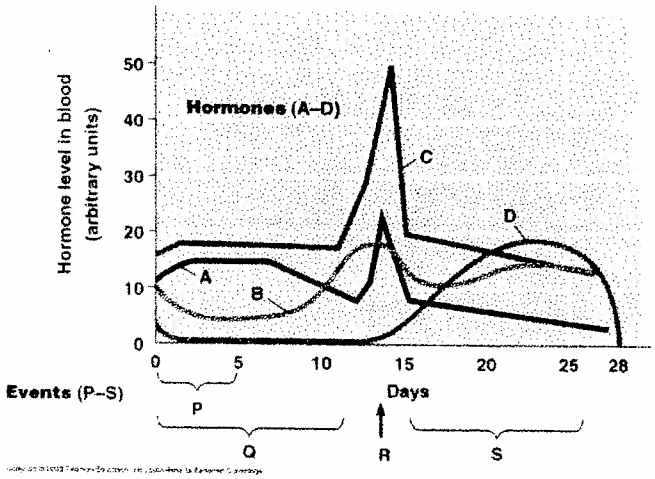
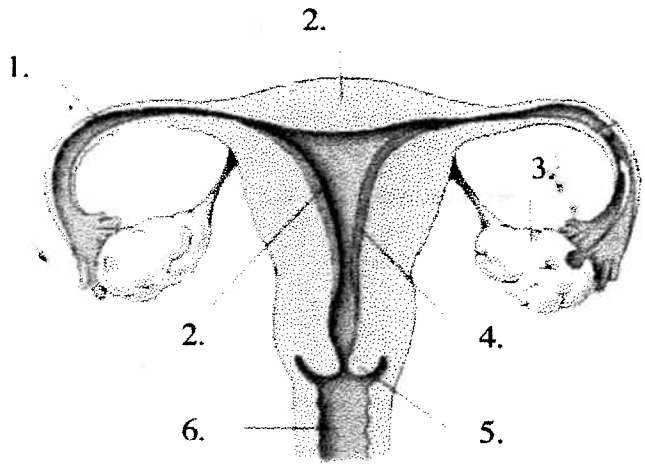
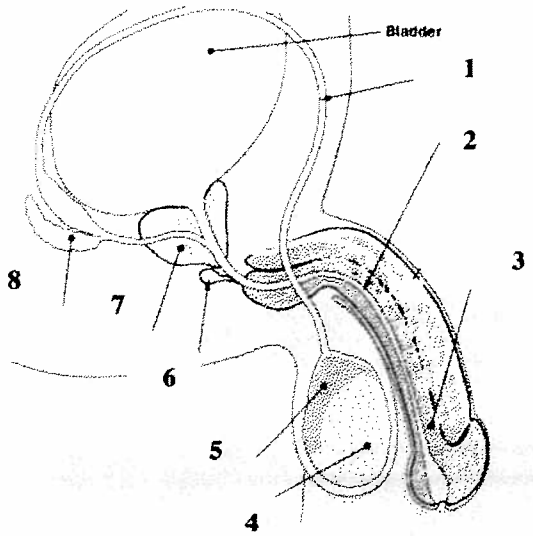
Q 1 Identify hormones A through D



Q2 Identify and describe the functions.



Q 3 Identify and describe the functions.



Q 4

List and describe the functions of two structures in the ovary that are supporting structures for the egg

Q 5

Identify the glandular cells that secrete testosterone and the four functions of testosterone.

Q 6

Identify the source of secretion and the function of the male hormones FSH and LH.

A 2

1. **Fallopian tube:** site of fertilization
2. **uterus :** holds and nourishes a developing fetus
3. **ovary:** produces egg cells and hormones
4. **endometrium:** lining of the uterus which is the site of implantation of the embryo and supplied with blood vessels to provide nutrients for fetus
5. **cervix:** narrow opening between uterus and vagina
6. **vagina:** birth canal; receives penis during sexual intercourse; the exit for the menstrual flow

A 1

hormone A: FSH

hormone B: estrogen

hormone C: LH

hormone D: progesterone

A 4

1. follicles:
   - contain cells that nourish the developing oocyte
   - contain glandular cells that secrete estrogen

2. corpus luteum
   - organ that arises from transformed follicle cells
   - secretes estrogen and progesterone

A 3

1 vas deferens: carries sperm from the epididymis to its junction with the urethra
2 urethra: carries semen during ejaculation
3 penis: deposits sperm into the female reproductive tract
4 testes: produces sperm
5 epididymis: stores and matures sperm in coiled tubules
6 Cowper's gland: secretes mucus and alkaline fluid (to protect sperm from acidic environment of the vagina)
7 prostate gland: secretes mucus and alkaline fluid
8 seminal vesicle: secretes fluid and fructose to provide energy for the sperm

