

CBSE GUESS SAMPLE PAPER 2015

SUBJECT: BIOLOGY (044)

CLASS XII

Time: 3 hrs.

Maximum Marks. 70

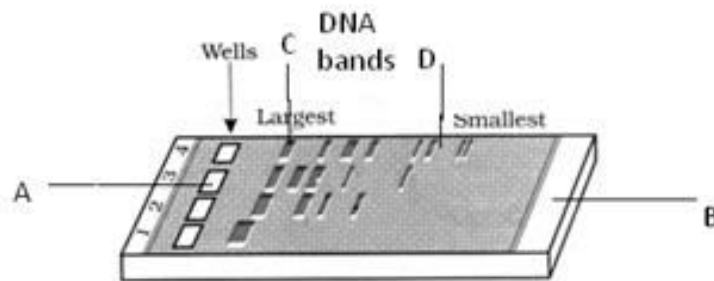
General Instructions:

- i) All questions are compulsory.
- ii) This question paper consists of five sections A, B, C, D and E. **Section A** contains 5 questions of **one** mark each; **section B** contains 5 questions of **two** marks each, **section C** contains **12** questions of **three** marks each, **section D** contains **1** question of **four** mark and **section E** contain **3** questions of **five** marks each.
- iii) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of three marks and all three questions of five marks Weightage. A student has to attempt only one of the alternatives in such questions.
- iv) Wherever necessary, the diagrams drawn should be properly labeled.

SECTION - A

1. Name the bond between the pentose sugar and the nitrogen base. To which carbon of the pentose sugar does the nitrogen base bind? (1)
2. The gene I that controls the ABO blood grouping in human beings has three alleles I^A , I^B and i .

- (a) How many different genotypes are likely to be present in the human population?
- (b) How many phenotypes are possibly present? (1)
3. What is the programme called that is involved in improving success rate of production of desired hybrid and herd size of cattle? (1)
4. Study the diagram below and answer the following questions: (1)



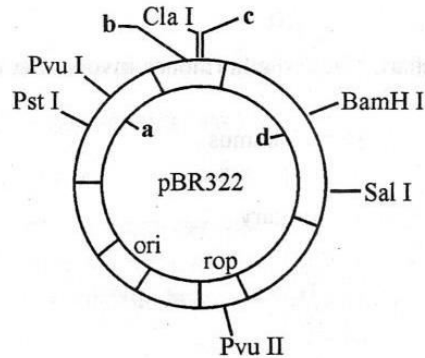
- (a) Why DNA fragments in band 'D' moved farther way in comparison to 'C'?
5. Name the source of the DNA polymerase used in PCR technique. How it is useful in PCR? (1)

SECTION – B

6. What are the norms set by Euro II for petrol and diesel vehicles? Why CNG is better than petrol and diesel? (2)

OR

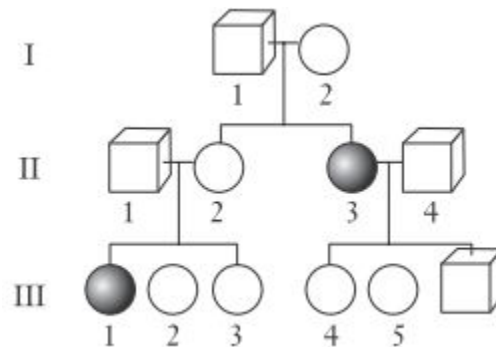
- (a) What do you mean by “bog”? (2)
- (b) What are the effects of waste water released from thermal power plant?
7. Follow the diagram given below and label 'a', 'b', 'c' and 'd'. (2)



8. Following are some plants released by Indian Agricultural Research Institute, New Delhi. Name the biofortified molecule in each plant. (2)
- (a) Carrot
 - (b) Bitter gourd.
 - (c) Spinach.
 - (d) Lab lab.
9. Answer the following questions: (2)
- (a) Anthropogenic actions have caused evolution of species. Explain with the help of two examples.
 - (b) Differentiate between divergent and convergent evolution.
10. Meiosis and gamete formation are two universal events take place in all sexually reproducing organisms. Timing of meiosis is different in different organism: Justify your answer with suitable example. (2)

