

Topic :- Human Reproduction

- 1 (d)
Sequence of spermatogenesis
- Spermatogonium
↓
Primary spermatocytes
↓
Secondary spermatocytes
↓
Spermatocytes
↓
Spermatozoa
- 2 (d)
The amount of yolk determines the type of cleavage in the egg. In **superficial meroblastic cleavage**, the cleavage remains restricted to the peripheral portion of the egg. This type of cleavage occurs in arthropods especially insects.
- i.e., centrolecithal eggs.
- 3 (d)
All fishes are oviparous, but whale is viviparous, *i.e.*, it gives birth to young ones and it also feeds its young ones. Among flying creatures, bat is viviparous. Whale and bat both are mammals.
- 4 (a)
Oestrogen is the dominant hormone controlling the proliferative phase of the uterine endometrium layer
- 5 (a)
In certain cases, where normal fertilization is not possible, ovum from the female and the sperm from the male are fused by *in vitro* technique. The zygote, later on, is implanted in the uterus, where further development takes place. **Patrick Steptoe** and **Robert Edwards** first time developed '**test tube baby technique**' in 1978.
- 6 (d)
Menstruation is caused by the reduction of oestrogen and progesterone, especially **progesterone** at the end of monthly ovarian cycle.
- 7 (c)
Fertilization takes place in ampulla of oviduct or ampullary isthmic junction
- 8 (b)

In telolecithal egg, yolk is unevenly distributed and most of the amount of yolk is found at the vegetal pole, *e.g.*, eggs of amphibians.

9 **(b)**

Oestrogen concentration remains almost constant and produce throughout the menstrual cycle
Generally, menstrual cycle have four phases

(i) **Menstrual phase** (a) The soft tissue of endometrial lining of the uterus disintegrates causing bleeding.

(b) The unfertilized egg and soft tissue are discharged.

(c) It lasts 3-5 days.

(ii) **Follicular Phase/Proliferative Phase** (a) The primary follicles in the ovary grow and become a fully mature Graafian follicle.

(b) The endometrium of the uterus is regenerated due to the secretion of LH and FSH from anterior pituitary and ovarian hormone, estrogen.

(c) It least for about 10-14 days.

(iii) **Ovulatory Phase** (a) Rapid secretion of LH (LH surge) induces rupture of Graafian follicle, thereby leading to ovulation (release of ovum).

(b) It lasts for only about 48 hr.

(iv) **Luteal Phase/Secretor Phase** (a) In this phase the ruptured follicle changes into corpus luteum in the ovary and it begins to secrete the hormone progesterone.

(b) The endometrium thickens further and their glands secrete a fluid into the uterus.

(c) If ovum is not fertilized, the corpus luteum undergoes degeneration and this causes disintegration of the endometrium leading to menstruation.

(d) Oestrogen and progesterone levels rise during this phase. It lasts for only 1 day. (e) During pregnancy all events of the menstrual cycle stop and there is no menstruation. The menstrual cycle permanently stops in females at the age of around 50 years. This is called **menopause**

10 **(c)**

Oestrogen is secreted by the cells of Graafin follicles. It is the principal feminizing hormone responsible for the development of secondary sexual characters and female reproductive organs.

11 **(c)**

Due to lack of progesterone, uterine endmetrium, epithelial glands and connective tissue are broken in menstrual cycle.

12 **(b)**

During normal menstruation approximately 40 mL of blood and an additional 35 mL of serous fluid are lost. The menstrual fluid is normally non-clotting because a fibrinolysin is released alongwith necrotic endometrial material.

13 **(b)**

In ovulatory phase, release of ova occurs due to the rapid increase in LH called LH surge. It last for maximum two days

14 **(b)**

In beginning, the corpus luteum degenerates because of decreasing LH and progesterone level. This leads to the degradation at endometrium wall

15 **(d)**

Oogonia (A)

↓ Miosis (cell division)