A 6

FSH:
- secreted by the pituitary gland
- stimulates the production of sperm in the Sertoli cells of the seminiferous tubules

LH:
- secreted by the pituitary gland
- promotes the production of testosterone by the interstitial cells

A 5

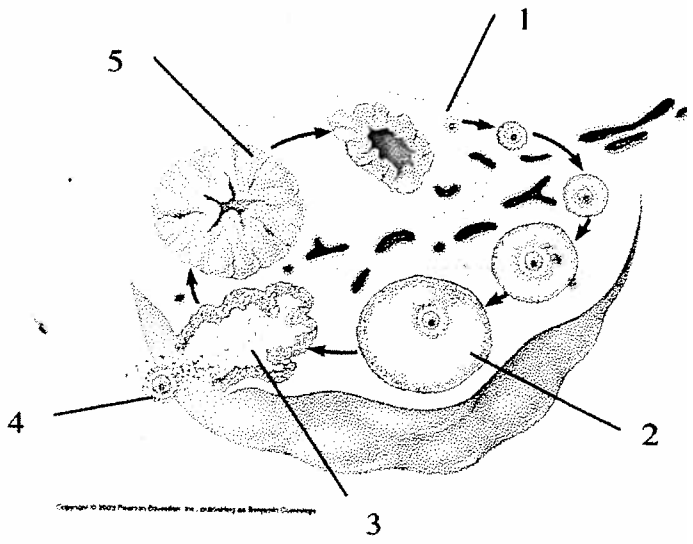
Testosterone is secreted by the interstitial cells in the testes.

Functions are:
- promotes 2° sex characteristics
- stimulates primary sex characteristics(development of reproductive tract)
- high levels act as a negative feedback to pituitary and hypothalamus
- along with FSH, stimulates spermatogenesis

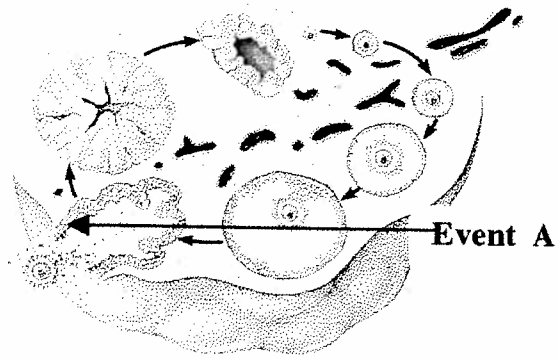
Q 7

Identify a sexually transmitted infection (STI) and explain how the STI can interfere with fertility and reproduction.

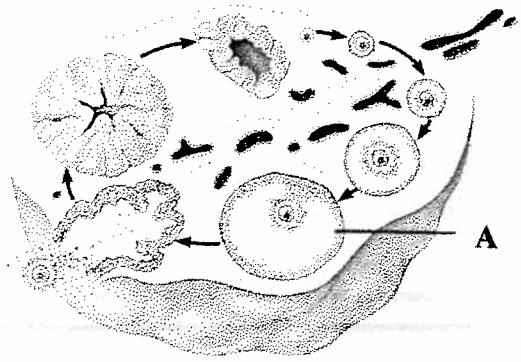
Q 8 Identify the structures



Q 9 Identify Event A.
Identify the gland which secretes the hormone and the name of the hormone that promotes event A.



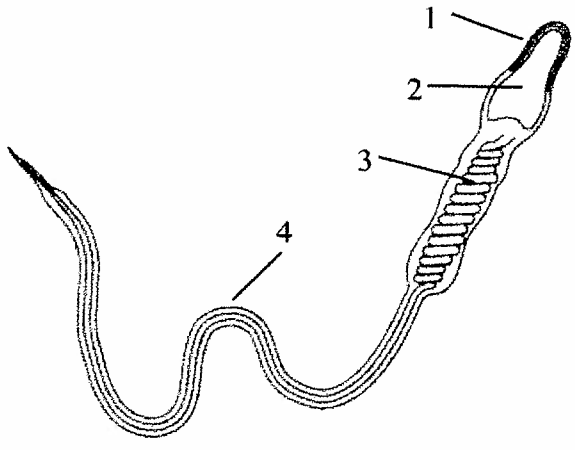
Q 10 Identify the hormone and source of the hormone that promotes glandular cells to develop in A. Identify the hormone that structure A produces.



Q 11

- Identify the two ovarian hormones that act as a negative feedback upon the release of pituitary gonadotropins.
- What event do these two hormones inhibit?
- Identify the two pituitary gonadotropic hormones and the hypothalamic hormone which controls their release.

