REPRODUCTIVE SYSTEM. EMBRYOLOGY

The reproductive system is the combination of organs and tissues associated with the process of **reproduction**.

The female reproductive system consists of the ovaries, **Fallopian tubes**, **uterus**, **vagina**, and **vulva**. In females, **ova** are produced by the ovary from the puberty period to **menopause**, that is, the end of the **fertile period**. Fallopian tubes are **hornlike** and serve as **natural ducts** for the ovum to **penetrate into** the uterus.

The uterus is a **pear-shaped** organ between the urinary bladder and the rectum. The uterus or **womb** is the place where the **embryo** and then **fetus** develop. **Placenta** is a **sponge-like vascular** organ which develops during pregnancy in the **uterine wall**. The functions of the placenta are to **provide** the embryo (fetus) **with nourishment**, **eliminate** its **wastes**, and **exchange respiratory gases**.

The male reproductive system includes the testes, **prostate gland**, **seminal vesicle**s, **urethra** and **penis**. The male gonads (testes) are composed of a large mass of the **seminiferous tubules**. They contain cells which **manufacture spermatozoa**. **Semen** is a combination of spermatozoa and a thick fluid secreted by the prostate gland.

Embryology is the study of growth and development of the embryo and the fetus from **fertilization** of the ovum until birth. Ova are produced in the ovaries. Each ovary contains numerous follicles. The ova develop inside of follicles, but only a small proportion of them **reach maturity**. The mature female sex cells are considered to be the ova or egg cells.

After fertilization (the fusion of a spermatozoon and an ovum) rapid changes take place in the membrane of the ovum. The cells begin to **multiply** and the embryo is formed. In humans the term embryo refers to the **products of conception** within the uterus up to the eighth week of development. During this time all the main organs are formed.

The fetus is a **mammalian embryo** during the later stages of development within the uterus. In humans it refers to an **unborn child** from its eighth week of development till birth.

Modern embryology is an **advanced science**. Now doctors are able to examine the embryo or fetus during the first 12 weeks of **pregnancy** by means of **ultrasonic waves** or **fiberoptic endoscope**. Access to the **fetal circulation** may be **obtained** through the instrument and **direct visualization** of the embryo **enables** to diagnose possible **malformations**.

ESSENTIAL VOCABULARY

reproduction	відтворення, розмноження
Fallopian/uterine tubes	фалопієві/маткові труби
uterus/womb	матка, жіноче лоно
vagina	піхва
vulva	вульва, зовнішні статеві органи

menopause	менопауза, клімактеричний період
fertile period	здатний до розмноження; плідний період
hornlike	рогоподібний
natural duct	природний канал, протока
to penetrate into	проникати всередину
pear-shaped	грушоподібний
embryo	ембріон
fetus	плід
placenta	плацента
sponge-like	губкоподібний
uterine wall	стінка матки
vascular	судинний
to provide with	постачати,забезпечувати
nourishment	живлення
to eliminate wastes	видаляти продукти розпаду
to exchange respiratory gases	виконувати газообмін
prostate gland	простата, передміхурова залоза
seminal vesicles	сім’яні міхурці
urethra	сечовипускальний канал, уретра
penis	пеніс, чоловічий статевий член
seminiferous tubule	сім’яний каналець
to manufacture	виробляти, продукувати
spermatozoon (*pl*. - a)	сперматозоїд
semen	сім'я, сперма
fertilization	запліднення; запилення
to reach maturity	досягати зрілості
to multiply	розмножувати(ся), множити
product of conception	продукт зачаття, запліднення
mammalian embryo	ембріон ссавців
unborn child	ненароджена дитина
advanced science	передова наука
pregnancy	вагітність
ultrasonic waves	ультразвукові хвилі
fiberoptic endoscope	волоконно-оптичний ендоскоп

fetal circulation	кровообіг плоду
to obtain	одержувати, отримувати, здобувати
direct visualization	пряма візуалізація, просвічування
to enable	уможливлювати, створювати можливість
malformation	неправильне утворення, порок, каліцтво

II. ANSWER THE QUESTIONS

1. What is the function of the reproductive system? The reproductive system is responsible for reproduction.
2. What does embryology deal with? Embryology deal with growth and development of the embryo and the fetus from fertilization of the ovum until birth.
3. What organs does the male reproductive system include? The male reproductive system includes the testes, prostate gland, seminal vesicles, urethra and penis.
4. What organs does the female reproductive system include? The female reproductive system consists of the ovaries, Fallopian tubes, uterus, vagina, and vulva.
5. When does the placenta develop? Placenta develops during pregnancy in the uterine wall.
6. What functions does the placenta perform? The functions of the placenta are to provide the embryo (fetus) with nourishment, eliminate its wastes, and exchange respiratory gases.
7. Where are ova produced? Ova are produced by the ovary.
8. What changes occur in the ovum after fertilization? After fertilization (the fusion of a spermatozoon and an ovum) rapid changes take place in the membrane of the ovum.
9. What is the role of the Fallopian tubes? Fallopian tubes serve as natural ducts for the ovum to penetrate into the uterus.
10. Where are spermatozoa manufactured? Spermatozoa are manufactured in the testes.
11. What is the difference between the embryo and fetus? The fetus is a mammalian embryo during the later stages of development within the uterus.
12. What methods of examination does modern embryology use? Modern embryology use ultrasonic waves or fiberoptic endoscope.
13. What is the purpose of ultrasonic examination of the fetus? Access to the fetal circulation may be obtained through the instrument and direct visualization of the embryo enables to diagnose possible malformations.