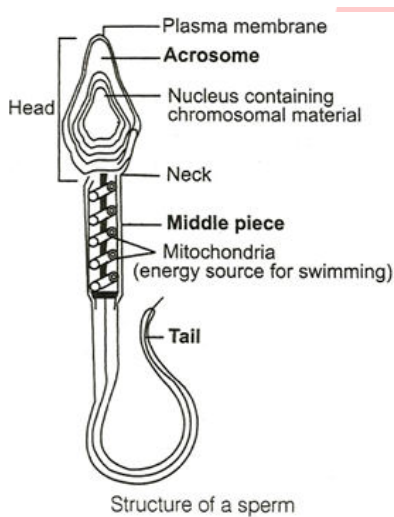
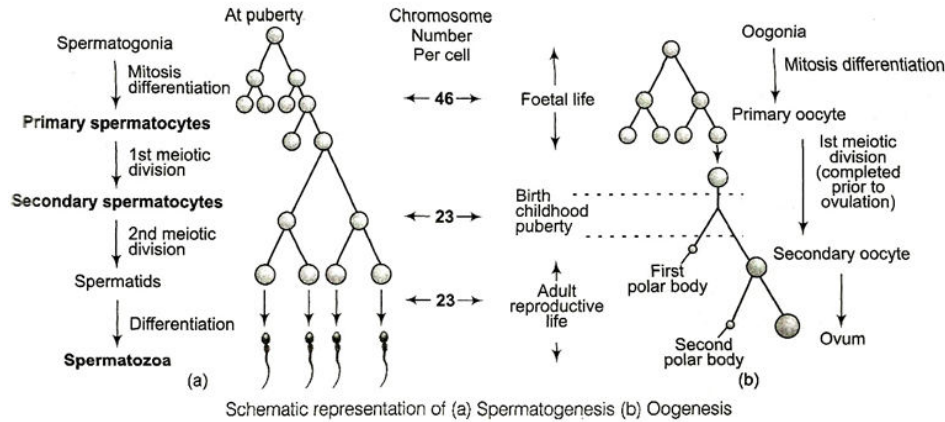
Primary oocyte (B)

↓ Meiosis-I (completed prior to ovation)

Secondary oocyte (C)

↓ Meiosis-II

Ovum



16 (a)

The fusion of a haploid male gamete (sperm) and a haploid female gamete (ovum) to form zygote is called fertilization. Fertilization takes place in fallopian tube of human.

17 (b)

A- Chorion, B-Amnion, C- Yolk sac, D- Allantois.

Extraembryonic or Foetal Membranes

The growing embryo/foetus develops four membranes called the extraembryonic or foetal membranes. These include chorion, amnion, allantois and yolk sac

(i) Chorion It is made up of trophoblast outside and somatopleuric extraembryonic mesoderm inside. It completely surrounds the embryo and protects it. It also takes part in the formation of placenta

(ii) Amnion It is composed of trophoblast inside and somatopleuric extraembryonic mesoderm

outside. The space between the embryo and the amnion is called the amniotic cavity, which is filled with a clear, watery fluid secreted by both the embryo and the membrane. The amniotic fluid prevents dessication of the embryo and acts as a protective cushion that absorbs shocks

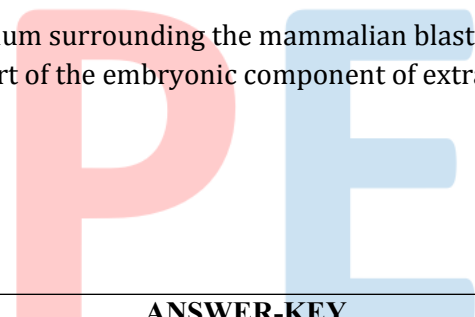
(iii) Allantois The allantois is composed of endoderm inside and splanchnopleuric extraembryonic mesoderm outside. It is a sac like structure, which arises from the gut of the embryo near the yolk sac. In human the allantois is small and non-functional except for furnishing blood vessels to the placenta

(iv) Yolk Sac The primary yolk sac consists of endoderm inside and splanchnopleuric extraembryonic mesoderm outside. The yolk sac is non-functional in human beings except that it functions as the site of early blood cell formation

18 (a) Oogenesis starts in the foetal stage. Till the time of birth they remains in prophase-I. The oogenesis resumes at the time of puberty by GnRH produced by hypothalamus

19 (a) Vulva or urinogenital opening is the opening of vestibule which inturn consists jointly the opening of vagina (i.e, vaginal orifice), urethra (urethral orifice) and hymen.

20 (a) Trophoblast ia an epithelium surrounding the mammalian blastocyst forming outer layer of chorion and becoming part of the embryonic component of extra-embryonic membranes.



ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	D	D	D	A	A	D	C	B	B	C
Q.	11	12	13	14	15	16	17	18	19	20
A.	C	B	B	B	D	A	B	A	A	A