

COMMON QUARTERLY EXAMINATION-2024-25 XII: Bio Zoology**XII: Bio Zoology****KEY ANSWER**

SECTION – 1

- (i) Answer all the question
(ii) (ii) Choose the most appropriate answer from the given four Alternatives and $8 \times 1 = 8$

1. In Which mode of Reproduction variation are seen

c) Sexual

2. How many days the dividing embryo takes to move through the fallopian tube into the uterine cavity

b) 4-5 days

3. A Contraceptive Pill Prevents Ovulation by

b) inhibiting release at FSM and LH

4. The human Y Chromosome size is

a) 60 mb

5. Hershey and chase experiment with Bacteriophage showed that

b) DNA is the genetic material

6. The Human evolution belongs to which Epoch?

b) Paleocene

7. Allergy involves

a) IgE

8. Which is the following pair is correctly matched for the product produced by them?

d) *Saccharomyces cerevisiae* -Ethanol

SECTION-2

Note: Answer any four of the following questions.

9. Which type of reproduction is effective A Sexual or Sexual and why?

- Sexual reproduction is an effective method of reproduction than asexual method because Sexual reproduction contributes to the evolution of the species by adding variation in a population.
- Variation occurs because of the fusion of male and female gametes (sexual reproduction) carrying different sets of chromosomes.

10. Placenta is an endocrine tissue. Justify.

- During pregnancy, the placenta acts as a temporary endocrine gland. It produces the following hormones.
- hCG - human Chorionic Gonadotropin, human chorionic somatomammotropin. (hCS) (or) human placental Lactogen (hPL) - supporting foetal growth. Oestrogen , Progesterone , cortisol, prolactin, thyroxine - are essential for a normal pregnancy. Relaxin - relax pelvic ligaments during parturition .

11. Expand the following:

- a) ZIFT - Zygote Intra - Fallopian Transfer.
- a) ICSI - Intra Cytoplasmic Sperm Injection.

12. Define pedigree Analysis.

- Pedigree is a "family tree", drawn with standard genetic symbols, showing the inheritance pathway for specific phenotypic characters.
- Pedigree analysis is the study of traits.

13. Define Atavistic organs.

- Sudden appearance of vestigial organs in highly evolved organisms is called atavistic organs. Example, presence of tail in a human baby is an atavistic organ.

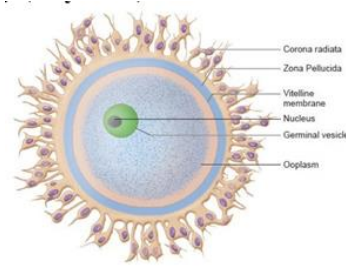
14. Define single cell protein (SCP)

Single Cell Protein (SCP) 2M

Single cell protein refers to edible unicellular microorganisms like Spirulina. Protein extracts from pure or mixed cultures of algae, yeasts, fungi or bacteria may be used as ingredient or as a substitute for protein rich foods and is suitable for human consumption or as animal feed.

SECTION-3

15. Draw and the structure of Human Ovum.



16. Differentiate foeticide and infanticide

- Female foeticide refers to aborting the female in the mother's womb; whereas female infanticide is 'killing the female child after her birth'

17. Define genophore.

- The DNA as a nucleoid is organized into large loops held by protein. DNA of prokaryotes is almost circular and lacks chromatin organization, hence termed genophore.

18. Write any six human viral disease name.

- Common cold
- Mumps
- Measles
- Viral hepatitis
- Chicken pox
- Dengue fever

19. Define Lyon's Hypothesis.

Mary Lyon suggested that Barr bodies Σ represented an inactive chromosome, which in females becomes tightly coiled a heterochromatin, a condensed and visible form of chromatin (Lyon's hypothesis).

SECTION - 4

Note: Answer all the questions.

20. (a) Explain about Parthenogenesis.

Development of an egg into a complete individual without fertilization is known as parthenogenesis.

- It was first discovered by Charles Bonnet in 1745.
- Parthenogenesis is of two main types namely,

1. Natural Parthenogenesis
2. Artificial Parthenogenesis.

Natural parthenogenesis:

- In certain animals, parthenogenesis occurs regularly, constantly and naturally in their life cycle and is known as natural parthenogenesis.

Natural parthenogenesis may be of two types, viz.,

- complete
- Incomplete

Complete parthenogenesis

- only form of reproduction in certain animals
- There is no biparental sexual reproduction.
- There are no male organisms
- females only.

Incomplete parthenogenesis

- Found in some animals in which both sexual reproduction and parthenogenesis occurs.
- E.g. In honeybees; fertilized eggs (zygotes) develop into queen and workers, whereas unfertilized eggs develop into drones (male).