SECTION – C

11. Three water samples namely river water, untreated sewage water and secondary effluent discharged from a sewage treatment plant were subjected to BOD test. The samples were labeled A, B and C. But the lab attendant did not note which was which. The BOD values of A, B and C were recorded as 20 mg/L, 8mg/L and 400mg/L respectively. Which sample of the water is most polluted? Assign the correct label to each assuming the river water is relatively clean? Define BOD. (3)
12. Examine the pedigree chart given below and answer the questions. (3)



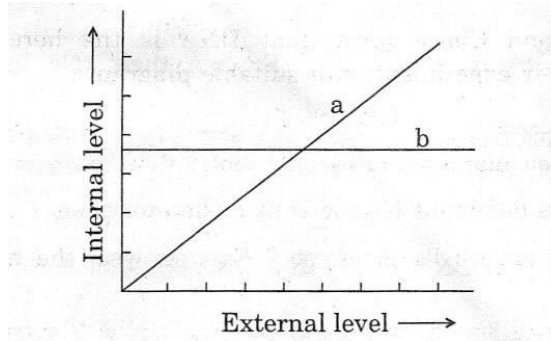
- (a) Is the trait being studied in the pedigree recessive or dominant? How do you know?
- (b) Is the trait being studied in the pedigree sex-linked recessive? Justify your answer?
- (c) What is the likely genotype of II-4 for the trait being studied in the pedigree?
13. ----- X ----- (Parent) (3)

↓

MULE

- (a) Who are the parents for this Mule?

- (b) Why is this offspring sterile?
- (c) Specify the type of hybridization involved here.
14. Provide one word or one sentence information about 'plasmid' with respect to its - (3)
- (a) Chemical nature
- (b) Its position in the bacterial cell
- (c) Its duplication
15. What do you mean by restriction endonuclease? Give two example of such enzyme.
Write the convention for nomenclature of such enzyme. (3)
16. Answer the following questions:
- (a) How catalytic converter is useful to reduce vehicular pollution?
- (b) Why unleaded petrol is recommended for the vehicle fitted with catalytic converter?
- (c) Name two harmless gases released by thermal power plant.
17. What is "The Evil Quartet" for the loss of biodiversity? Explain. (3)
- OR**
- Why tropics show greater diversity in comparison to the temperate one? (3)
18. Write the limitations of ecological pyramids. (3)
19. Observe the diagram below and answer the questions follows: (3)



- (a) Which one of these 'a' or 'b' depicts regulators?
- (b) What does the other line graph depict?
- (c) Organism differs from each other with reference to homeostasis. Explain with suitable example.

20. Study the following and answer the questions that follows: (C = codon, A = amino acid, Hb = Hemoglobin) (3)

Codons for Hb : C₁-C₂-C₃-C₄-C₅-GAA-GAA-C₈.....

Amino acids in Hb: A₁-A₂-A₃-A₄-A₅-Glutamic acid -Glutamic acid-A₈...___

(Normal Hemoglobin)

Mutation (A) : C₁-C₂-C₃-C₄-C₅-GAG-GAA-C₈.....

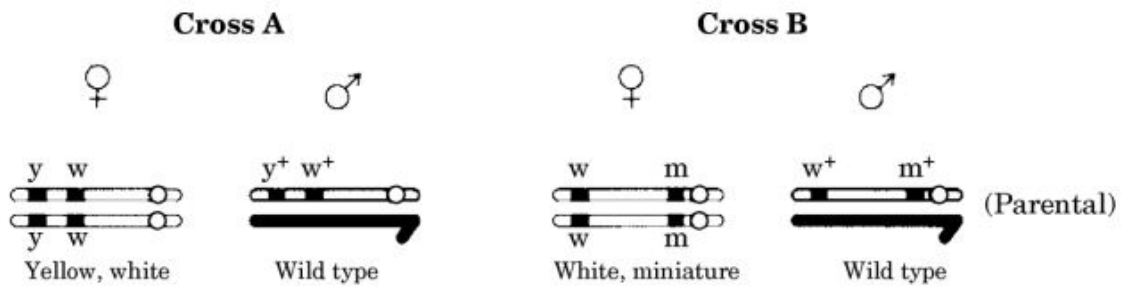
A₁-A₂-A₃-A₄-A₅-Glutamic acid -Glutamic acid-A₈...____
 (Normal Hemoglobin)

