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Answer :

- Genetic diversity** : A high diversity exists at the genetic level over its distributional range.  
e.g., *Rouwolfia vomitoria* growing on different Himalayan ranges might show diversity in terms of potency and concentration of active chemical reserpine.
- Species diversity** : Diversity which exists at the species level. e.g., The Western Ghats have a greater amphibian species diversity than the Eastern Ghats.
- Ecological diversity** : Diversity which exists at the ecosystem level. e.g., India has a large diversity of deserts, rain forests, mangroves, coral reefs, wetlands, estuaries, alpine meadows etc.

**SECTION-D**

25. (a) Differentiate between spermatogenesis and oogenesis on the basis of :

- Time of initiation of the process
- Site of completion of the process
- Nature of meiotic division undergone by gamete mother cells

(b) Name the hormones and state their role involved in controlling spermatogenesis in humans. [5]

OR

- Explain the process of double fertilization in angiosperms.
- Why does the development of endosperm precedes that of embryo ?
- List the parts of a typical dicot embryo.

Answer :

(a)

	Basis	Spermatogenesis	Oogenesis
(i)	Time of initiation of the process.	At puberty	During foetal or embryonic stage.

(ii)	Site of completion of the process	Seminiferous tubule.	Ampullary isthmic junction of Fallopian tube
(iii)	Nature of meiotic division undergone by gamete mother cell.	(i) Equal cell division. (ii) Continuous cell division. (iii) Formation of 4 spermatids.	(i) Unequal cell division. (ii) Arrested at early embryonic stage. (iii) Formation of one egg.

(b) GnRH acts on anterior pituitary to secrete LH and FSH. LH acts on Leydig cells and stimulates synthesis and secretion of androgens which stimulate spermatogenesis. FSH acts on sertoli cells which stimulates secretion of some factors which help in the process of spermeiogenesis.

OR

(a) Double fertilisation :

- One male gamete fuses with the egg cell in the embryo sac to form zygote (2n) by the process of syngamy.
  - The other male gamete fuses with the two polar nuclei to form PEN (Primary Endosperm Nucleus) (3n) by the process of triple fusion.
  - Both syngamy and triple fusion together are known as double fertilisation.
- (b) The endosperm contains reserve food material which is used for nutrition of developing embryo.
- (c) A typical dicot embryo consists of an embryonal axis and two cotyledons. The portion of the embryonal axis above the level of cotyledons is the epicotyl which terminates with the plumule. The portion below the level of the cotyledons is the hypocotyl that terminates at its lower end with the radical which is covered by a root cap.

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