

**INDIA INTERNATIONAL SCHOOL**

**CLASS 12**

**BIOLOGY QUESTION BANK**

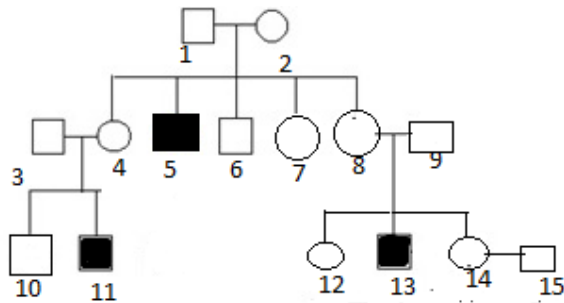
**ONE MARK QUESTIONS**

- 1) Why are offsprings of oviparous animals at a greater risk as compared to offsprings of viviparous animals?
- 2) Mention one difference between a monoecious and a dioecious plant. Give one example of both.
- 3) Why do the pollen grains of Vallisneria have a mucilaginous covering?
- 4) How many haploid cells are present in a mature female gametophyte of a flowering plant? Name them
- 5) Write the location and function of Sertoli cells in humans.
- 6) Mention the difference between spermiogenesis and spermiation.
- 7) Name two STD's which can be transmitted through contaminated blood.
- 8) Mention one positive and one negative application of aminocentesis.
- 9) A haemophilic son was born to normal parents. Give the genotypes of the parents.
- 10) Name the event during cell division cycle that results in the gain or loss of chromosome.
- 11) Mention the contribution of genetic maps on human genome project.
- 12) Mention any two ways in which single nucleotide polymorphism identified in human genome, can bring out revolutionary changes in biological and medical sciences?
- 13) What does Hardy- Weinberg equation  $p^2 + 2pq + q^2 = 1$ . Convey?
- 14) State the significance of biochemical similarities amongst diverse organisms in evolution.
- 15) How do macrophages in the human body act as 'HIV Factory'?
- 16) State two different roles of spleen in human body.
- 17) Mention the strategy used to increase homozygosity in cattle for desired traits.
- 18) Why are plants obtained through micropropagation termed somaclones? Name three food plants produced on commercial scale using this method.
- 19) Why are some molecules called bioactive molecules?
- 20) Mention the role of cyanobacteria as a biofertilizer.
- 21) Why is enzyme cellulose used for isolating genetic material from plant cells, and not from animal cells?
- 22) How does ds RNA gain entry into eukaryotic cell to cause RNA interference?
- 23) Why are some organisms called as eury thermals?
- 24) Explain the function of 'reservoir' in a nutrient cycle.
- 25) Why is it desirable to use unleaded petrol in vehicles fitted with catalytic converters?

**TWO MARK QUESTIONS**

- 26) a) Differentiate between meiocyte and gamete.  
b) Why is whiptail lizard referred to as parthenogenetic?
- 27) Explain any two devices by which autogamy is prevented in flowering plants.
- 28) Why should a breeder need to emasculate a bisexual flower?
- 29) Name the product of fertilisation that forms the kernel of coconut. How does the kernel differ from coconut water?

- 30) Spermatogenesis in human males is a hormone- regulated process. Justify.
- 31) A) Where do the signals for parturition originate from, in humans?  
 B) Why is it important to feed the new born babies on colostrum?
- 32) Describe the lactational Amenorrhoea method of birth control.
- 33) How does a test- cross help in identifying the genotype of the organism? Explain.
- 34)