Q 12 Identify structures 1—4.
Describe the function of structure 1.



A 8

1 primary oocyte within follicle cells

2 mature follicle

3 ruptured follicle

4 secondary oocyte

5 corpus luteum

A 7

Chlamydia:

- bacterial infection that can lead to a build-up of scar tissue in the oviducts (Pelvic Inflammatory Disease).
- the blocked oviducts do not allow the sperm to reach the egg.

Gonorrhea

- bacterial infection in the urethra or cervix; sperm cannot reach egg
- can lead to PID which results in scar tissue in oviducts; sperm cannot reach egg

A 10

hormone: FSH
secreted by the pituitary gland

Structure A, follicle cells, produces the hormone estrogen.

A 9

Event A: ovulation

The pituitary gland secretes LH which stimulates ovulation.

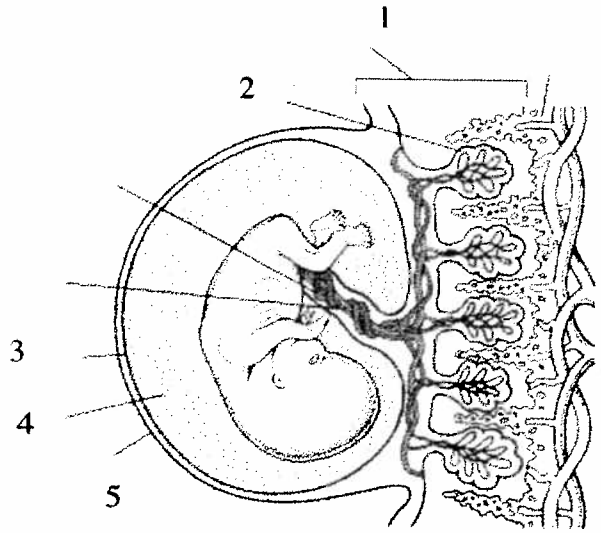
A 12

1 acrosome: contains enzymes to help sperm penetrate the egg
2 nucleus
3 mitochondria
4 flagellum

A 11

- **ovarian hormones:** progesterone and estrogen
- **event inhibited:** ovulation
- **pituitary gonadotropins:** FSH and LH
- GnRH controls the release of FSH and LH

Q 13 Identify and describe the structures

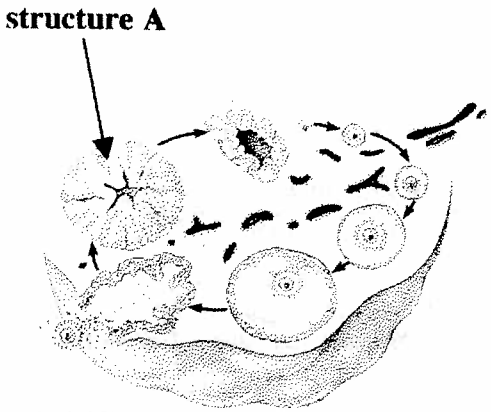


Q 14

Gastrulation is the process in which the three germ layers are formed: ectoderm, mesoderm and endoderm.

List the major tissues and organs that arise from each germ layer.

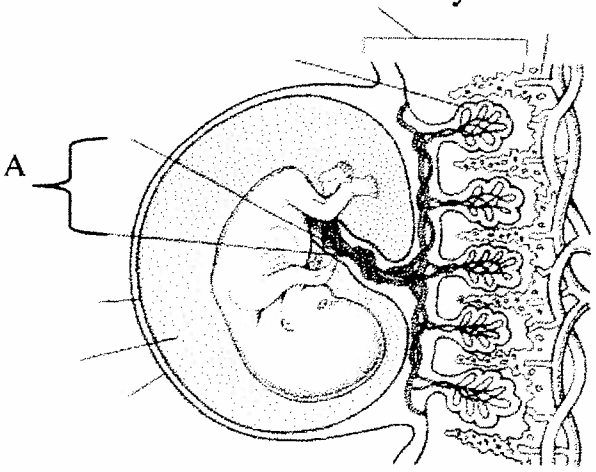
Q 15 **Identify** the hormone that stimulates the formation and development of structure A. After fertilization, **identify** the hormone that continues this stimulation. Why is this necessary?



Q 16

Identify the functions of the placenta.

Q 17 Identify the extra-embryonic membrane that contributes to the formation of "A". Identify "A".



