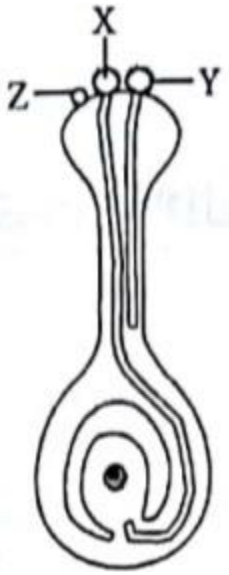
CBT AUGUST 2023-24

CLASS – XII : BIOLOGY

A. Read the following and answer any four questions from 1 to 3 given below:

Cross pollination is the transfer of pollen grains from the anther of a one flower to the stigma of a genetically different flower. It is performed with the help of an external agency which may be abiotic (e.g., wind, water) or biotic (e.g., insects, birds, bats, snails). The diagram shows the carpel of an insect pollinated flower.



(1) What is the most likely reason for non germination of pollen grain Z?

(a) Pollen grains X and Y were brought to the stigma earlier, therefore, their germination inhibited the germination of pollen grain Z.
(b) Pollen grain Z was brought to the flower by wind, while pollen grains X and Y were brought flower by insect.
(c) Pollen grain Z lacks protrusions that allow it to adhere properly onto the stigma surface.
(d) Pollen grain Z comes from a flower of an incompatible species.
Ans. (d)

FEEDBACK : because in other three options such incompatibility does not show by the nature.

(2) Refer to the given characteristics of some flowers.
A. The stamens hang out of the flower, exposing the anthers to the wind.
B. The pollen grains are tiny and light.
C. The flower has a sweet scent.
D. The flower petals are brightly coloured.
How many of the above characteristics are of insect pollinated flower?
(a) One (b) Two (c) Three (d) Four
Ans. (b)

FEEDBACK : insect pollinated flowers are brightly coloured, fragrent, offer pollen grains to the visitors.

(3) Which of the following best describes the function of the pollen tube?

(a) It acts as a conduit to transport male gametes from the anther to the ovule.

(b) It acts as a conduit to transport male gametes from the stigma to the ovule.

(c) It contains key nutrients that serve to nourish the newly-formed zygote.

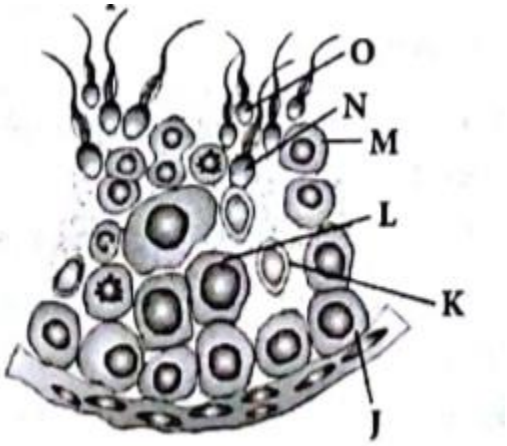
(d) It digests the tissues of the stigma, style and ovary.

Ans. (b)

FEEDBACK : pollen grains germinate on stigma and produce pollen tube that carries male gametes to the ovule.

B. Read the following and answer any four questions from 4 to 8 given below:

Each testicular lobule of testis contains one to three highly coiled seminiferous tubules. Wall of each seminiferous tubule is formed of single layered germinal epithelium. Majority of cells in this epithelium are cuboidal called male germ cells. Study the transverse section of part of seminiferous tubule and answer the following questions.



(4) What is the characteristic of K?

(a) K is spermatogonium which grows into primary spermatocyte. .
(b) K is Sertoli cell which provides nutrition to spermatids.

(b) K is secondary spermatocyte which undergo meiosis II to form spermatid.
(d) K is spermatid being converted into sperm.

Ans. K

FEEDBACK : This is the diagram of sectional view of seminiferous tubule. In which J-spermatogonium,k sertoli cells, L- primary spermatocyte, M- secondary spermatocyte, N- spermatids and o- spermatozoa. So k is sertoli cell which provides nutrition to spermatids.

(5) Which of the following cell undergo reduction division to form secondary spermatocyte?
(a) J
(b) M
(c) L
(d) K
Ans. C

FEEDBACK : Primary spermatocytes undergoes reduction division to form secondary spermatocyte. So option (c) L is coreect.

(6) How many among the following have 46 chromosomes?

J,K, L, M, N, O

(a) 2
(b) 4
(c) 5
(d) 3
Ans.d

FEEDBACK : Spermatogonium, primary spermatocytes and sertoli cells have 46 chromosomes. So (d) 3 is correct option.
(7) Select an option that correctly identifies different labels.

(a) L-Primary spermatocyte, N - Spermatozoa, M-Secondary spermatocyte
(b) J-Spermatogonium, K-Sertoli cell, O-Spermatozoa
(c) L-Primary spermatocyte, M-Secondary spermatocyte, N - Spermatozoa (d) J-Spermatogonium, K- Primary spermatocyte, N-Spermatid
Ans. b

FEEDBACK : This is the diagram of sectional view of seminiferous tubule. In which J-spermatogonium,k sertoli cells, L- primary spermatocyte, M- secondary spermatocyte, N- spermatids and o- spermatozoa. So option (b) is correct.
(8) Which hormone initiates spermatogenesis at puberty?

(a) FSH
(b) ICSH
(c) ABP
(d) GnRH

Ans. d

FEEDBACK : At the age of puberty due to significant increase in the secretion of gonadotropin releasing hormone (GnRH). This is a hypothalamic hormone. The increased levels of GnRH then acts at the anterior pituitary gland and stimulates secretion of two gonadotropins – luteinising hormone (LH) and follicle stimulating hormone (FSH) which further initiate the process of spermatogenesis. So option (d) is correct.
Read the following and answer any four questions from 9 to 10 given below:

Oral administration of small doses of hormones is contraceptive method used by the females. They are used the form of tablets and hence called the pills. The oral pills are two types; mini pills and combined pills.

(9) How do hormonal pills prevent pregnancy?

(a) By phagocytosis of the sperms

(b) By inhibiting ovulation

(c) By preventing sperms from entering the vagina

(d) All of these

Ans. **b**

FEEDBACK : Pills inhibit ovulation and implantation as well as alter the quality of cervical mucus to prevent/retard entry of sperms. So option (b) is correct.

(10) Assertion: Mala D, a combined contraceptive pill have to be taken daily without a break. Reason: Mala D contains synthetic progesterone and estrogen.

(a) Both assertion and reason are true and reason is the correct explanation of assertion.

(b) Both assertion and reason are true but reason is not the correct explanation of assertion.

(c) Assertion is true but reason is false.

(d) Both assertion and reason are false.

Ans.b

FEEDBACK : Pills have to be taken daily for a period of 21 days starting preferably within the first five days of menstrual cycle. After a gap of 7 days (during which menstruation occurs) it has to be repeated in the same pattern till the female desires to prevent conception. They inhibit ovulation and implantation as well as alter the quality of cervical mucus to prevent/retard entry of sperms. So option (b) is correct.