomatal aperture