Q 18

Put the following events of pregnancy into the correct sequence:

blatocyst formation, parturition, morphogenesis, zygote formation, gastrulation, fertilization,

A 14

- **ectoderm:** nervous system, epidermis(skin)
- **mesoderm:** skeleton, muscles, reproductive structures
- **endoderm:** lining of the digestive and respiratory systems, endocrine glands

A 13

1 placenta: organ composed of both fetal tissue (chorion) and maternal tissue (endometrium)
2 chorionic villi:
3 amnion: fluid-filled extra-embryonic membrane
4 amniotic cavity: contains fluid which protects embryo
5 chorion: produces hCG which maintains the corpus luteum for the first three months of pregnancy

A 16

The placenta is an organ that allows for the exchange of nutrients, oxygen and waste between the maternal blood supply and the fetal blood supply.

The placenta also produces progesterone and estrogen beginning at ~ the 4th month of pregnancy.

A 15

LH stimulates the formation and development of the corpus luteum.

hCG continues to stimulate the corpus luteum for the first 3 months of pregnancy.

The corpus luteum secretes estrogen and progesterone, which are needed to maintain the endometrium lining for the developing fetus.

A 18

Sequence of events:
fertilization
zygote formation
blastocyst formation:
gastrulation
morphogenesis
parturition

A 17

Allantois: forms the foundation of the umbilical blood vessels.

Structure A: umbilical blood vessels

Q 25

Identify five teratogens that would influence embryonic and fetal development.

Identify the trimester when the fetus is most susceptible to teratogens.

Q 26

Identify two examples of conception control and describe the physiological or mechanical basis of the reproductive technology.

Q 27

Identify two examples of infertility reversal and describe the physiological or mechanical basis of the reproductive technology.

Q 28

Describe in vitro fertilization.

Q 29

- Identify the gland that produces oxytocin.
- Identify the gland that releases oxytocin.
- Identify the control of parturition as positive feedback or negative feedback.
- Describe the role of oxytocin and prostglandins in parturition.

Q 30

- Identify the gland that secretes prolactin
- Identify the control of lactation as positive feedback or negative feedback
- Describe the role of prolactin and oxytocin in the control of lactation

A 26

Example of a physiological conception control:

- **birth control pills**: artificial hormones mimic the effect of progesterone and inhibit the release of FSH and LH from the anterior pituitary. As a result, the woman does not ovulate.

Examples mechanical conception control:

- **condom**: physical barrier to contain ejaculated sperm
- **surgical sterilization**:
  - **vasectomy** involves cutting and tying the vas deferens
  - **tubal ligation** involves cutting and tying oviduct

A 25

Four tertogens are:

- alcohol
- tobacco
- drugs
- viral infections
- radiation
- environmental toxins

The fetus is most susceptible to teratogens in the first trimester.

A 28

In vitro fertilization:

- ultrasond is used to identify eggs in the ovary
- eggs are retrieved using a laparoscope
- eggs are combined with sperm in lab glassware
- after fertilization, the developing embryo is placed in the uterus

A 27

Infertility reversal can be achieved by:

- **superovulation:** hormone treatments to produce multiple eggs
- **artificial insemination:** sperm placed in woman's vagina
- **surrogate mother:** another woman carries the baby

A 30

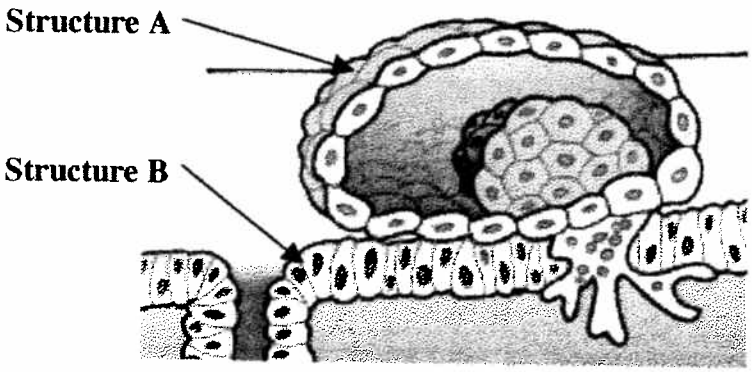
- Prolactin is secreted by the anterior pituitary
- Lactation, the secretion and formation of breast milk, is controlled by positive feedback initiated by suckling stimulation of the baby.
- **Oxytocin** stimulates the secetion of breast milk.
- **Prolactin** stimulates the formation of breast milk.

