Aakash Institute
Premier Institute in India for Medical Entrance Exams.
Aakash IIT-JEE
(Division of Aakash Educational Services Ltd.)
Regd. Office : Aakash Tower, Plot No. 4, Sector-11, Dwarka, New Delhi-110075
Ph. : 011-47623456 Fax : 011-47623472

43957
[Q. Booklet Number]

ANSWERS & HINTS
for
WBJEE - 2011

by Aakash Institute & Aakash IIT-JEE

MULTIPLE CHOICE QUESTIONS
SUB : BIOLOGY

1. Glucose and amino acids are reabosorbed in the
(A) proximal tubule (B) distal tubule (C) collecting duct (D) loop of Henle
Ans : (A)
Hints : Glucose and amino acids are reabsorbed in the proximal tubule of nephron.

2. The amount of CSF in the cranial cavity
(A) 500 ml (B) 140 ml (C) 1 litre (D) 1.5 ml
Ans : (B)
Hints : The amount of CSF in the cranial cavity is 140 ml.

3. Which one is imino acid?
(A) Pepsin (B) Proline (C) Cysteine (D) Renin
Ans : (B)
Hints : Proline and hydroxyproline are imino acids.

4. The main difference between Gram positive and Gram negative bacteria is
(A) Cell membrane (B) Cell wall (C) Ribosome (D) Mitochondria
Ans : (B)

5. ACTH is secreted from
(A) Adrenal cortex (B) Pituitary (C) Adrenal Medulla (D) Thyroid
Ans : (B)
Hints : ACTH is secreted from anterior pituitary

6. Which of the following is the correct pathway for propagation of cardiac impulse?
(A) SA node $\rightarrow$ AV node $\rightarrow$ Bundle of His $\rightarrow$ Purkinje fibers
(B) AV node $\rightarrow$ Bundle of His $\rightarrow$ SA node $\rightarrow$ Purkinje fibers
(C) SA node $\rightarrow$ Purkinje fibers $\rightarrow$ AV node $\rightarrow$ Bundle of His
(D) Purkinje fibers $\rightarrow$ AV node $\rightarrow$ SA node $\rightarrow$ Bundle of His
Ans : (A)
Hints : Cardiac impulse is propagated in the following way : SA node $\rightarrow$ Av node $\rightarrow$ Bundle of His $\rightarrow$ Purkinje fibres.

7. Inner surface of the bronchi, bronchioles and fallopian tubes are lined by
(A) cubical epithelium (B) columnar epithelium (C) squamous epithelium (D) ciliated epithelium
Ans : (D)
Hints : Ciliated epithelium is found in inner surface of bronchi, bronchioles and fallopian tubes

8. Electric potential of the brain is recorded by
(A) CT Scan (B) Sphygmomanometer (C) ECG (D) EEG
Ans : (D)
Hints : Electrical potential of brain is recorded by EEG

9. Which of the following is related to humoral immunity?
(A) T-lymphocyte (B) B-lymphocyte (C) I-lymphocyte (D) P-lymphocyte
Ans : (B)
Hints : Humoral immunity is due to B-lymphocyte because it secretes antibody in the blood plasma.

10. Fertilization occur in
(A) Uterus (B) Ureter (C) Vagina (D) Fallopian tube
Ans : (D)
Hints : Fertilization occurs in fallopian tube at the junction of ampulla and isthmus.

11. The Gastrin is secreted from
(A) Intestine (B) Stomach (C) Pancreas (D) Rectum
Ans : (B)
Hints : Gastrin hormone is secreted from "G-cells" of stomach.

12. The cause of cretinism is
(A) Hypothyroidism (B) Hypoparathyroidism (C) Hyperthyroidism (D) Hyperparathyroidism
Ans : (A)
Hints : Cretinism is caused by hyposecretion of thyroxine in children.

13. Which of the following is a minerelocorticoid?
(A) Testosterone (B) Progesterone (C) Adrenalin (D) Aldosterone
Ans : (D)
Hints : Aldosterone is secreted from adrenal cortex and controls RAAS. mechanism.

14. The part of the brain where the centre for hunger and thirst is located is
(A) Cerebrum (B) Hypothalamus (C) Cerebellum (D) Medulla Oblongata
Ans : (B)
Hints : Hypothalamus is the centre for hunger and thirst.

