DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : BIOLOGY
DPP No. : 8

Topic :- Human Reproduction

1 **(a)**
In the given options only acrosome belong to the male reproductive system. Rest of the options (corpus luteum, endometrium, Graafian follicle) belongs to the female reproductive system

2 **(b)**
Human placental lactogen stimulates growth and development of breast in preparation for lactation. This hormone is needed before oestrogen and progesterone can have their effects on breasts.

3 **(c)**
Ovulation (release of egg or ovum from ovary into body cavity) involves the extrusion of a secondary oocyte from the ovary. Actually by 10-14 days after the first day of menstruation, only one follicle has contained its growth to become a fully mature Graafian follicle, while other follicles regress through a process called follicle atresia. Under proper hormonal stimulation, Graafian follicle rupture and extrude its oocyte into the uterine tube in the process of ovulation.

4 **(b)**
Seminal vesicle produce 60% of the semen and gives alkaline medium to the sperm for the nutralisation of vaginal acidic medium

5 **(d)**
A- Cervix B- Uterine cavity

C-fallopian tube D-Ovary

6 **(a)**
2nd month.
Summary of important development changes in the human embryo

Time from Fertilisation	Organ Formed
Week 1	Fertilisation cleavage starts about 24 hours after fertilisation cleavage to form a blastocyst 4-5 days after fertilisation. More than 100 cells implantataion 6-9 days after fertilisation
Week 2	The three primary

	germ layers (ectoderm, endoderm and mesoderm) develop
Week 3	Woman will not have a period. This may be the first sign that she is pregnant. Beginning of the backbone. Neural tube develops, the beginning of the brain and spinal cord (first organs)
Week 4	Heart, blood vessels, blood and gut start forming. Umbilical cord developing
Week 5	Brain developing, 'Limb buds', small swelling which are the beginning of the arms and legs. Heart is a large tube and starts to beat, pumping blood. This can be seen an ultrasound scan
Week 6	Eyes and ears start to form
Week 7	All major internal organs developing. Face forming. Eyes have some colour. Mouth and tongue develop. Beginning of hand and feet
Week 12	Foetus fully formed, with all organs, muscles, bones toes and fingers. Sex organs well developed. Foetus is moving
Week 20	Hair beginning to grow including eyebrows and eyelashes. Fingerprints developed.

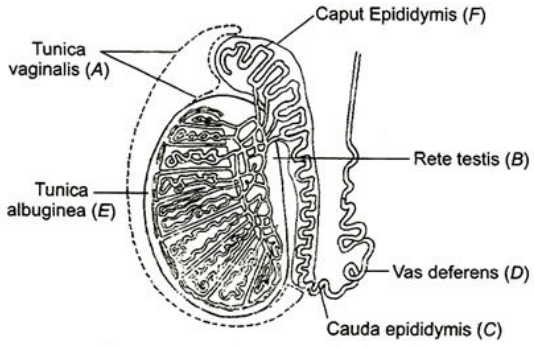
	Fingernails and toenails growing. Firm hand grip. Between 16 and 20 weeks baby usually felt moving for first time
Week 24	Eyelids open. Legal limit of abortion in most circumstances
By Week 26	Has a good chance of survival if born prematurely
By Week 28	Baby moving vigorously. Responds to touch and loud noises. Swallowing amniotic fluid and urinating
By Week 30	Usually lying head down ready for birth
40 Weeks	Birth

7 **(a)**

FSH (Follicle Stimulating Hormone), secreted by anterior lobe of pituitary, stimulates sperm formation in male and growth of ovarian follicles in the females.

8 **(c)**

Testis is covered by tough compact fibrous capsule called **tunica albuginea**, which is externally covered by peritoneal layer of flat cells called **tunica vaginalis**; which is supplied by a network of blood capillaries called **tunica vasculosa**



LS of mammalian testis and different ducts

9 **(d)**

Inhibin is a glycoprotein hormone secreted from the Sertoli's cells. It is involved in the negative feedback control of sperm production.

