MISSION MBBS

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Subject: BOTANY

Topic : Strategies for Enhancement in Food Production L1

Class: Standard XI

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1. Which of the following best defines the process of animal breeding?

   ✗ **A.** Management of animals for obtaining milk and its products

   ✗ **B.** Rearing, feeding and mating of livestock for obtaining eggs and meat

   ✗ **C.** Mating closely related animals of the same breed

   ✓ **D.** Controlled mating of animals followed by their selection to obtain superior genotypes

Animal husbandry is the branch of agriculture that is concerned with proper feeding, rearing and breeding of domesticated animals for obtaining milk, meat, eggs and hides. Examples include cattles, pigs, poultry.

Animal breeding is an important aspect of animal husbandry that includes controlled mating of domesticated animals followed by the selection of offspring with superior genotypes.

Maximum yield can be achieved by the following steps :

- Identifying and mating of superior males and females.
- Selecting the progeny with superior characters.
- Repeating the process for 4-6 generations.

This will help in developing superior breeds to obtain products with good quality and quantity of product.
Hence, option d defines animal breeding.

Management of animals for obtaining milk and its products is known as dairy farming. It is one of the components of animal husbandry.

Poultry refers to the domesticated fowls used for food or for their eggs.

2. Read the following statements (1- 4). Which of the following statements are true related to disadvantages of natural breeding.

    1. Requirement of a large space for mating the animals.
    2. Requirement of expensive laboratory facilities and expert staffs for carrying out breeding techniques.
    3. Huge expenditure on rearing and feeding the animals.
    4. More expenditure on vaccination and disease treatment of the animals throughout the year.

    ✗ **A.** 2 and 3

    ✗ **B.** 1 and 3

    ✗ **C.** 3 and 4

    ✓ **D.** 1, 3 and 4

    Animal breeding is the controlled mating of domesticated animals followed by the selection of offspring with superior genotypes. It helps to improve the desirable characters of the animals in subsequent generations while gradually eliminating the harmful ones.

    In natural breeding, the animals (male and female) have to be physically present in the farm. They have to be reared together in large, clean, dry, well ventilated farm houses with proper lighting to ensure healthy life of the animals.

    The animals that are reared for breeding purposes require a balanced and nutritious diet for their good health. The diet must be high in proteins and nutrients.

    Natural breeding involves sexual contact between the animals. Thus the chances of spreading of contagious diseases are quite high. So, timely vaccinations and regular health check-ups by a visiting veterinarian is also important.

    All of these require heavy expenditure on the part of the breeders every year and are hence major disadvantages of natural breeding.

    Natural breeding does not involve the use of scientific techniques so much cost is not involved in maintaining laboratories, equipments or expert personnel.

    Hence statements 1, 3 and 4 are disadvantages of natural breeding.

3. Match the images to the phases of the moon.

4. Our moon revolves around the Earth.

5. *Primrose* exhibit which type of placentation?

- ✗ **A.** Marginal
- ✗ **B.** Axile
- ✓ **C.** Free central
- ✗ **D.** Basal

The arrangement of ovules in the ovary of the plant is called placentation. The placenta is a parenchymatous cushion present inside the ovary where ovules are borne. Placentation is of various types, e.g., marginal, axile, parietal, free-central, and basal.

Primrose has free-central placentation where the ovules are borne around a central column, which is not connected with the ovary wall by any septum.

6. Which of the following is true about ‘natural breeding’?

- **A.** It involves selecting animals with desirable characteristics and allowing them to mate on their own
- **B.** It involves injecting the semen from the selected male into the reproductive tract of the selected female
- **C.** It involves only random breeding
- **D.** It involves the use of surrogate mothers to give birth to the offspring

Animal breeding is the controlled mating of domesticated animals to produce the offspring with superior genotypes. It can be done using natural and artificial methods.

In natural breeding the animals with the desirable characteristics are selected and allowed to mate by natural means. This process may be random or controlled. Hence option a is true and option c is false.

Random natural breeding is mostly seen in the villages where a few superior bulls are kept along with grazing cows which leads to random mating.

In controlled natural breeding, the selected superior native cows are allowed to mate with superior exotic bulls. It lead to the development of hybrid cows with more milk production and hybrid bulls (hardy, energetic and more agile).