15. The reflex arc, which is made of two neurones is known as
(A) Monosynaptic reflex arc (B) Disynaptic reflex arc
(C) Polysynaptic refles arc (D) Asynaptic reflex arc
Ans : (A)
Hints : Monosynaptic reflex are has two neurons sensory and motor, which forms one synapse in CNS.

16. The lactase hydrolyzes lactose into
(A) Glucose (B) Glucose and galactose (C) Fructose (D) Glucose and fructose
Ans : (B)
Hints : Lactose $\rightarrow$ Glucose + Galactose

17. In 24 hours, total glomerular filtrate formed in human kidney is
(A) 1.7 litres (B) 7 litres
(C) 17 litres (D) 170 litres
Ans : (D)
Hints : GFR is 120 ml/min, so, approx. 170 litre ultra fitrate is produced in 24 hrs.

18. When the oxygen supply to the tissue is inadequate, the condition is
(A) Dyspnea (B) Hypoxia
(C) Asphyxia (D) Apnea
Ans : (B)
Hints : Inadequate supply of oxygen to the tissue is called hypoxia

19. Which one of the following is not a second messenger in hormone action?
(A) Calcium (B) Sodium (C) cAMP (D) cGMP
Ans : (B)

Hints : Sodium is not a secondary messenger in hormone action.

20. The name of the pace maker of the heart is
(A) Lymph node (B) S.A. node (C) Juxtaglumerular apparatus (D) Semilunar valve
Ans : (B)
Hints : Pace maker of heart is SA node.

21. What is a genophore?
(A) DNA in prokaryotes (B) DNA and RNA in prokaryotes
(C) DNA and protein in prokaryotes (D) RNA in prokaryotes
Ans : (B)
Hints : Genophore = DNA + RNA

22. Example of a typical homopolysaccharide is
(A) Ligin (B) Suberin (C) Inulin (D) Starch
Ans : (C)
Hints : Inulin is typical homopolysaccharide and is a polymer of fructose.

23. Who wrote the famous book 'Origin of Species'?
(A) Lamarck (B) Darwin (C) De Vries (D) Mendel
Ans : (B)
Hints : The book 'Origin of species' was written by Darwin.

24. Polyploid derived from two different species is called
(A) Autopolyploid (B) Triploid (C) Allopolyploid (D) Monoploid
Ans : (C)

25. Electrons used in Electron Microscope are of the wavelength
(A) 0.05 Å (B) 0.15 Å (C) 0.25 Å (D) 0.30 Å
Ans : (A)

26. Biolistic technique is used in
(A) Tissue culture process (B) Gene transfer process
(C) Hybridization process (D) Germplasm conservation process
Ans : (B)
Hints : Biolistic technique is a direct method of gene transfer.

27. Example of water soluble plant pigment is
(A) Chlorophyll-a (B) Chlorophyll-b (C) Anthocyanin (D) Xanthophyll
Ans : (C)
Hints : Anthocyanin is a water soluble pigment.

28. Structural element of Chromatin is
(A) Histone (B) Acid protein and DNA (C) Nuclear matrix (D) Nucleosomes
Ans : (D)
Hints : The structural element of chromatin is Nucleosomes.

29. Inulin is a polymer of
(A) Glucose (B) Galactose (C) Fructose (D) Arabinose
Ans : (C)

30. Mannitol is
(A) Amino Acid (B) Amino alcohol (C) Sugar alcohol (D) Sugar acid
Ans : (C)

31. A flower which can be divided into two equal halves by only one plane is
(A) Zygomorphic (B) Actinomorphic (C) Regular (D) Perfect
Ans : (A)

32. Pieces of plant tissue used in tissue culture is called
(A) Explant (B) Somaclone (C) Inoculant (D) Clone
Ans : (A)

33. VAM is
(A) Symbiotic bacteria (B) Saprophytic bacteria (C) Saprophytic fungi (D) Symbiotic fungi
Ans : (D)
Hints : VAM (Endomycorrhizae) represent symbiotic association between fungi and roots of higher plants.

