CBT SEPTEMBER 2023-24
CLASS – XI : BIOLOGY
Answer key with explanation

GENERAL INSTRUCTIONS
TOTAL NO OF QUESTIONS 10
ALL QUESTIONS ARE COMPULSORY
05 QUESTIONS IN SECTION B FROM Chapter 5 : Morphology of Flowering plants
05 QUESTIONS IN SECTION C FROM Chapter 6: Anatomy of Flowering plants and Chapter 7: Structural organization in animals

Study the CASE given below and answer Q.No.1 to Q.No.3

The leaf is a lateral, flattened structure borne on the stem. It develops at the node and bears a bud in its axil. The axillary bud later develops into a branch. Leaves originate from shoot apical meristems and are arranged in an acropetal order. They are the most important vegetative organs for photosynthesis.
A typical leaf consists of leaf base, petiole and lamina. The leaf is attached to the stem by the leaf base and may bear two lateral small leaf like structures.
In some leguminous plants, like Peas and Beans, the leaf base is swollen.
Long thin flexible petioles allow leaf blades to flutter in wind, thereby cooling the leaf and bringing fresh air to leaf surface. The lamina or the leaf blade is the green expanded part of the leaf with specific arrangement of veins and veinlets on it. There is, usually, a middle prominent vein, which is known as the midrib. Veins provide rigidity to the leaf blade and act as channels of transport for water, minerals and food materials. The shape, margin,apex, surface varies in different leavesThe extent of incision of lamina also varies in different leaves accordingly the leaves may be simple or compound.
Phyllotaxy is the pattern of arrangement of leaves on the stem or branch. If is of three types – alternate, opposite and whorled. Plants of different types shows different phyllotaxy.

Q1. In maize plant , the root type and the venation found is :

a) Fibrous roots and reticulate venation
b) Fibrous roots and parallel venation
c) Tap root and Reticulate venation
d) Tap root and parallel venation

ANS Fibrous roots and parallel venation
EXPLANATION : It is a characteristic of monocot to have Fibrous roots and parallel venation and Maize is a monocot plant.

Q2. The swollen leaf base as in case of some leguminous plants is called:

a) Stipules
b) Pulvinus
c) Petiole
d) Lamina

ANS. Pulvinus

EXPLANATION : The point of attachment of the leaf petiole to the stem is called pulvinus. In some leguminous plants, leaf base is swollen which is called pulvinus. Pulvinus regulates the movement of leaflets in plants like *Mimosa.*

Q3. Choose the correct option for the given figure of Phyllotaxy and an example of the plant which shows it :

a) Opposite phyllotaxy as in Gauva plant
b) Opposite phyllotaxy as in China rose plant
c) Alternate phyllotaxy as in China rose
d) Alternate phyllotaxy as in Gauva plant

ANS. Alternate phyllotaxy as in China rose

EXPLANATION : As figure shows alternately arranged leaves

Q4. Choose the correct option for the given figure of aestivation in corolla:

a) Valvate
b) Twisted
c) Imbricate
d) Vexillary

ANS. Twisted

EXPLANATION : W When the margins of the petals are in contact with each other without overlapping, it is called valvate aestivation.

Q 5. In Cymose type of inflorescence:

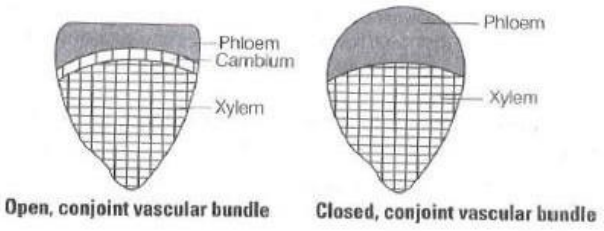
a) Main axis continues to grow and the flowers are borne in acropetal succession.
b) Main axis continues to grow and the flowers are borne in basipetal succession.
c) Growth is limited and the flowers are borne in basipetal succession.
d) Growth is limited and the flowers are borne in acropetal succession.
ANS. Growth is limited and the flowers are borne in basipetal succession.