Artificial insemination is an artificial breeding technique which involves injecting the semen of the selected male with desired characterisitcs into the reproductive tract of the selected female animal. So option b is artificial insemination.

Surrogate females are used in the artificial breeding technique known as Multiple Ovulation Embryo Transfer (MOET) technology. Surrogate female is an animal that takes a part of the role of mother to another animal.
So, correct answer is 'a'.

7. The main objectives of animal breeding is

1. to obtain increased yield and better quality of products.
2. to develop breeds with longer productive life.
3. to reduce the reproductive rate in animals.
4. to develop disease resistant breeds of animals.

A. 1, 2 and 3

B. 1 and 2

C. 1, 2 and 4

D. Only 4

Animal breeding is an important aspect of animal husbandry that includes controlled mating of domesticated animals to produce the offspring with superior genotypes.

Animal breeding aims at -

1. Increasing the yield and quality of products such as milk, meat, wool.
2. Developing disease-resistant offspring with better yield and productivity.
3. Providing a longer productive life to the animals such as a longer lactation period.
4. Increasing the reproductive rate of animals, so that many offspring with superior qualities can be obtained annually. This can be achieved by mating local breeds with exotic ones.
5. Increasing growth rate to increase herd size in a short time. Early maturation of animals is done to yield products or participate faster in breeding methods.

Hence statements 1, 2 and 4 are correct.

8. Purelines in cattles can be obtained by _____.

A. mating of unrelated individuals of the same breed

B. mating of related individuals of the same breed

C. mating of individuals belonging to different species

D. mating of individuals belonging to different breeds

A pureline refers to a line of descent that consists of homozygous animals that have been raised from closely related parents.

Inbreeding involves mating closely related individuals of the same breed for 4-6 generations. It increases the chances of offspring to receive the same allele from both parents, resulting in accumulating superior genes and eliminating less desirable ones. This process thereby, increases productivity and development of purelines in cattle. Hence option b is the answer.

Out-breeding done between unrelated individuals of same breed or different breeds results in increasing heterozygosity in the population. Hence option a, c and d are not the answer.

9. Which of the following are advantages of natural breeding?

I. Reduction of effort of breeders and ease of mating between males and female with superior characters.

II. Semen collected from the superior males can be preseved and used later.

III. There are less chances of spreading of contagious diseases.

IV. It does not involve heavy expenditure on laboratories, equipments or expert personnel.

- **A.** I and II
- **B.** Only I
- **C.** III and IV
- **D.** I and IV ✓

Animal breeding is an important aspect of animal husbandry (rearing, caring and breeding of animals for products like meat, milk etc.). It involves controlled mating of domesticated animals to obtain offspring with superior genotypes.

Animal breeding can be done my natural methods or by artificial methods. In natural breeding the animals with the desirable characteristics are allowed to mate by natural means.

Major advantages of natural breeding are as follows:

- It requires minimum effort from the breeders. Mating can be ensured by placing the superior males together with the selected females in an enclosed space. So statement I is correct.
- It does not involve the use of scientific techniques to mate the animals.
- Heavy expenditure on laboratories, equipments or expert personell for carrying out the mating process is not involved. So statement IV is correct.
- Prior collection of semen is not required.

However, natural breeding involves sexual contact between the animals. Thus the chances of spreading of contagious diseases are quite high. So statement III is false.

Semen are collected from superior males and stored for fertilisation in artificial breeding technique like artificial insemination and Multiple Embryo Transfer Technology. A major advantage of artificial insemination is that the collected semen can be preserved at extremely low temperatures to be used in future. Hence statement II is false.

10. The technique involving collection of the semen from the desired male followed by injecting it into the reproductive tract of the selected female is called _____ .

A. animal breeding

B. artificial insemination

C. out-breeding

D. inbreeding

Animal breeding refers to the normal breeding/ mating of animals to improve the breed. It helps in increasing the yield (milk or meat) of animals and improving the quality of offspring.

Artificial insemination is a technique utilised for controlled breeding. The semen is collected from a superior male and injected into the reproductive tract of the selected female artificially in this method.

Out-breeding is the process of breeding unrelated animals, which may be of the same breed but do not have a common ancestor for 4-6 generations or between different breeds or between different species.

Inbreeding refers to the mating of more closely related individuals within the same breed for many generations.
So, the correct answer is artificial insemination.