10 **(a)**

Inner cell mass forms embryonic disc, which is composed of two layers, ectoderm above and endoderm below. Once the embryonic disc elongates, to form primitive streak which forms

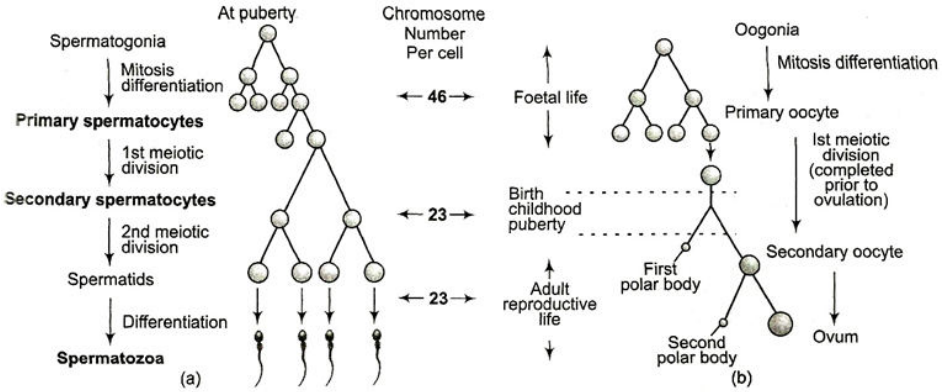
mesoderm.

11 **(b)**

Capacitation of Sperm The sperms in the female is genital tract are made capable of fertilizing the egg by the secretion of female genital tract. These secretions of the female genital tract removes the coating substances deposited on the surface of the sperms, particularly those on acrosome. Thus, the receptor sites on the acrosome are exposed and sperm become active to penetrate the egg. This phenomenon of sperm activation in mammals is called capacitation. It takes about 5-6 hr for capacitation of sperm

12 (c)

Primary oocyte surrounded by a layer of granulosa cell called primary follicle which are 2n in number.



Schematic representation of (a) Spermatogenesis (b) Oogenesis

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)

13 (b)

After one week of fertilization, implantation begins to starts. During implantation, the trophoectoderm (trophoblast) comes in contact with the endometrium of the uterus and sinks into a

pit formed in the endometrium and gets completely burried in the endometrium.

14 (c)
Oestrogen is secreted from the ovary and regulates growth and development of female accessary reproductive organs, secondary sexual characters and behaviour, so when both ovaries are removed. Oestrogen level will decrease in blood.

15 (d)
Testosteron is a steroid hormone and causes development of secondary sexual characters in male.
Gestation period of rabbit is approximately 28 to 32 days.
Bulbourethral glands are the pea-sized glands inferior to the prostate. These glands secrete a fluid that lubricates urethra and the end of penis.
Before ovulation, oestrogens are secreted from Graafian follicle. Placenta also secretes some amount of oestrogens.

16 (c)
Corpus luteum acts as an endocrine gland. It is formed from the remaining structure of mature Graafian follicle which rupture at the time of ovulation and release ovum. Corona radiata and cumulus rophorus. It produces progesterone hormone during the second half of the menstrual cycle. It prepares the lining of uterus for implantation of fertilized egg.

17 (b)
The embryo with about 64 cells is termed as blastocyst. The process of attachment of blastocyst with the uterine wall of mother is called implantation. It occurs after 7 days of fertilization.

18 (b)
A-seminal vesicles; B-urethra

19 (a)
Fate of three germ layers
Mesoderm Dermis of skin, circulatory system, muscles, bones (except facial)
Endoderm Lining of Gl tract, lining of lungs, kidney ducts and bladder, thymus, thyroid tonsils
Ectoderm Epidermis of skin, tooth enamel, lens and cornea of the eye outer ear Brain and spinal cord, facial bones skeletal muscles in the head

20 (a)
A-Chorion; B-Placenta

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