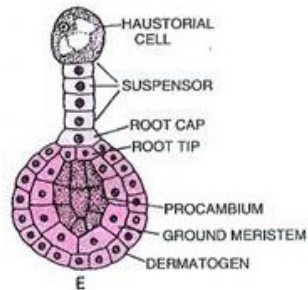


- a) Give all the possible genotype of members 4, 5 and 6 in pedigree.
- b) Is the disease sex linked or autosomal?
- c) Recessive or dominant?
- 35) State the dual role of deoxyribonucleoside triphosphate during DNA replication.
- 36) Differentiate between mRNA synthesis in prokaryotes and eukaryotes.
- 37) How does 'fitness' of population help in evolution?
- 38) How is genetic drift different from gene migration? Explain.
- 39) Explain with the help of an example that Divergent evolution leads to homologous structures.
- 40) Explain the response initiated on the addition of a dose of vaccine.
- 41) State the effect of carcinogens on the human body. Name the carcinogenic ionising and non-ionising radiations.
- 42) How is a pureline in an animal raised?
- 43) How is it possible to recover healthy banana plants from a diseased but desirable quality banana plant?
- 44) During the secondary treatment of primary effluents, how does a significant decrease in BOD occur?
- 45) How do methanogens help in producing biogas?
- 46) 'A' and 'B' are the two different cloning vectors in two different bacterial colonies cultured in chromogenic substrate. Bacterial colonies with cloning vector 'A' were colourless, whereas, those with 'B' were blue- coloured. Explain giving reasons the cause of difference in colour.

- 47) Name the organism from where the thermostable DNA polymerase is isolated. State its role in genetic engineering.
- 48) How is Bt- cotton made to attain resistance against bollworm?
- 49) Why does a patient of ADA- deficiency require repeated infusion of genetically engineered lymphocytes? Suggest a possible permanent remedy.
- 50) Egrets are often seen along with grazing cattle. How do you refer to this interaction? Give reason for this association.
- 51) Humming birds live among the bushes in tropics, while penguins live in iceberg. They cannot survive if their habitats are reversed. Justify.
- 52) Explain brood parasitism with the help of an example.
- 53) What does the term genetic diversity refer to? What is the significance of large genetic diversity in population?
- 54) A crane has DDT level as 5 ppm in its body. What would happen to the population of such birds? Explain giving reason.

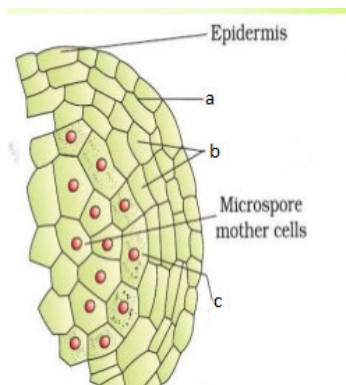
### THREE MARK QUESTIONS

55)



- a) Identify the figure.
- b) Name the initial cell from which this structure has developed.
- c) Draw the next mature stage and label the parts.

56) Given below is an enlarged view of one microsporangium of a mature anther.



- a) Name 'a', 'b' and 'c' wall layers.

b) Mention the characteristics and function of cells forming the wall layer 'c'.

57) Explain the development of an ovum from an oogonium in a human female.

58) a) When and how does placenta develop in human females?

b) How is the placenta connected to the embryo?

c) Placenta acts as an endocrine gland. Explain.

59) Write the functions of each one of the following:

a) Oviducal fimbriae

b) A chromosome of human sperm

c) Oxytocin

60) Write a short note on:

a) IUD's   b) MTP   c) CuT

61) List the structural genes involved in the digestion of lactose in E. Coli. Highlight their functions.

62) a) 'A drone has no father but has a grand- father.' Justify.

b) State the law of Mendel which is universally acceptable without any exception.

63) a) If the frequency of a parental form of a trait lies higher than 25% in a dihybrid test cross, what does that indicate about the two genes involved?

b) How many types of gametes can be formed by an individual organism that is heterozygous for four loci?

64) Read the following sequence, and answer the question.

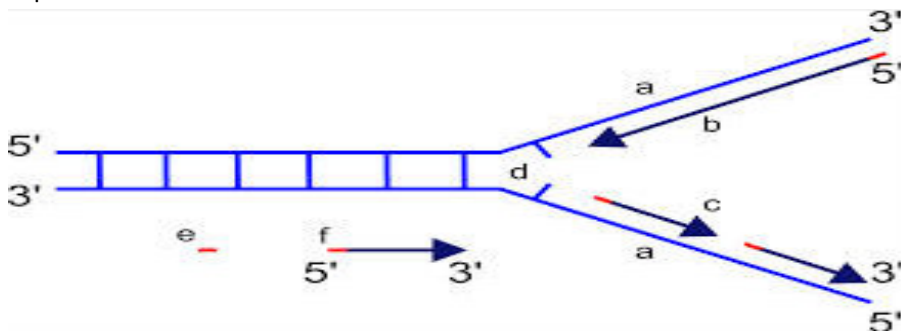
|   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|
| A | A | G | A | A | T | T | C | A | A |
| T | T | C | T | T | A | A | G | T | T |

a) What is called a palindromic sequence of DNA?

b) Write the palindromic nucleotide sequence shown in the DNA strand given and mention the enzyme that will recognise such a sequence.

c) State the significance of enzymes that identify palindromic nucleotide sequences.

