

XII - BIO-ZOOLOGY

FULL PORTION- I ANSWER KEYS

I. Choose the correct answers. 8X1=8

1. c. Industrial melanism
2. d. About one fourth only Will be Rh negative.
3. c. Statement 1 is correct but statement 2 is incorrect.
4. b. AUG
5. a. Sustainable development
6. d. Migration
7. c. Aspergillus niger
8. a. Viral disease

II. Answer the following questions briefly. 4X2=8

9. Eutrophication.

When run-off from land containing nutrients reaches water bodies like lakes, it results in dense growth of plant life. This phenomenon is called Eutrophication.

10. Epimorphosis - types

Reparative regeneration, only certain damaged tissue can be regenerated, e.g. human beings

Restorative regeneration severed body parts can develop. e.g. star fish, tail of wall lizard.

11. SOMATIC CELL GENE THERAPY

T herapeutic genes transferred into the somatic cells.

Introduction of genes into bone marrow cells, blood cells, skin cells etc.,

GERM LINE GENE THERAPY T herapeutic genes transferred into the germ cells.

Genes introduced into eggs and sperms.

Will not be inherited in later generations. Heritable and passed on to later generations.

12. Saheli

Contraceptive pill by Central Drug Research Institute (CDRI) in Lucknow, India contains a non-steroidal preparation called Centchroman.

13. Exercise program- positive attitudes.

1. Increase self-esteem
2. Boost self-confidence
3. Create a sense of empowerment
4. Enhance social connections and relationships.

14. Extra embryonic membranes.

The extra embryonic membranes namely the amnion, yolk sac, allantois.

III. Answer the following questions briefly. 4X2=8

15. Lyon's hypothesis.

Mary Lyon suggested that Barr bodies represented an inactive chromosome, which in females becomes tightly coiled into a heterochromatin, a condensed and visible form of chromatin.

16. Parthenogenesis and types.

(Gr. Parthenos – virgin, Genesisproduce) Development of an egg into a complete individual without fertilization is known as parthenogenesis. Eg. Honey bees, Solenobia.

17. Diagram of Immunoglobulin and labeled parts

18. Amniocentesis- why banned in India.

Amniocentesis is a prenatal technique used to detect any chromosomal abnormalities in the foetus and it is being often misused to determine the sex of the foetus. Once the sex of the foetus is known, there may be a chance of female foeticide. Hence, a statutory ban on amniocentesis is imposed.

19. Birth rate and death rate.

Birth rate is an expression of the production of new individuals in the population by birth,

hatching, germination (or) fission.

Death rate is the population decline factor. Mortality can be expressed as a loss of individuals in unit time or death rate.

IV. Answer the following questions in details. 2X5=10

20. A. Types of fossilization.

i) Actual remains – The original hard parts such as bones, teeth or shells are preserved as such in the earth's atmosphere. This is the most common method of fossilization. When marine animals die, their hard parts such as bones, shells, etc., are covered with sediments and are protected from further deterioration. They get preserved as such as they are preserved in vast ocean; the salinity in them prevents decay. The sediments become hardened to form definite layers or strata. For example, Woolly Mammoth that lived 22 thousand years ago were preserved in the frozen coast of Siberia as such. Several human beings and animals living in the ancient city of Pompeii were preserved intact by volcanic ash which gushed out from Mount Vesuvius.

ii) Petrification – When animals die the original portion of their body may be replaced molecule for molecule by minerals and the original substance being lost through disintegration. This method of fossilization is called petrification. The principle minerals involved in this type fossilization are iron pyrites, silica, calcium carbonate and bicarbonates of calcium and magnesium. Paleontological evidences Paleontology is the study of prehistoric life through fossils. Fossils are described as the true witnesses of evolution or documents.

iii) Natural moulds and casts – Even after disintegration, the body of an animal might leave indelible impression on the soft mud which later becomes hardened into stones. Such impressions are called moulds. The cavities of the moulds may get filled up by hard minerals and get fossilized, which are called casts. Hardened faecal matter termed as coprolites occur as tiny pellets. Analysis of the coprolites enables us to understand the nature of diet the pre-historic animals thrived on.

B. Any three goals of human genome project.

(Any three)

- Identify all the genes (approximately 30000) in human DNA.
- Determine the sequence of the three billion chemical base pairs that makeup the human DNA.

- To store this information in databases.
- Improve tools for data analysis.
- Transfer related technologies to other sectors, such as industries.
- Address the ethical, legal and social issues (ELSI) that may arise from the project.

20. (OR) Menstrual cycle.

The menstrual or ovarian cycle occurs approximately once in every 28/29 days during the reproductive life of the female from menarche (puberty) to menopause except during pregnancy.

1. Menstrual phase The cycle starts with the menstrual phase when menstrual flow occurs and lasts for 3-5 days. Menstrual flow is due to the breakdown of endometrial lining of the uterus, and its blood vessels due to decline in the level of progesterone and oestrogen. Menstruation occurs only if the released ovum is not fertilized. Absence of menstruation may be an indicator of pregnancy. However it could also be due to stress, hormonal disorder and anaemia.

2. Follicular or proliferative phase The follicular phase extends from the 5th day of the cycle until the time of ovulation. During this phase, the primary follicle in the ovary grows to become a fully mature Graafian follicle and simultaneously, the endometrium regenerates through proliferation. These changes in the ovary and the uterus are induced by the secretion of gonadotropins like FSH and LH, which increase gradually during the follicular phase. It stimulates follicular development and secretion of oestrogen by the follicle cells.

3. Ovulatory phase Both LH and FSH attain peak level in the middle of the cycle (about the 14th day). Maximum secretion of LH during the mid cycle called LH surge induces the rupture of the Graafian follicle and the release of the ovum (secondary oocyte) from the ovary wall into the peritoneal cavity. This process is called as ovulation.

4. Luteal or secretory phase During luteal phase, the remaining part of the Graafian follicle is transformed into a transitory endocrine gland called corpus luteum. The corpus luteum secretes large amount of progesterone which is essential for the maintenance of the endometrium.

21. Reasons of biodiversity loss.

- Habitat loss, fragmentation and destruction (affects about 73% of all species)

- Pollution and pollutants (smog, pesticides, herbicides, oil slicks, GHGs)
- Climate change
- Introduction of alien/exotic species
- Over exploitation of resources (poaching, indiscriminate cutting of trees, over fishing, hunting, mining)
- Intensive agriculture and aquacultural practices
- Hybridization between native and nonnative species and loss of native species
- Natural disasters (Tsunami, forest fire, earth quake, volcanoes)
- Industrialization, Urbanization, infrastructure development, Transport – Road and Shipping activity, communication towers, dam construction, unregulated tourism and monoculture are common area of specific threats
- Co-extinction

(OR)

a) Clot buster

Streptokinase produced by the bacterium Streptococcus and genetically engineered Streptococci are used as “clot buster” for removing clots from the blood vessels of patients who have undergone myocardial infarction.

b) Sub-unit vaccines

Vaccines that use components of a pathogenic organism rather than the whole organism are called subunit vaccines; recombinant DNA technology is very suited for developing new subunit vaccines. It includes components like proteins, peptides and DNAs of pathogenic organisms. The advantages of these vaccines include their purity in preparation, stability and safe use.