34. Ovule integument gets transformed into
(A) seed (B) fruit wall (C) seed coat (D) cotyledons
Ans : (C)
Hints : Outer integument transforms into testa where as the inner integument into tegmen.

35. Acid rain is caused by
(A) NO_2 (B) SO_2 (C) SO_3 (D) CO_2
Ans : (B)

36. Which one of the following bacterium is used for production of transgenic plants
(A) *Escherichia coli* (B) *Bacillus thuringiensis*
(C) *Staphylococcus aureus* (D) *Agrobacterium tumefaciens*
Ans : (D)

37. A plant cell becomes turgid due to
(A) Plasmolysis (B) Exosmosis (C) Endosmosis (D) Electrolysis
Ans : (C)
Hints : Endosmosis leads to diffusion of water into the cell.

38. Restriction enzymes are used to cut
(A) Single stranded RNA (B) Double stranded DNA (C) Single stranded DNA (D) Double stranded RNA
Ans : (B)
Hints : Restriction endunuclease is used to cut dsDNA at palindromic sequence.

39. Spindle fibre is made up of
(A) Humulin (B) Intermediate filament
(C) Flagellin (D) Tubulin
Ans : (D)

40. Edible part of Mushroom is
(A) Basidiocarp (B) Primary mycelium (C) Fungal hyphae (D) Basidiospores
Ans : (A)

41. Calcium level decreases in the blood due to hyposecretion of
(A) Parathyroid hormone (B) Calcitonin (C) Thyroxine (D) Adrenaline
Ans : (A)
Hints : Hyposecretion of PTH causes decrease in the level of calcium in the blood.

42. Kupffer's cells are
(A) Phagocytic (B) Actin (C) Myosin (D) Fibrin
Ans : (A)
Hints : Kupffer's cells are phagocytic cells of liver.

43. Which centre is stimulated during increase in body temperature
(A) Anterior hypothalamus (B) Posterior hypothalamus (C) Limbic system (D) Red nucleus
Ans : (A)
Hints : Anterior hypothalamus is stimulated during increase in body temperature.

44. Name the following having oxygen storing capacity
(A) Myoglobin (B) Prophase II (C) Anaphase I (D) Metaphase II
Ans : (A)
Hints : Myoglobin present in muscles stroes oxygen

45. Longest phase of meiosis
(A) Prophase I (B) Prophase II (C) Anaphase I (D) Metaphase II
Ans : (A)

46. Tetany is caused by
(A) Hyperparathyroidism (B) Hypoparathyroidism (C) Hyperthyroidism (D) Hypothyroidism
Ans : (B)

47. Which the following is a gastrointestine hormone?
(A) Prolactin (B) Enterokinase (C) GH (D) FSH
Ans : (B)

48. Name the hormone that has no role in menstruation.
(A) LH (B) FSH (C) GH (D) TSH
Ans : (D)

49. Which of the following substances can cure Parkinson's disease?
(A) GABA (B) Acetylcholine (C) Dopamine (D) Glutamic acid
Ans : (C)
Hints : Dopamine deficiency causes parkinson's disease.

50. Movement of tongue muscle is controlled by
(A) facial nerve (B) trigeminal nerve (C) hypoglossal nerve (D) vagus nerve
Ans : (C)
Hints : 12th cranilal nerve (hypoglossal) is responsible for movement of tongue.

51. Which function will be lost due to damage of occipital lobe?
(A) Hearing (B) Speech (C) Vision (D) Memory
Ans : (C)
Hints : Damage of occipital lobe causes loss of vision.

52. Meissner's corpuscles occur in
(A) Brain (B) Nerve cells (C) Skin (D) Tongue
Ans : (C)

53. Osteomalacia is a deficiency disease of
(A) Infants due to protein energy malnutrition (B) Adults due ot protein energy malnutrition
(C) Adults due to Vitamin D deficiency (D) Infants due to Vitamin K deficiency
Ans : (C)

54. The gene of sickle cell anaemia is inherited by
(A) Blood cells (B) Bone cells (C) Sex chromosomes (D) Autosomes
Ans : (D)
Hints : The gene for sickle cell anaemia is located in chromosome number 11.

55. Ptyalin is inactivated by a component of gastric juice known as
(A) Pepsin (B) Mucus (C) Rennin (D) HCl
Ans : (D)
Hints : Ptylin or α -amylase of saliva is inactivated by HCl in stomach.