65) What do you see two different types replicating strands in the given DNA replication Fork? Explain. Name these strands.



66) a) If the length of DNA of E. Coli is 1.36 mm, calculate the number of base pairs in it.

b) How is such large amount of DNA accommodated in the nucleus of an animal?

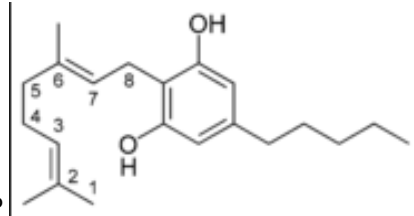
67) Anthropogenic action can hasten evolution. Explain with the help of a suitable example.

68) a) Name the primates that lived about 1.5 million years ago. List their characteristic features.

b) i. Where was the first man- like animal found?

ii. Write the order in which Neanderthals, Homohabilis and homo- erectus appeared on Earth. State the brain capacity of each one of them.

69) The outline structure of a drug is given here:



a) Which group of drugs does this represent?

b) What are the modes of consumption of these drugs?

c) Name the organ of body which is affected by consumption of these drugs.

70) a) Write the scientific names of the two species of filarial worm, that causes filariasis.

b) How do they affect the body of infected persons?

c) How does this disease spread?

71) An antibody molecule is represented as  $H_2L_2$ . Explain.

72) Define Totipotency of a cell. List the requirements, if the objective is to produce somaclones of a tomato plant on commercial scale.

73) IARI has released several varieties of crop plants that are biofortified. Give three examples of such crops and their biofortifications.

74) Name the two different categories of microbes naturally occurring in sewage water. Explain their role in cleaning sewage water into usable water.

75) a) Name the technique used for the separation of DNA fragments.

b) Write the type of matrix used in this technique.

c) How is the separated DNA visualised and extracted for use in recombinant DNA technology?

76) Biopiracy should be prevented. State why and how?

77) Water is very essential for life. Write any three features both for plants and animals, which enable them to survive in water- scarce environment.

78) White Bengal Tigers are protected in special settings in zoological parks. Tiger reserves are maintained in Western Ghats.

a) How do these two approaches differ from each other? Mention the advantages of each one.

b) What is the significance of cryopreservation technique?

79) Who compared the plane with an Ecosystem? Explain it.

80) Eutrophication is the natural ageing of a lake. Explain.

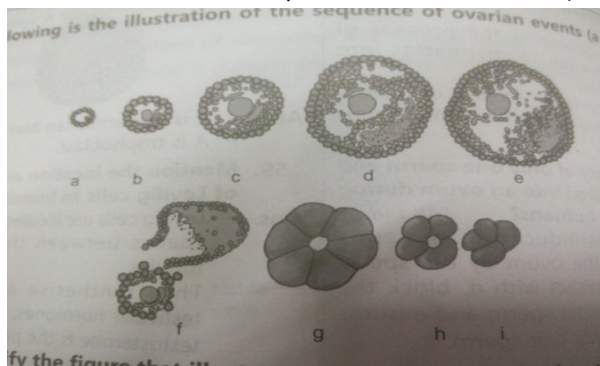
### FIVE MARK QUESTIONS

81) a) How does microspore mother cell develop into mature pollen grain in angiosperms?

b) Describe the structure of a mature pollen grain and draw a labelled diagram of its two-celled stage.

82) Describe the post zygotic events leading to implantation and placenta formation in humans. Mention any two functions of placenta.

83) The following is the illustration of the sequence in ovarian events (a-i) in a human female.



- Identify the figure that illustrates ovulation and mention the stage of oogenesis it represents.
- Name the ovarian hormone and pituitary hormone that have caused the above mentioned event.
- Explain the changes that occur in the uterus simultaneously in anticipation.
- Write the difference between 'c' and 'h'.
- Draw a labelled sketch of the structure of a human ovum prior to fertilization.