BIOLOGICAL AND PSYCHOLOGICAL ASPECTS OF HEREDITY

Heredity includes all the factors that are present in the organism at birth. **In other words**, it is the **sum total** of **inborn individual traits**.

Heredity has two aspects – biological and psychological. Biologically, it means the sum total of biological traits that are present in the fertilised ovum. Psychologically it means the traits, **innate** tendencies, and **capacities** that **resemble** between the parents and the child.

Biological heredity according to general **observation** is that **like begets like**. It means that cow begets cow, horse begets horse, dog begets dog, and human beings beget human being. There is no **exception to this rule**.

It is a common observation that children are alike their parents. A child **takes after** his parents in size, **appearance**, colour of the skin, colour of the eyes, strength of muscles etc. **Identical twins** resemble each other at birth in every respect. **Fraternal twins** resemble in majority of the traits. **Siblings** resemble in many characteristics. Certain biologists explain that children are bound to resemble their parents closely because of the continuity of the germ plasm.

There are 5 major theories **regarding** the mechanism of heredity: Weisman's, Galton's, Mendel's, Darwin's, and Lamarck's theory. The discussion of the various theories has led to the following generalizations. In short they are as follows:

1. Like begets like.
2. Law of variation.
3. Law of regression.
4. **Transmission** of **acquired traits**.

Heredity is the **property** of one generation to convey to the other the signs of structure, physiological properties and the specific nature of individual development. **Variability** is a change in hereditary **potentialities**. Variability in manifestation of potentialities arises in the process of the organism development when interacting with the external environment. New properties of the organism appear only due to variability, but it only plays a role in evolution, when the **manifestation** of variability persists in **succeeding generations**, i.e. is inherited. But variability is limited by the law of regression. The law states that "In successive generations variations tend to move towards the average of the species of which they form a part."

The study of heredity and the variation of inherited characteristics is called Genetics. Genetics is of great importance for Medicine. The **issues** how genetic information is **replicated** and transmitted from cell to cell and organism to organism are studied by Biology.

ESSENTIAL VOCABULARY

heredity	спадковість

hereditary	спадковий
in other words	іншими словами
sum total	загальна сума, підсумок
inborn	вроджений, спадковий
individual trait	індивідуальна риса
innate	уроджений, природний, властивий
capacities	можливості, здібності
to resemble	бути схожим, мати подібність
observation	спостереження, дослідження
to beget (begot, begotten)	породити, породжувати
like begets like	подібне породжує подібне
exception to the rule	виняток з правила
to take after	бути схожим
appearance	зовнішній вигляд
identical twins	однояйцеві, монозиготні близнята
fraternal twins	двояйцеві, дизиготні близнята
sibling	єдинокровний брат або сестра
to regard	вважати; розглядати; мати стосунок
transmission	передача
acquired traits	набуті риси
property	властивість
variability	мінливість
potentialities	потенційні можливості
manifestation	прояв
succeeding generations	наступні покоління
to inherit	успадковувати
issue	питання, проблема
to replicate	повторювати (копіювати)

III. ASK QUESTIONS TO THE FOLLOWING SENTENCES BEGINNING WITH THE WORD IN BRACKETS:

1. Heredity includes all the factors that are present in the organism at birth

   What does heredity include?

2. Heredity has biological and psychological aspects

   How many aspects does heredity have?

3. Psychological aspect means the traits, innate tendencies, and capacities resembling the parents and the child

   What does the psychological aspect mean?

4. A child takes after his parents in many features

   (**Who does a child take features after?)**

5. Identical twins resemble each other at birth in every respect

   When do identical twins resemble each other?

6. Children are bound to resemble their parents closely because of the continuity of the germ plasm

   Why do children have to be very reminiscent of their parents?

7. There are 5 major theories regarding the mechanism of heredity

   How many basic theories are there about the mechanism of heredity?

8. The signs of structure, physiological properties and the specific nature of individual development can be conveyed from generation to generation

   How can the signs of structure, physiological properties and the specific nature of individual development be conveyed ?

9. Variability arises in the process of the organism development when interacting with the external environment

   When does variability occur?

10. New properties of the organism appear only due to variability

    (How do new properties of the organism appear?)

11. But variability is limited by the law of regression

    (What is the variability limited by?)

12. Genetics is of great importance for Medicine

    (What is genetics important for?)

13. The discussion of the various theories of heredity has led to the certain generalizations **(What has the discussion of the various theories of heredity led to?)**