

**Topic :- Human Reproduction**

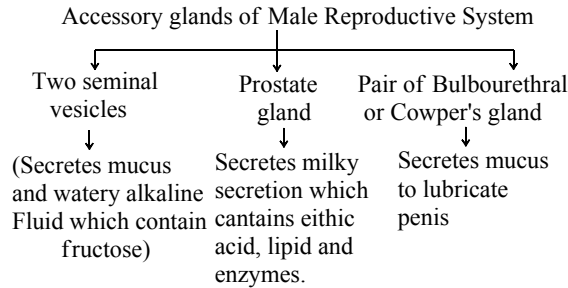
- 1 **(a)**  
Intra Uterine Device (IUD) is a small device made up of copper, plastic or stainless steel. It is inserted into uterus by a doctor and left in place. It prevents implantation and may cause bleeding and discomfort.
- 2 **(c)**  
At present, the most widely accepted method of contraception in India is IUDs (Intra Uterine Devices). These devices are effective and popular. These devices are inserted by doctors and expert nurses in the uterus through vagina.
- 5 **(d)**  
A chemical fertilizin is a glycoprotein or acid mucopolysaccharide produced from mature eggs. Dur to it, sperms migrate towards ova.
- 6 **(b)**  
Prolactin, FSH, LH
- 7 **(b)**  
The growth of superficial and middle layer of endometrium occurs from the 5<sup>th</sup> to 14<sup>th</sup> day of the cycle under the influence of oestrogen.
- 8 **(b)**  
Semen is collection of secretions from the seminal vesicles, prostate gland and Cowper's glands and sperms from testis. A single ejaculation may contain 200-300 million spermatozoa (sperms) of which atleast 60% sperms must have normal shape and size and atleast 40% of them must show vigorous motility for normal fertility.  
Semen has a pH of 7.35-7.50; its alkalinity helps to neutralize the acidity of the urethra protects the sperms from the acidity of the vagina
- 9 **(b)**  
In human female reproductive cycle or menstrual cycle during proliferative phase, the anterior lobe of pituitary gland secretes the Follicle Stimulating Hormone (FSH), which stimulates to ovarian follicles to secrete oestrogens. During the second week of reproduction cycle, most of the developing follicle die and usually one follicle continues to mature. Now the Luteinzing Hormone (LH) in blood level increase by pituitary gland. A small surge of FSH also occurs. Now ovulation takes place, which releases immature egg into abdominal cavity. During ovulation, the follicle breaks open and collapses under the continuous influence of Luteinizing Hormone(LH). It begins to enlarge and forms a yellowish strucyure, called corpus luteum or yellow body.
- 10 **(a)**

Internally, the breast consists of the glandular tissue forming mammary glands, the fibrous tissue (connective tissue) and the fatty or adipose tissue. Mammary glands are modified **sweat glands**

11 (a)

A tertiary follicle changes into the mature follicle or Graafian follicle. The secondary oocyte forms a new membrane called zona pellucida surrounding it. The Graafian follicle ruptures to release the secondary oocyte (ovum) from the ovary by the process called ovulation

12 (b)



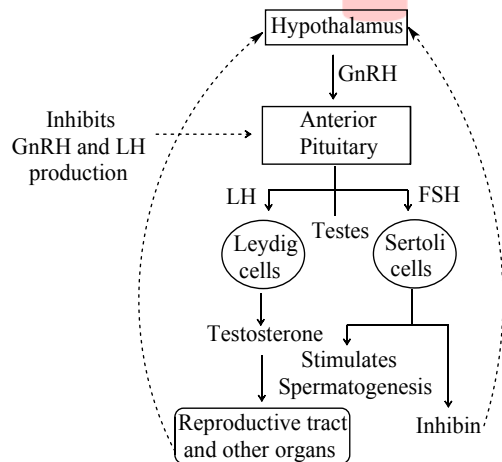
External genitalia of humans is called **penis**. Its outer skin, which covers the forehead of penis called foreskin or prepuce. It is the single opening for semen and urine in males

13 (b)

FSH and LH.

