

SAMPLE PAPER

2019 AIIMS

BIOLOGY

SET-1

Roll No.

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General Instructions

- (i) This test consists of 60 questions.
- (ii) Each question is allotted 1 mark for correct response.
- (iii) $-1/3$ mark will be deducted for indicating incorrect response of each question. No credit will be given for the questions not answered or marked for review .
- (iv) The duration of the examination shall be $3\frac{1}{2}$ hours.

1. Photorespiration, usually occurs in
 - (i) one cell organelle
 - (ii) two cell organelles
 - (iii) three cell organelles
 - (iv) four cell organelles.
2. Coconut's husk fibre, coir of commerce is extracted from
 - (i) epicarp
 - (ii) mesocarp
 - (iii) endocarp
 - (iv) all of these.
3. Adults of *Wuchereria bancrofti* attacks
 - (i) excretory system
 - (ii) nervous system
 - (iii) digestive system
 - (iv) lymphatic system



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4. Which of the following Phyla are included in Enterozoa?
- Annelida, Mollusca, Porifera
 - Echinodermata, Hemichordata, Porifera
 - Mollusca, Arthropoda, Hemichordate
 - Porifera, Mollusca,, Arthropoda
5. In *Entamoeba histolytica*, the presence of chromatid bodies is characteristic of
- precystic stage
 - mature quadrinucleate stage
 - trophozoite stage
 - mature binucleate stage.
6. Which one of the following is a matching pair of certain organisms (s) and the kind of association ?
- Shark and sucker fish-commensalism
 - Alage and fungi in lichens-mutualism
 - Orchids growing on tree-parasitism
 - Cuscuta (dodder) growing in other flowering plants-epiphytism

7. Which one of the following correctly represents the manner of replication of DNA?



8. Unidirectional transmission of a nerve impulse through nerve fibre is due to the fact that
- nerve fibre is insulated by a medullary sheath
 - sodium pump starts operating only at the cyton and then continues into the nerve fibre
 - neurotransmitters are released by dendrites and not axon endings
 - neurotransmitters are released by the axon endings and not by dendrites.
9. Which one of the following categories of organisms do not evolve oxygen during photosynthesis?
- Red algae
 - Photosynthetic bacteria
 - C₄ plants with Kranz anatomy
 - Blue green algae



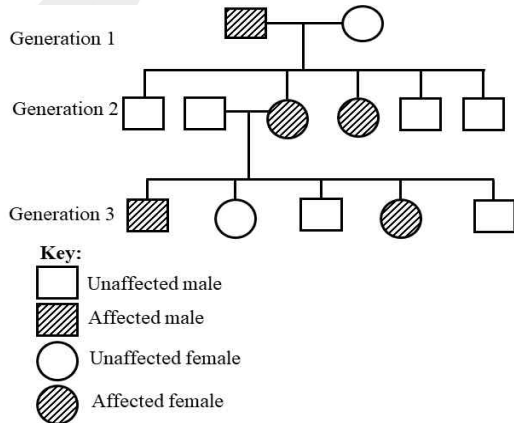
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10. Severe Acute Respiratory Syndrome (SARS)

- (i) is caused by a variant of *Pneumococcus pneumoniae*
- (ii) is caused by a variant by a variant of the common cold virus (corona virus)
- (iii) is an acute form of asthma
- (iv) affect non-vegetarians much faster than the vegetarians

11. Given below is a pedigree chart showing the inheritance of a certain sex-linked trait in humans.



The trait traced in the above pedigree chart is

- (i) dominant X-linked
- (ii) recessive X-linked
- (iii) dominant Y-linked
- (iv) recessive Y-linked

12. Which one of the following four secretions is correctly matched with its source, target and nature of action?

	Secretion	Source	Target	Action,
(i)	Gastrin	Stomach	Oxyntic cells	Production of HCl
(ii)	Inhibin	Sertoli cells	Hypothalamus	Inhibition of secretion of gonadotropin releasing hormone
(iii)	Enterokinase	Duodenum	Gall bladder	Release of bile juice
(iv)	Atrial Natriuretic Factor (ANF)	Sino atrial nodes (SAN) M-cell of Atria	Juxta-glomerular apparatus (JGA)	Inhibition of release of renin