56. Which one of the following human cells do not contain mitochondria ?
(A) Nerve cell (B) Red blood cell (C) Liver cell (D) White blood cell
Ans : (B)
Hints : Matured Red blood cells are without mitochondria.

57. In which stage of the first meiotic division two sister chromatids are formed?
(A) Leptotene (B) Zygotene (C) Pachytene (D) Diplotene
Ans : (C)
Hints : During pachytene statge, chromosomes shortens & thickens with two sister chromatids and became clearly visible.

58. Which one of the following triplet codons is a chain termination codon?
(A) UGU (B) AAU (C) UUG (D) UAG
Ans : (D)
Hints : UAG is a non-sense codon.

59. How many pairs of contrasting characters in pea pod were chosen by Mendel?
(A) 3 (B) 5 (C) 7 (D) 9
Ans : (A)
Hints : Three pairs of contrasting characters with respect to pea pod are (i) Pod position (ii) pod colour (iii) Pod shape

60. If a cross between two individuals produces offsprings with 50% dominant character (A) and 50% recessive character (a) the genotype of parents are
(A) Aa × Aa (B) Aa × aa (C) AA × aa (D) AA × Aa
Ans : (B)
Hints : Aa × aa. This is a test cross.

61. Structural lipids of cell membrane
(A) Simple lipid (B) Chromolipids (C) Steroid (D) Phospholipids
Ans : (D)

62. Which one of the following is polysaccharide ?
(A) Glycogen (B) Sucrose (C) Lactose (D) Maltose
Ans : (A)
Hints : Glycogen is a polysaccharide of glucose.

63. What will be the codons in m-RNA if the DNA codes are ATG-CAG ?
(A) TAC – GTC (B) UAC – GUC (C) UCA – TUA (D) TCA – GTC
Ans : (B)

64. Which of the following species is restricted to a specific area ?
(A) Sibling species (B) Allopatric species (C) Sympatric species (D) Endemic species
Ans : (D)
Hints : Endemic species is restricted to a specific area.

65. Which of the following is NOT correctly matched ?
(A) Sycon – Canal system
(B) Star fish – Radial symmetry
(C) Ascaris – Flame cell
(D) Prawn – Haemocoel
Ans : (C)
Hints : Flame cells are found in flat worms.

66. Which one of the following animal phyla does not possess a coelom ?
(A) Platyhelminthes (B) Annelida (C) Mollusca (D) Echinodermata
Ans : (A)
Hints : Platyhelminthes are acoelomate.

67. Cardiac muscles are
(A) Striated and voluntary (B) Striated and involuntary (C) Smooth and voluntary (D) Smooth and involuntary
Ans : (B)

68. Which one of the following immunoglobulins is found as pentamer ?
(A) IgG (B) IgM (C) IgA (D) IgE
Ans : (B)
Hints : IgM is a pentamer with 10 paratopes

69. Which one of the following cells is not a phagocytic cell ?
(A) Macrophage (B) Monocyte (C) Neutrophil (D) Basophil
Ans : (D)
Hints : Basophil is non-phagocytic WBC.

70. Which one of the following is the most primitive ancestor of man ?
(A) Homo habilis (B) Australopithecus (C) Rampithecus punjabicus (D) Homo neanderthalensis
Ans : (C)
Hints : *Ramipithecus* is one of the most primitive ancestors of man.

71. A female Anopheles mosquito can be recognized by
(A) Proboscis and palpi are long and more or less of equal length
(B) Proboscis long and palpi short
(C) Proboscis short and palpi long
(D) Both proboscis and palpi are short
Ans : (A)
Hints : Proboscis and palpi are long and of equal in length in female *Anopheles.*

72. The anterior V-spot in microfilaria of Wuchereria represents
(A) Nerve ring (B) Cervical papilla (C) Excretory system (D) Reproductive
Ans : (C)
Hints : V-spot in microfilaria of *Wuchereria* represents excretory system.

73. In a population, unrestricted reproductive capacity is called
(A) Biotic potential (B) Fertility (C) Carrying capacity (D) Birth rate
Ans : (A)

74. When the two ecosystems overlap each other, the area is called
(A) Habitat (B) Niche (C) Ecotone (D) Ecotype
Ans : (C)
Hints : Ecotone represent transition zone between two ecosystems.