**Hormonal Control of Spermatogenesis** Spermatogenesis is initiated due to the increase in Gonadotropin Releasing Hormone (GnRH) by hypothalamus. GnRH acts on the anterior lobe of the pituitary gland to secrete Luteinising Hormone (LH) and Follicle Stimulating Hormone (FSH). LH acts on the Leydig cells of the testis to secrete testosterone.

FSH acts on the sertoli cells of the seminiferous tubules of the testis to secrete an androgen binding protein (ABP) and inhibin. ABP concentrates testosterone in the seminiferous tubules. Inhibin suppresses FSH synthesis. FSH act on spermatogonia to stimulate sperm production



Hormonal control of male reproductive system

Dark line – Positive feed back

Dot line – Negative feed back

14 (a)

Female gamete mother cells are called oogonia.

**Oogenesis** is the process of formation of mature ovum. *It has three phases*

(a) **Multiplication Phase** Oogenesis takes place in embryo stage. A couple of million of gamete mother cells (oogonia) are formed within each foetal ovary. No more oogonia are formed after birth. These cells (oogonia) get into prophase-I of meiotic division. They get temporarily arrested as this stage called primary oocyte

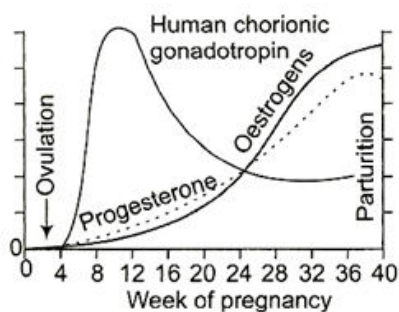
(b) **Growth Phase** Each primary oocyte then gets surrounded by a layer of granulosa cells. This structure is called the primary follicle. A large number of these follicles degenerate during the phase from birth to puberty. At puberty, only 60000 and 80000 primary follicles are left in each ovary. The primary follicles get surrounded by more layers of granulosa cells and a new theca to form secondary follicles

(c) **Maturation Phase** In the first maturation phase, the secondary follicle soon transforms into a tertiary follicle. The primary oocyte within the tertiary follicle grows in size and completes its first meiotic division to form a large haploid secondary oocyte and a tiny first polar body  
The tertiary follicle changes into a mature follicle-the Graafian follicle which ruptures to release the secondary oocyte (ovum) from the ovary by a process called ovulation. The second maturation phase occurs after fertilization when the meiotic division of the secondary oocyte is complete. This second meiotic division results in the formation of a second polar body and a haploid ovum (ootid)

16 (b)  
A-Oogonia-46 chromosomes, B-Primary oocyte-46 chromosomes, C-Secondary oocyte-23 chromosomes

17 (c)  
In spermatogenesis, primary spermatocyte undergoes meiosis-I and as a result of which two haploid secondary spermatocytes formed. Thus, for the given case secondary spermatocyte possesses 8 chromosomes, *i.e.*,  $n=8$  and 16 chromatids because each chromosome divides along its length into two chromatids.

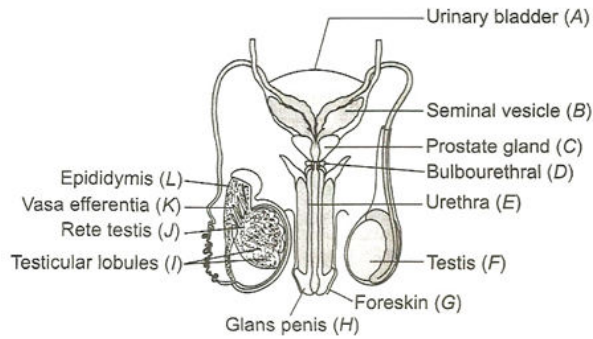
18 (d)  
hCG, hpG, and relaxin are produced during pregnancy. During pregnancy the level of other hormone like oestrogen, progesterone, cortisol, prolactin, thyroxin, etc., are increased several folds in maternal blood. Increased production of these hormones is essential for supporting the foetal growth, metabolic changes in the mother and maintenance of pregnancy



19 (a)  
A-Labia minora, B-Hymen, C-Clitoris

20 (b)  
**Rete Testis and Vasa Efferentia**  
The seminiferous tubules are closed at one end but on the other side they join to a network called

rete testis from where fine ciliated ductules called **vasa efferentia** arises



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