13. Which one of the following events is correctly matched with the time period in a normal menstrual cycle?

- (i) Release of egg : 5th day
- (ii) Endometrium regenerates : 5 – 10 days
- (iii) Endometrium secretes nutrients for implantation : 11 – 18 days
- (iv) Rise in progesterone level : 1 – 15 days

14. Which one of the following animals is correctly matched with its one characteristic and the taxon?

Animal	Characteristic	Taxon
(i) Millipede	Ventral nerve cord	Arachnida
(ii) Duckbill platypus	Oviparous	Mammalia
(iii) Silverfish	Pectoral and pelvic fins	Chordate
(iv) Sea anemone	Triploblastic	Cnidaria

15. Plants of which one of the following groups of genera are pollinated by the same agency?

- (i) *Triticum, Cocos, Mangifera*
- (ii) *Ficus, kigelia, Casuarina,*
- (iii) *Salvia, Morus, Euphorbia*
- (iv) *Bombox, Butea, Bauhinia*

16. Somaclonal variation is seen in

- (i) tissue culture grown plants
- (ii) apomicts
- (iii) polyploids
- (iv) vegetatively propagated plants.

17. Gene which suppresses other gene's activity but does not lie on the same locus is called as

- (i) epistatic
- (ii) supplementary
- (iii) hypostatic
- (iv) codominant.

18. Which among the following is a rootless plants?

- (i) *Nymphaea*
- (ii) *Sagittaria*
- (iii) *Ceratophyllum*
- (iv) *Vallisneria*

19. Hydroponics is

- (i) nutrient less culture
- (ii) water less culture
- (iii) soilless culture
- (iv) non of these.

20. Which part of the world has a high density of organisms?

- (i) Deciduous forests
- (ii) Grasslands
- (iii) Tropical rain forests
- (iv) Savannahs

21. Which of the following sets includes all bacterial disease?
- Cholera, typhoid, mumps
 - Tetanus, tuberculosis, measles
 - Malaria, mumps, poliomyelitis
 - Diphtheria, leprosy, plague
22. Phytohormones are
- hormones regulating growth from seed to adulthood
 - growth regulators synthesised process
 - hormones regulating flowering
 - hormones regulating secondary growth.
23. The bacteria which attack dead animals are
- first link of the food chain and are known as primary producers
 - second link of the food chain they are herbivorous
 - third link of the food chain and are tertiary consumers
 - the end of food chain and are decomposers.
24. Which of the following is true regarding the given electron transport chain?
 $\text{CoQ} \rightarrow \text{Cyt } c \rightarrow \text{Cyt } aa_3 \rightarrow \text{O}_2$
- $\text{CoQ} \rightarrow \text{Cyt } c$ is H^+ absorbing site.
 - $aa_3 \rightarrow \text{O}_2$, H^+ yielding site
 - $\text{CoQ} \rightarrow \text{Cyt } c$ is H^+ yielding site and $aa_3 \rightarrow \text{O}_2$ is H^+ absorbed site.
 - No H^+ is absorbed or released.
25. The first bioherbicide developed in 1981 was based on
- Phytophthora palmivora*
 - Phytophthora infestans*
 - Bacillus thuringiensis*
 - Azadirachta indica*.
26. Specific proteins responsible for the flow of materials and information into the cell are called
- membrane receptors
 - carrier proteins
 - integral proteins
 - none of these
27. What is the effect of GnRH produced by hypothalamus?
- Stimulates the synthesis and secretion of androgens
 - Stimulates secretion of milk in mammary glands
 - Stimulates foetal ejection reflex
 - Stimulates synthesis of carbohydrates from non-carbohydrates in liver



28. CD-4 receptor is associated with

- (i) AIDS
- (ii) cancer
- (iii) malaria
- (iv) pneumonia.