84) a) A tree- building pea plant, homozygous for inflates. Green pods is crossed with another pea plant with constricted, yellow pods (ffgg). What would be the phenotypes of  $F_2$  generations? Give the phenotypic ratio of  $F_2$  generation.

b) State the generalisation proposed by Mendel on the basis of above mentioned cross.

85) Explain the causes, inheritance patterns and symptoms of any two Mendelian genetic disorders.

86) a) Why is haemophilia generally observed in human males? Explain the conditions under which a human female can be haemophilic.

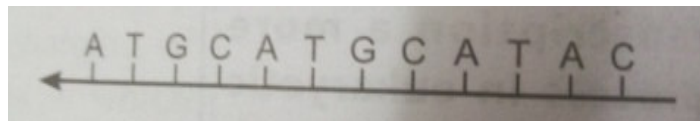
b) A pregnant human female was advised to undergo MTP. It was diagnosed that foetus she is carrying has developed from a zygote formed by an XX- egg fertilized by Y- carrying sperm. Why was she advised to undergo MTP?

87) a) Why is DNA molecule a more stable genetic material than RNA? Explain.

b) Explain the 'switched off' condition of a Lac- operon.

88) How do initiation and termination of translation processes occur in bacteria? Where are untranslated regions located in an mRNA? Mention their role.

89) a) Construct a complete transcription unit with promoter and terminator on the basis of hypothetical template strand given below:



b) Write the RNA strand transcribed from the above transcription unit along with its polarity.

90) Explain the salient features of the Hugo de Vries' Theory of mutation. How is Darwin's theory of natural selection different from it? Explain.

91) a) Mention the role of vectors in recombinant DNA technology. Give any two examples.

b) With the help of diagrammatic representation only, show the steps of recombinant DNA technology.

92) Explain the steps involved in the production of genetically engineered insulin. Why is the insulin thus produced preferred to the one produced from non-human sources?

93) a) List any four abiotic components that lead to variations in the physical and chemical conditions of different habitats.

b) Explain the impact of these components on the distribution of organisms in different habitats.

94) a) Trace the succession of plants on a dry, bare rock.

b) How does phosphorus cycle differ from carbon cycle?

95) a) Mention and describe three reasons as to why we should conserve biodiversity.

b) Explain the significance of biodiversity 'hot-spots' in 'in-situ' conservation.

#### VALUE BASED QUESTIONS

96) Kautilya's Arthashastra describes what can be considered as the first forest conservation and wildlife management programme on the globe. We also learn from history that many kings of our country had planted trees along roadsides and maintained the forests for various purposes, but now the forest cover is diminishing due to human activities.

a) Mention any four causes of deforestation.

b) How much of forest area has been lost in-

i. tropics

ii. Temperate regions

respectively.

c) Mention the values exhibited in the action of our kings in this regard.

97) 'Be a vegetarian' is a slogan seen and heard in many advertisements these days.

a) Can you help the common people of your village to understand and follow this with more biological reasons.

b) Explain how this will save the environment also.

98) Rakesh, a 10 years old boy is a sufferer of thalassemia and he has to have periodic blood transfusion. His parents as well as his brother are normal. Their family doctor talks to them about stem cell therapy and requests Rakesh's parents to have another child to treat Rakesh, Yes, now Rakesh has been cured out of the disease and family of five is happy.

a) Explain how it is possible that Rakesh alone is thalassemic in family.

b) Name another genetic disorder which also occurs among the siblings but not found in their parents.

c) Mention the human values that doctor has shown towards Rakesh's family.

99) Hritik's father is a heavy smoker. One day he fainted in his office and the doctor who attended to him found that his blood pressure was high and he had also the deficiency of oxygen in his body.

a) Can you explain why there is oxygen deficiency in the body of a cigarette smoker? What lung disorder can he suffer from?

b) How does smoking of tobacco cause high blood pressure?

c) How can you make a propaganda against smoking?

100) Mule is an animal used in maintaining terrains to carry luggage, it combines the load carrying nature of donkeys and the fast walking nature of horses. Man has been performing such crosses among plants and animals.

a) Name and define the type of cross involved in the production of a mule?

b) Give reasons as to why man has been trying such crosses?

c) Mention the values neglected in his act of hybridisation.