EXPLANATION : ***The cymose inflorescence is characterised by the presence of a flower at the apex of the flower axis."***

The growth of the main axis is limited and the lateral axis also terminates into flower and that limits the growth of the axis. Flowers are present in the basipetal succession, i.e. older flower is present terminally and the younger ones at the base. This type of arrangement is known as centrifugal with the older flowers present in the middle and the younger ones at the periphery.

Q 6. A conjoint and open vascular bundle will be observed in the transverse section of:

a) Monocot root
b) Monocot stem
c) Dicot root
d) Dicot stem
ANS. Dicot stem
EXPLANATION : Vascular bundles are said to be open when cambium is present in between the xylem and phloem. Conjoint means the xylem and phloem are united and are present on the same radius. It is the case in dicot stem.



Q 7. Stomata in grasses are:

a) Rectangular
b) Dumb-bell shaped
c) Barrel shaped
d) Kidney shaped
ANS. Dumb-bell shaped

EXPLANATION : In most cases, guard cells are present in bean shape, but grass (monocot) consists of two dumbbell-shaped guard cells joined by two lateral subsidiary cells.

Q 8. During aestivation and hibernation, Frog respires through:

a) Lungs
b) Skin
c) buccal mucosa
d) All of these

ANS. Skin

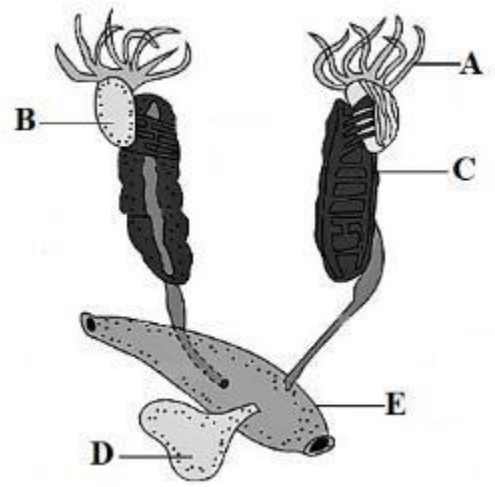
EXPLANATION :

Frog respires through skin, lungs and buccal cavity. The respiration by lungs is called pulmonary respiration. The respiration by skin is called cutaneous respiration. During aestivation and hibernation, gaseous exchange takes place through skin . During this period, the activities of frogs are relatively lower and they require less energy. The skin is composed of thin membranous tissue that is quite permeable to water and contains a large network of blood vessels. The thin membranous skin is allows the respiratory gases to readily diffuse directly down their gradients between the blood vessels and the surroundings. When the frog is out of the water, mucus glands in the skin keep the frog moist, which helps absorb dissolved oxygen from the air. And on land they respire through lungs.

Frogs also have a respiratory surface on the lining of their mouth on which gas exchange takes place readily. While at rest, this process is their predominate form of breathing, only fills the lungs occasionally. This is because the lungs, which only adults have, are poorly developed.

so b is the correct option.

Q 9. The following diagram shows male reproductive system of a frog A,B,C,D and E are respectively:



a) Fat body, Testis, Kidney, Cloaca, Urinary bladder
b) Fat body, Testis,Kidney, Urinary bladder, Cloaca
c) Fat body, Testis, Adrenal, Cloaca, Urinary bladder
d) Fat body, Testis, Adrenal, Urinary bladder, Cloaca

ANS. B) Fat body, Testis,Kidney, Urinary bladder, Cloaca

EXPLANATION : Option (b) gives the correct labeling

Q 10. In frog, the ventricle opens into:

a) Conus arteriosus
b) Sinus venosus
c) Hepatic portal vein
d) Vena cava

ANS. a) Conus arteriosus

EXPLANATION : Conus arteriosus is a conical pouch that is formed in the right ventricle. It is the site from where the pulmonary artery arises. Whereas Conus arteriosus is a conical pouch that is formed in the right ventricle. It is the site from where the pulmonary artery arises.
The hepatic portal vein is the largest vein in the abdominal cavity. It drains blood from the spleen and the gastrointestinal tract to the liver.
The system of veins and venacava which is superficially situated and carry deoxygenated blood from different parts of the body to heart, except pulmonary veins.

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