Paedogenetic parthenogenesis

- In paedogenetic parthenogenesis (paedogenesis) the larvae produce a new generation of larvae by parthenogenesis.
- It occurs in the sporocysts and Redia larvae of liver fluke.
- e.g. Gall fly

In artificial parthenogenesis,

- the unfertilized egg (ovum) is induced to develop into a complete individual by physical or chemical stimuli animals and seaurchin eggs

b) Define Infertility, Write their Causes?

Infertility

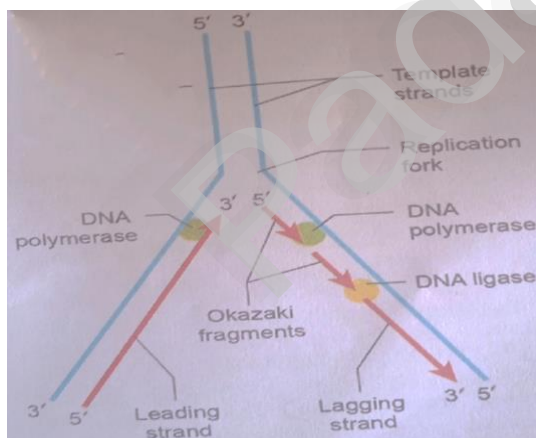
- Inability to conceive or produce children even after unprotected sexual cohabitation is called infertility.

Causes:

- Pelvic inflammatory disease (PID), uterine fibroids and endometriosis are the most common causes of infertility in women.
- Low body fat or anorexia in women. i.e. a psychiatric eating disorder characterised by the fear of gaining weight.
- Tight clothing in men may raise the temperature in the scrotum and affect sperm production.
- Under developed ovaries or testes.
- Female may develop antibodies against her partner's sperm.
- Males may develop an autoimmune response to their own sperm.

21. (a) Explain the Mechanism of replication with diagram.

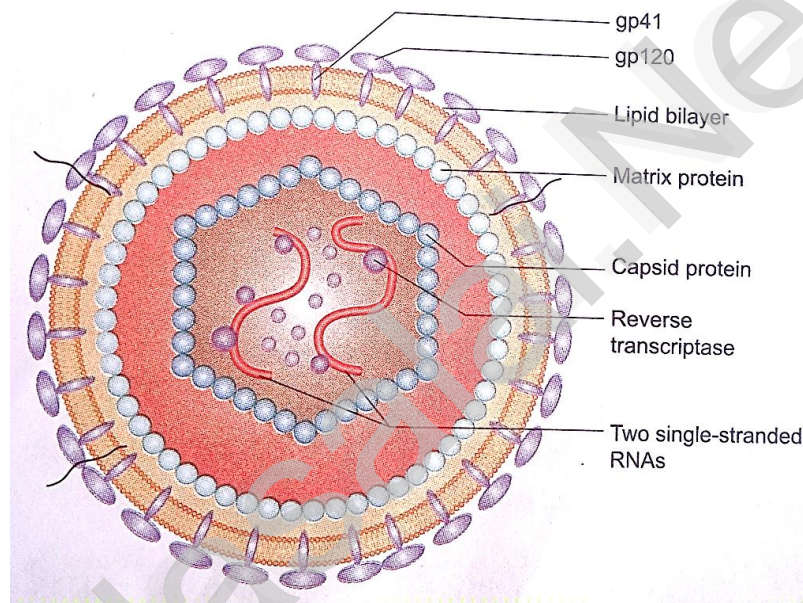
- Replication begins at the initiation site called the site of 'origin of replication' (ori).
- In prokaryotes, there is only one origin of replication, whereas in eukaryotes with giant DNA molecules, there can be several origins of replication (replicons).
- Since the two strands of DNA cannot be separated throughout at a time (due to large requirement of energy) the replication occurs within a small opening of the DNA helix called as replication fork.
- Unwinding of the DNA strand is carried out by DNA helicase.
- in strand (template strand with polarity 3'5') the replication is continuous and is known as the leading strand while in the other strand (coding strand with polarity 5'3') replication is discontinuous, known as the strand.
- The discontinuously synthesized fragments of the lagging strand (called the Okazaki fragments) are joined by the enzyme DNA ligase.



(b) Explain the structure of HIV with diagram.

Structure of HIV

- The human immunodeficiency belongs to the genus Lentivirus
- When observed under the electron microscope, HIV is seen as a spherical virus, 100-120 nm in diameter, containing a dense core by a lipoprotein envelope.
- The envelope has glycoprotein (gp) spikes termed gp 41 and gp 120.
- At the core, there are two large single stranded RNA.
- Attached to the RNA are molecules of reverse transcriptase.
- It also contains enzymes like protease and ribonuclease.
- The core is covered by a capsid made of proteins.
- This is followed by another of matrix proteins



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