75. Pyramid of energy in ecosystems is
(A) Always upright (B) Always inverted (C) Mostly upright (D) Mostly inverted
Ans : (A)

76. Which one of the following is mainly responsible for green house effect ?
(A) SO_2 (B) CO_2 (C) CO (D) O_2
Ans : (B)
Hints : 60% of the total green house effect is due to CO_2.

77. Which one of the following is an exotic carp species ?
(A) Barbus stigma (B) Cyprinus carpio (C) Labeo bata (D) Cirrhinus mrigala
Ans : (B)

78. Which of following two hormones are essential for induced breeding of fishes ?
(A) TSH and ACTH (B) Oestrogen and progesterone
(C) FSH and LH (D) Vassopressin and oxytocin
Ans : (C)
Hints : FSH and LH present in pituitary extract helps in induced beeeding.

79. Which stage of malarial parasite is infective to man ?
(A) Gametocyte (B) Merozoite (C) Cryptomerozoite (D) Sporozoite
Ans : (D)
Hints : Sporozoite stage of Plasmodium is infective to man.

80. The scientific name of the moth which produce tasar is
(A) Bombyx mori (B) Antheraea mylitta (C) Antheraea assamensis (D) Philosomia ricini
Ans : (B)

❑ ❑ ❑

DESCRIPTIVE TYPE QUESTIONS

SUB : BIOLOGY

1. What are poikilothermic animals?

A. The body temperature of poikilothermic animals (cold blooded animals) changes according to environmental temperature. Example are invertebrates, fishes, amphibians and reptiles.

2. Write two functions of juxtaglomerular apparatus.

A. The Juxta glomerular apparatus (JGA) possesses Juxta glomerular cells and Macula densa. The Juxta glomerular cells secrete renin which regulates RAAS mechanism. Macula densa responds to the change in the mineral ion concentration of glomerular filtrate.

3. State two differences between red and white muscles.

A.

Red Muscle	White Muscle
1. Myoglobin present	Myoglobin absent
2. Slow fatigue muscle	Fast fatigue muscle
3. Mitochondria more in number	Mitochondria less in number
4. Sarcoplasmic reticulum less in number	Sarcoplasmic reticulum more in number

4. What is the difference between pinocytosis and phagocytosis?

A.

Pinocytosis	Phagocytosis
1. It is "Cell drinking" phenomenon where bulk intake of extracellular fluid with the help of vesicle called pinosome takes place.	It is a "Cell eating" phenomenon where bulk intake of solid material from outside to inside of a cell takes place with the help of phagosome.

5. State four important functions of plasma membrane.

A. Four important functions of plasma membrane are :

(i) Involved in active and passive transport

(ii) Involved in a variety of cellular processess such as cell adhesion, ion conductivity & cell signalling.

(iii) As a cell envelope it contain the protoplasm thus protective in nature.

(iv) In prokaryotes, plasma membrane is the site of E.T.S.

6. What is bioaccumulation?

A. Bioaccumulation is the accumulation of toxic substance at a rate greater than at which the substance is lost by an organism.

Longer the biological half life of the accumulated substance, greater is the risk of bioaccumulation.

7. What is a test cross? Why is it so named?

A. Test cross is a cross between F_1 hybrid and homozygous recessive parent.

Test cross is so named as it determines whether the individual with dominant phenotype is homozygous dominant or heterozygous dominant.

8. What is ribozyme?

A. A ribozyme is a RNA molecule possessing a well defined tertiary structure that enables it to catalyse a chemical reaction eg. 23S rRNA (peptidyl transferase).

9. What are mycorrhizae?

A. Mycorrhizae is a symbiotic association between roots of higher plants and fungi.

It plays a key role in mineral absorption specially phosphate.

10. Write down the scientific name of China rose plant. Give its floral formula.

A. Scientific name of China rose is *Hibiscus rosa - sinensis*

Floral formula : Br, $\oplus$, φ $Epik_{3-9}$. $K(5)\ \overset{\frown}{C}_5\ A_{(\alpha)}\ G_{(5-\alpha)}$