A 29

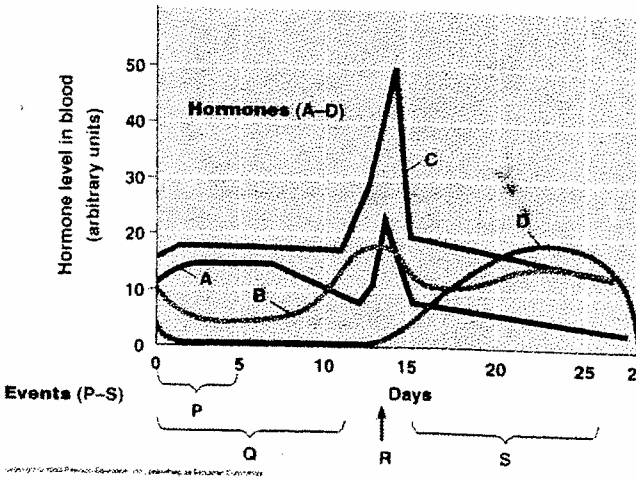
- **Hypothalamus** produces oxytocin
- **Posterior pituitary** releases oxytocin
- The birthing process, parturition, is controlled by positive feedback initiated by uterine muscle contractions stimulating the hypothalamus
- **Oxytocin** causes strong uterine contractions
- **Prostaglandins** also simulates the uterine muscle to contract.

Q 31 Identify the structures in this diagram of implantation.

Identify the approximate day of pregnancy that this occurs.

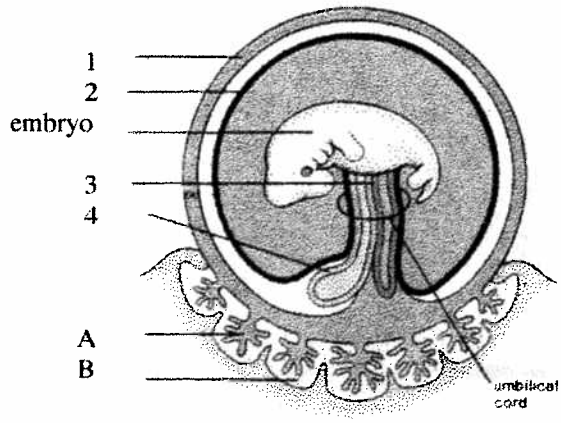


Q 32 Identify events P through S.



Q 33 Identify the four extra-embryonic membranes.

Identify A and B as either the fetal portion or the maternal portion of the placenta



Q 34

- Identify the gland that secretes hCG
- Identify the target for hCG
- Explain why hCG declines to low levels after the first trimester of pregnancy.

Q 35

During which trimester are all the body organs formed?

During which trimester do the external genitalia complete their differentiation ?

Q 30

Draw the negative feedback control of the male reproductive system.

A 32

- **event P: menstrual phase:** endometrium lining is shed due to low levels of progesterone and estrogen
- **event Q: follicular phase**: a follicle develops in ovaries and secretes estrogen which targets the endometrium to repair
- **event R**: ovulation
- **event S: luteal phase**: corpus luteum secretes both estrogen and progesterone which targets the endometrium to prepare for embryo implantation

A 31

Structure A: blastocyst
Structure B: endometrium

Implantation occurs on approximately the 6th or 7th day of pregnancy

A 34

The chorionic cells of the placenta secretes hCG

The target of hCG is the corpus luteum so that estrogen and progesterone continue to be secreted.

After the first trimester, the placenta secretes sufficient progesterone and estrogen to maintain the endometrium.

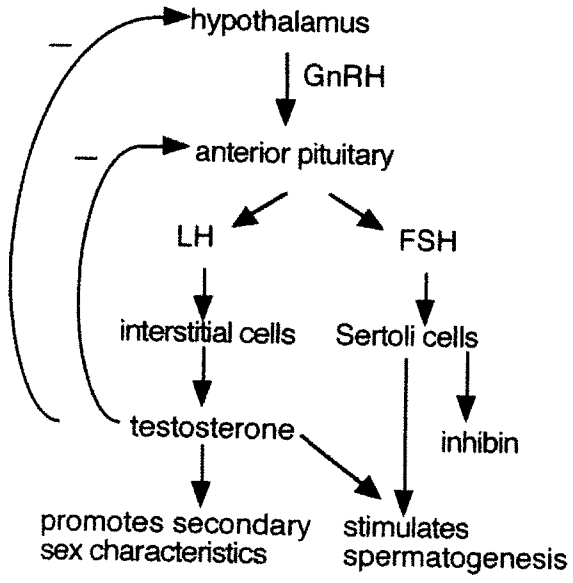
A 33

1 chorion
2 amnion
3 allantois
4 yolk sac

A fetal portion of placenta: chorionic villi

B maternal portion of placenta: endometrium

A 36



A 35

All body organs are formed during the first trimester.

Sex differentiation of external genitalia occurs during the first trimester.