Mutation (B) : C₁-C₂-C₃-C₄-C₅-GUG-GAA-C₈.....

A₁-A₂-A₃-A₄-A₅-Valine -Glutamic acid-A₈...____
 (Sickle cell Hemoglobin)

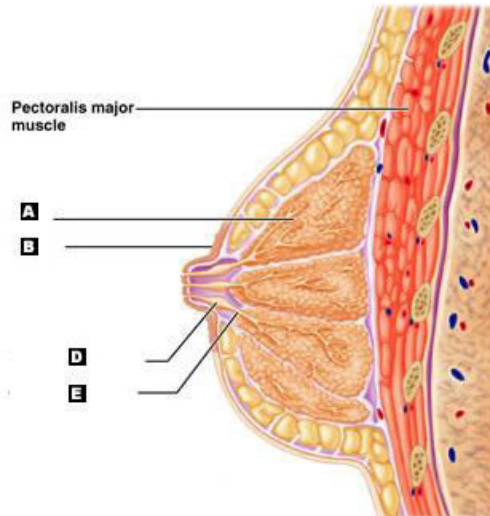
- (a) Why mutation 'A' does not produce abnormal hemoglobin? Which property of genetic code works here?
- (b) What you call to the type of mutation that produce sickle cell hemoglobin due to mutation 'B'.
- (c) Write any one other property of genetic code.

21. Study the figures given below and answer the question. (3)



- (a) Identify in which of the crosses is the strength of linkage between the genes higher. Give reasons in support of your answer.
- (b) Write the two conditions in which independent assortment will take place between two pairs of genes.

22. Observe the diagram given below and answer the following questions. (3)



- Label the parts 'A', 'B', 'D' and 'E'.
- What you call to the milk produced during the initial few days of lactation? Why it essential for the baby?

SECTION – D

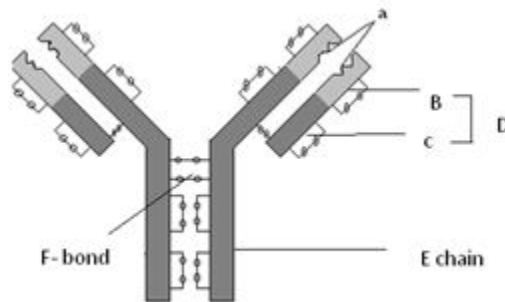
23. A married couple visits a gynecologist and tells her that even after repeated copulations the wife is not getting pregnant. Assume you are that gynecologist then suggest them a method from ART for each of the following conditions with justification. (4)

- If reproductive system of both of them is not working well, but testes in male and ovary in female is in good condition.
- Sufficient sperm is not produced by the male partner.

- (c) Ovary is not producing ovum.
- (d) Male unable to inseminate.

SECTION – E

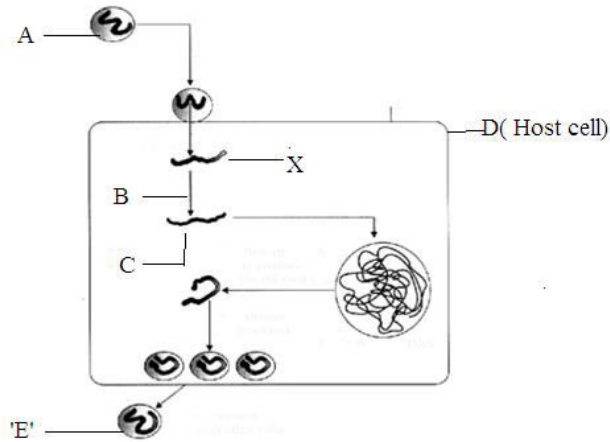
24. Observe the diagram given below and answer the questions followed: (5)



- (a) What does the above diagram illustrate?
- (b) Name the part labeled 'a', 'D', 'E' and 'F'.
- (c) Name the cell that produces this molecule.
- (d) What you call to the type of immunity produced by this molecule?

