

## Answer Key

### HSE II Botany

#### First terminal Examination

1. Embryo sac
2. Wheat
3. © progeny formed by AR have similar genetic makeup while progeny formed by SR have different genetic makeup  
  
©Progeny by AR are not identical among one another and not exact copies of their parents (clone). Progeny by SR are different from each other and also dissimilar to the parents  
  
© Genetic variation is absent in the progeny of AR. But genetic variation is present in progeny of SR  
  
© Progeny of AR is less adaptable to changes in environment. Progeny of SR is more adaptable to changes in environment ( any one of the above points)
4. Advantage – Production of a large number of offspring  
– More genetic variation (any one point )  
  
Disadvantage - Offsprings are vulnerable to predators threatening their survival up to adulthood  
  
– It requires an external medium for gametic fusion ( any one point)
5. Cleistogamous flowers do not open at maturity and are bisexual. Here anther and stigma lie close to each other which ensure the deposition of pollen grains on the stigma. An external pollinator is not required for pollination in cleistogamous flowers
6. Polyembryony  
Eg: Citrus, Orange, Mango (any two)
7. A - plumule  
B - cotyledons  
C - Hypocotyl  
D - Radicle  
E - Root cap
8. a. Single Cell Protein  
  
b. Spirulina, chlorella, Yeast, mushrooms (any two)

9. a. binary fission - amoeba  
b. conidia - penicillium  
c. gemmules - sponges  
d. zoospores - chlamydomonas
10. Meristems (apical and axillary) are virus free and it can be used as explant to produce healthy plants by tissue culture
11. a. palindromic sequence / palindrome  
b. EcoRI
12. In MOET, a cow with desirable qualities is administered hormones with FSH activity to induce follicular maturation and super ovulation. It produces 6 – 8 eggs per cycle and is mated with an elite bull or artificially inseminated. The embryos at 8-32 celled stages are recovered and transferred to surrogate mothers. Thus MOET is helpful to increase the herd size in cattle in a short time.
13. a. Apis Indica  
b. - knowledge of the nature and habits of bees  
- selection of suitable locations for keeping the beehives  
- catching and hiving of swarms  
- management of beehives during different seasons  
- handling and collection of honey and beeswax (any two points)
14. **sunflower - entomophily**  
-Flowers with attractive colour  
-Flowers are grouped into inflorescence to make them conspicuous  
-Flowers rich in nectar (any two points)
- Maize - anemophily**  
-Flowers with exposed anther and stigma

-Pollen grains are non sticky and light

-Large feathery stigma (any two points)

**Vallisneria - hydrophily**

-Pollen grains have mucilaginous covering

-Stigma and floral parts are unwettable

-Female flowers reach the surface of water where the pollens are released (any two points)

15. a. IR 8

b. -collection of variability

-evaluation and selection of parents

-cross hybridization of the selected parents

-selection and testing of superior recombinants

-testing, release and commercialization of new cultivar

16. a. sporopollenin

b. vegetative cell and generative cell. Vegetative cell is bigger in size, with abundant food reserve, have large irregularly shaped nucleus. Generative cell is smaller in size, spindle shaped, with dense cytoplasm and a nucleus, and float in the cytoplasm of vegetative cell.

17. i. pollen release and stigma receptivity are not synchronized

ii. anther and stigma are placed at different positions

iii. self incompatibility

iv. unisexual flowers (any three points)