29. Cyclic photophosphorylation involves

- (i) PS I
- (ii) PS II
- (iii) PS I and PS II
- (iv) P₆₈₀.

30. Match the following columns and select the correct option.

Column	Column II
(A) <i>Panthera tigris</i>	(A) Mango
(B) <i>Mangifera indica</i>	(B) Common Indian frog
(C) <i>Musca domestica</i>	(C) Cockroach
(D) <i>Periplaneta americana</i>	(D) Tiger
(E) <i>Rana tigerina</i>	(E) House fly

(i) A-(ii), B-(v), C-(i), D-(iii), E-(iv)
(ii) A-(iv), B-(i), C-(v), D-(iii), E-(ii)
(iii) A-(ii), B-(v), C-(iii), D-(i), E-(iv)
(iv) A-(iv), B-(i), C-(v), D-(ii), E-(iii)

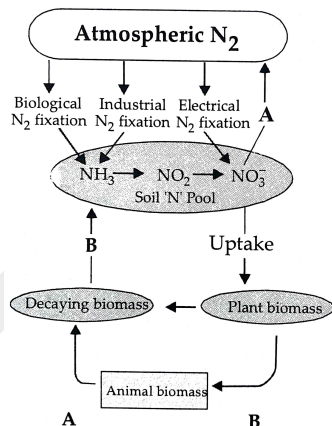
31. Which of the following statements is correct ?

- (A) Common cold—Droplet Infection.
 - (B) Typhoid—Contaminated food & water.
 - (C) AIDS—Shaking hands.
 - (D) Ringworm—Using infected towels.
- (i) 1 and 2
(ii) 3 and 4
(iii) 1 and 3
(iv) 1, 2 and 4

32. Which of the following is correct?

- (i) Henking discovered the small Y-chromosome.
- (ii) *Drosophila* also shows XX-XY sex determination like human.
- (iii) Birds have ZZ-ZW sex determination, where females are ZZ & males are ZW.
- (iv) Grasshoppers show XX-XY sex determination.

33. In the given diagram A and B represent



- (i) Mineralisation Demineralisation
- (ii) Ammonification Denitrification
- (iii) Denitrification Ammonification
- (iv) Denitrification Mineralisation

34. During muscular contraction, which of the following events occurs?

- (A) H-zone disappears
 - (B) A bond widens
 - (C) I band reduces in width
 - (D) Width of A band is unaffected
 - (E) M line and Z line come closer.
- (i) (i), (iii), (iv) and (v)
 - (ii) (i), (ii), and (v)
 - (iii) (ii), (iv) and (v)
 - (iv) (i), (ii), and (iii).

35. Kranz anatomy is usually associated with

- (i) C₃ plants
- (ii) C₄ plants
- (iii) CAM plants
- (iv) C₃ – C₄ intermediate plants.

36. Catecholamine in a normal person induces

- (i) intense salivation
- (ii) alertness
- (iii) decrease in heart beat
- (iv) excessive urination.

37. What is the oxidation state of iron in haemo-globin?

- (i) Fe⁻
- (ii) Fe²⁺
- (iii) Fe³⁺
- (iv) Fe⁴⁺

38. Carbon dioxide (CO_2) diffuses into blood from tissue. site and passes to alveolar site in the form of
- bicarbonate; 70%
 - bicarbonate; 20–25%
 - carbaminohaemoglobin; 60–70%
 - carbaminohaemoglobin; 7%.

39. Which of the following is a palindromic sequence?

- | | |
|-----------------------------------|--------------------------------------|
| (i) 5'–CGTATG–3'
3'–GCATA–5' | (iii) 5'– GAATTC–3'
3'– CTTAAG–5' |
| (ii) 5'–CGAATG–3'
3'–CGAATG–3' | (iv) 5'– GACTAC–3'
3'– TACGAC–5' |

40. Match the source gland with its respective hormone and function and function and select the correct option.

	Source gland	Hormone	Function
(i)	Anterior pituitary	Oxytocin	Contraction of uterine muscles
(ii)	Anterior pituitary	Vasopressin	Induces reabsorption of water in nephron
(iii)	Thymus	Thymosin	Proliferation of T-lymphocytes
(iv)	α -cells of islets of Langerhans	Glucagon	Uptake of glucose into the cell.