OR

Answer the following questions: (5)



Study the diagram showing replication of HIV in humans and answer the following questions accordingly:

- Write the chemical nature of the coat 'A'.
- Identify the 'X'.
- Name the enzyme 'B' acting on 'X' to produce molecule 'C'. Name 'C'.
- Mention the name of the host cell 'D' the HIV attacks first when it enters into the human body.
- Name the two different cells the new viruses 'E' subsequently attack.

25. Answer the following questions: (5)

- Draw a diagram of an enlarged view of L.S. of one microsporangium of an angiosperm and label the following parts.
 - Tapetum
 - Middle layer
 - Endothecium

v. Microspore mother cells

(b) Mention the characteristic features and function of tapetum.

(c) Why pollen grains are well preserved as fossils?

(d) What are two factors that affect the viability of the pollen grain?

OR

Answer the following questions regarding seed: (5)

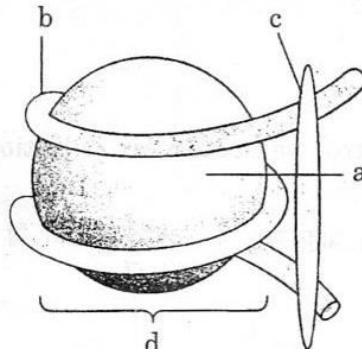
(a) What are the advantages offered by seed to angiosperm?

(b) What is crucial for storage of mature seed?

(c) Which is the oldest viable seed and how old is it? Write the scientific name of the plant.

(d) Write the scientific name of 2000 years old viable seed recently discovered during archeological excavation at King Herod's palace near Dead Sea.

26. Answer the following questions: (5)



(a) What is this diagram representing?

(b) Name the parts a, b and c.

(c) Name two amino acids rich in 'a'.

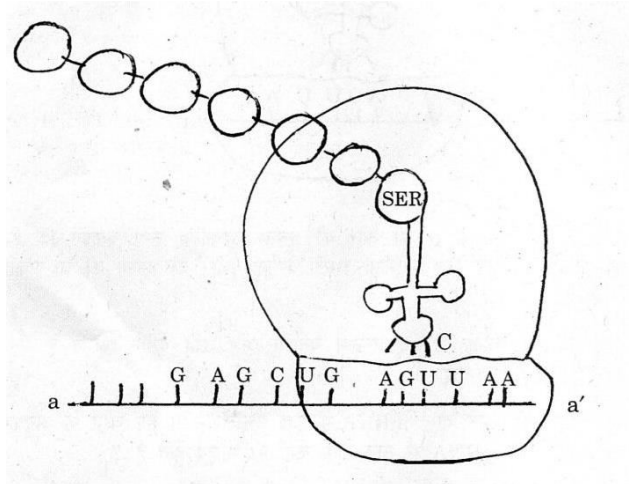
(d) How many base pairs present in each unit 'd'?

(e) What is the role of non-histone protein in packaging of DNA?

OR

Answer the following question from the diagram given below:

(5)



- Identify the polarity from a to a' in the diagram and mention how many more amino acids are expected to be added to this polypeptide chain.
- Mention the DNA sequence coding for serine and the anticodon of the tRNA for the same amino acid.
- Why are some untranslated sequences of bases seen in mRNA coding for a polypeptide? Where exactly are they present in the mRNA?
- To which site the amino-acyl- tRNA present in the larger sub-unit of ribosome?
- Name the enzyme that forms the peptide bond between the amino acids during protein synthesis.



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