



Page No: 65

Solution LAQ - 11:

Artificial insemination is the process of injecting the semen obtained from a desired male bull of high milk yielding breed into the genital or reproductive tract of female animal during heat period.

Steps involved in artificial insemination are:

- (i) The semen of healthy and tough animal of high milk yielding breed is collected.
- (ii) It is preserved by freezing or chemical methods.
- (iii) The preserved semen is then injected into the genital tract of the female animal.
- (iv) The preserved semen is injected during fertility period.

Solution LAQ - 12:

Prevention of animal diseases:

- (i) The shelters should have roofed sheds which protects them from rain, heat, direct sunlight and cold.
- (ii) The shelters should be provided with cross ventilation.
- (iii) The floor of the cattle shed is made brick lined for facilitating cleaning and dry floor.
- (iv) Animals must be protected from diseases caused by virus, bacteria and fungi by giving them proper treatment and vaccinating them on time.
- (v) Proper nutritional requirements should be given to them so that they do not suffer from nutritional deficiency diseases.

Solution LAQ - 13:

Honey bee lives in a colony and different tasks are done by different groups of bees in the same colony. According to their roles, there are three types of castes in the colony of bee:

- (i) Queen - The body size of queen is much larger than other castes of bees of the colony. Queen is responsible for laying eggs and lays upto 200 eggs everyday of each season.
- (ii) Drone - It is haploid, fertile male. These are larger in size than workers. They are stingless and their main role is to mate with queen and remain in colony to sleep and eat honey.
- (iii) Worker - Worker is diploid, sterile female. Its size is smallest among the caste of bees. They are the active members of the colony. For various outdoor and indoor chores, the workers are provided with a variety of organs such as hypopharyngeal glands (for secretion of bee milk), wax glands (for building cells of comb), pollen baskets on their hind legs (for collection of pollen), sucking type mouth parts (for collecting the nectar), high level secretion of invertase enzyme (in the honey sac for honey formation), a sting at the tip of the abdomen (for defence of the colony).

Honey bees provide a good example of team work and division of labour.

Solution LAQ - 14:

Italian bee is commonly domesticated in India to increase the yield of honey. It is preferred because:

- (i) It is gentle in nature.
- (ii) It has good honey collection capacity.
- (iii) It has the ability to protect itself from enemies.
- (iv) It has prolific queen with less swarming.

Solution LAQ - 15:

The pasturage means the flowers available to the bees for nectar and pollen collection. In addition to adequate quantity of pasturage,

the kinds of flowers available will determine the taste of the honey. Pasturage of honey bee includes a variety of flowering plants such as Mango, Cotton, Litchi, Shishame, Apple, Cashew, Coffee, Rubber plant, Sunflower, Neem, etc.

Solution LAQ - 16:

For increasing production, the common feature in poultry, fisheries and bee keeping are:

- (i) Quality and quantity of x.
- (ii) Low maintenance requirement.
- (iii) Tolerance to high temperature.
- (iv) Care to prevent mortality.
- (v) To increase their productivity, cross breeding should be done.

Solution LAQ - 17:

Capture Fishery:

- (i) It is method of obtaining fish from natural resources.
- (ii) There is no seeding and raising of fish.
- (iii) It is undertaken in both inland and marine waters.

Culture Fishery:

- (i) It is a method of obtaining fish from fish farming.
- (ii) The fish is seeded and reared.
- (iii) It is undertaken mostly inland and near sea shore.

Inland Fishery:

- (i) It is a method of obtaining fish from fresh water resources such as canals, rivers, etc and brackish water resources where sea water and fresh water mix together.
- (ii) The fish is seeded and reared.
- (iii) Most fish production is through aquaculture.

Solution LAQ - 18:

Worker - Worker is diploid, sterile female. Its size is smallest among the caste of bees. They are the active members of the colony. For various outdoor and indoor chores, the workers are provided with a variety of organs such as hypo pharyngeal glands (for secretion of bee milk), wax glands (for building cells of comb), pollen baskets on their hind legs (for collection of pollen), sucking type mouth parts (for collecting the nectar), high level secretion of invertase enzyme (in the honey sac for honey formation), a sting at the tip of the abdomen (for defence of the colony).

The worker bees of a hive fall under 3 groups. These are:

- (i) Scavenger Bees - For the first three days each worker bees act as a scavenger.
- (ii) Nurse Bees - From the fourth day onwards each worker bee feeds the entire brood, like a foster mother, with a mixture of honey and pollen. By seventh day, its starts producing royal jelly, which is fed to the queen and future queen bees. They also perform guard duties.
- (iii) Foraging or Field bees - They explore new sources of nectar. They collect nectar, pollen and propolis. Nectar is changed into honey in the crops.

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