

**Reg. no.:**

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| **ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27** | | | | | | | | | |  | |
| **B.Sc. ZOOLOGY - VI SEMESTER** | | | | | | | | | |  | |
| **END SEMESTER EXAMINATION: APRIL 2024**  **(Examination conducted in May/June 2024)** | | | | | | | | | |  | |
| **ZO 6223- DEVELOPMENTAL AND EVOLUTIONARY BIOLOGY** | | | | | | | | | |  | |
|  | **(For current batch students only)** | | | | |  | |  | | |  | |  |  |  |
| **Time- 2 hrs** | |  | **Max Marks-60** | | | | | |  |  | |
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| **This paper contains TWO printed pages and THREE parts** | | | | | | | | | |  | |

**Note: Draw neat labelled diagrams wherever necessary**

**Indicate the question numbers clearly.**

**PART A**

**Answer ALL of the following: 10 X 1 = 10**

1. In contrast to spermists the **\_\_\_\_\_\_\_\_\_**theory states that organisms develop from a group of undifferentiated cells.
2. Radio carbon dating involves the use of the naturally occurring isotope \_\_\_\_\_\_\_\_\_\_ to determine the age of the rocks and fossils.
3. The homeotic genes encoded for by the \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ complexes control segment identity in the developing fly.
4. Human egg is a \_\_\_\_\_\_\_\_\_\_\_ type of egg based on the amount of yolk present.
5. \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_ were hallmarks of Lamarck’s idea of evolution.
6. Georges Cuvier was famous for hypothesizing that modern elephants had evolved from the extinct \_\_\_\_\_\_\_\_\_\_\_.
7. The tangible evidence of the origin of life dates to \_\_\_\_\_\_ Ga.
8. Henson’s node is a structure is a synonymous to \_\_\_\_\_\_\_ in frog.
9. Transcriptional modification is an example of \_\_\_\_\_\_\_\_\_\_\_ mutation.
10. The magnitude of Random Genetic Drift will be \_\_\_\_\_\_\_ in small populations.

**PART B**

**Answer any FOUR of the following: 4 X 5 = 20**

1. With a neat labelled diagram, describe the structure of the frog’s egg and add a note on the process of cleavage.
2. Classify placenta based on the distribution of the villi with an examplefor each.
3. What is sexual selection and what are its principal components?
4. Draw a cladogram of the following taxa: fish, deer, eagle, alligator, and chicken. On the phylogeny map the origin of the following traits – feathers, fur, mammary glands, four limbs.
5. Explain the process of cleavage and blastulation in amphioxus.
6. Draw a neat labelled diagram of the neurula of the frog.

**PART C**

**Answer any THREE of the following: 3 X 10 = 30**

1. With a neat labelled diagram explain the process of gastrulation in chick embryo.
2. Explain the mechanism of fertilization in humans and draw a neat labelled diagram of the blastocyst.
3. Explain the morphological and physiological changes occurring during uterine cycle. Add a note on the hormones involved with a graphical representation.
4. What is the continental drift and explain its hypotheses? Comment on the consequences of this drift on distribution of aquatic and terrestrial animals?
5. Explain with an example each, the types of reproductive barriers.

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