Directions : In the following questions (41-60), a statement of assertion is followed by a statement of reason. Mark the correct choice as :

- If both assertion and reason are true and reason is the correct explanation of assertion.
- If both assertion and reason are true but reason is not the correct explanation of assertion.
- If assertion is true but reason is false.
- If both assertion and reason are false.

41. **Assertion :** Mast cells in the human body release excessive amounts of inflammatory chemicals which cause allergic reactions.

Reasons : Allergens in the environments on reaching human body stimulate mast cells in certain individuals.

42. **Assertion :** The technique of micropropagation has been used to introduce variation in the offspring:

Reasons : It is not possible to generate virus free plants by micropropagation.

43. **Assertion :** Cephalisation is advantageous to an animal.

Reasons : Cephalisation improves the appearance of an animal.

44. **Assertion :** Deficiency symptoms of N, K and Mg are first visible in the senescent leaves.

Reasons : Biomolecules containing these elements are broken down in the older leaves making these elements available for mobilising to younger leaves.



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45. **Assertion** : One codon may code for more than one amino acid.
Reasons : A codon is degenerate and ambiguous.
46. **Assertion** : The enlarged Q and R waves indicate myocardial infarction.
Reasons : The ORS Complex represents ventricular repolarisation.
47. **Assertion** : *Saccharomyces cerevisiae* produces acetic acid.
Reasons : *Trichoderma polysporum* produces blood cholesterol lowering agent.
48. **Assertion** : In a regular medical examination of a small population, a 35 years old lady was found to have higher levels of oestrogens. progesterone in her blood.
Reasons : The lady is 12 week pregnant.
49. **Assertion** : On touching radial artery in our wrist, we feel pulse waves.
Reasons : The heart beats originate from the sinoatrial node (SA node) on the right atrium.
50. **Assertion** : There are 34 biodiversity hotspots in the world.
Reasons : High level of species richness is a criteria for selection of a biodiversity hotspot.
51. **Assertion** : In a terrestrial ecosystem, detritus food chain is the major conduit for energy flow.
Reasons : Solar energy is the direct source for energy supply in a detritus food chain.
52. **Assertion** : Protons or hydrogen ions produced by photolysis of water accumulate in the lumen of thylakoids.
Reasons : Photolysis of water takes place in inner membrane of thylakoid.
53. **Assertion** : In angiosperms, transport of food and water is more efficient than gymnosperms and pteridophytes.
Reasons : In angiosperms longitudinally arranged sieve elements and vessels with perforated end walls are present.
54. **Assertion** : Sporozoites of malarial parasite enter in the human body due to biting of freshly born female Anopheles mosquito, whose mother was a carrier of malarial parasite.
Reasons : Male and female gametocytes of malarial parasites are formed in the human intestine.
55. **Assertion** : In cockroach respiratory gases directly comes in contact with the various organs of the body.
Reasons : Cockroaches do not have respiratory pigment.
56. **Assertion** : Shrinkage of the protoplast of a cell occurs under the influence of hypertonic solution.
Reasons : Hypertonic solution causes plasmolysis.
57. **Assertion** : Mammary glands are apocrine glands.
Reasons : The distal part containing secretory granules break down and leaves as a secretion.



58. **Assertion** : Protandry and protogyny ensures cross fertilization.

Reasons : Cross fertilization introduces variation in progeny.

59. **Assertion** : Dark reaction occurs only at night in the stroma of chloroplast.

Reasons : CO_2 fixation occurs only during C_3 cycle.

60. **Assertion** : Java Apeman, Peking man and Heidelberg man are the fossils of Homo erectus.

Reasons : Homo erectus evolved from Homo habilis.



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