CHAPTER 9

Strategies for Enhancement in Food Production

9.1 Animal Husbandry

1. By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?
(a) Out crossing (b) Mutational breeding
(c) Cross breeding (d) Inbreeding
(NEET 2020)

2. Select the incorrect statement.
(a) Inbreeding helps in accumulation of superior genes and elimination of undesirable genes.
(b) Inbreeding increases homozygosity.
(c) Inbreeding is essential to evolve purelines, in any animal.
(d) Inbreeding selects harmful recessive gene that reduce fertility and productivity.
(NEET 2019)

3. Homozygous purelines in cattle can be obtained by
(a) mating of unrelated individuals of same breed
(b) mating of individuals of different breed
(c) mating of individuals of different species
(d) mating of related individuals of same breed.
(NEET 2017)

4. Interspecific hybridisation is the mating of
(a) animals within same breed without having common ancestors
(b) two different related species
(c) superior males and females of different breeds
(d) more closely related individuals within same breed for 4-6 generations.
(NEET-II 2016)

5. Among the following edible fishes, which one is a marine fish having rich source of omega-3 fatty acids?
(a) *Mystus* (b) Mangur
(c) Mrigala (d) Mackerel
(NEET-II 2016)

6. Outbreeding is an important strategy of animal husbandry because it
(a) is useful in overcoming inbreeding depression
(b) exposes harmful recessive genes that are eliminated by selection
(c) helps in accumulation of superior genes
(d) is useful in producing purelines of animals.
(2015)

7. Compared to a bull a bullock is docile because of
(a) higher levels of cortisone
(b) lower levels of blood testosterone
(c) lower levels of adrenaline/noradrenaline in its blood
(d) higher levels of thyroxine. *(2007)*

8. In cloning of cattle a fertilized egg is taken out of the mother's womb and
(a) in the eight cell stage, cells are separated and cultured until small embryos are formed which are implanted into the womb of other cows
(b) in the eight cell stage the individual cells are separated under electrical field for further development in culture media
(c) from this upto eight identical twins can be produced
(d) the egg is divided into 4 pairs of cells which are implanted into the womb of other cows.
(2007)

9. Which one of the following is a viral disease of poultry?
(a) Coryza (b) New castle disease
(c) Pasteurellosis (d) Salmonellosis
(2007)

10. The world's highly prized wool yielding 'Pashmina' breed is
(a) goat (b) sheep
(c) goat-sheep cross
(d) Kashmir sheep - Afghan sheep cross.
(2005)

11. Which fish selectively feed on larva of mosquito?
(a) *Gambusia* (b) *Rohu*
(c) *Clarias* (d) *Exocoetus* *(2001)*

12. Which statement is correct?
(a) *A. indica* is largest wild honeybee.
(b) Wax is waste material of honeybee.
(c) Workers are the smallest of the three castes.
(d) Drone of honeybee is diploid. *(2000)*

13. The term aquaculture means
(a) inland fisheries (b) aspergillosis
(c) marine fisheries (d) both (a) and (c). *(1999)*

14. Fish, which eradicate the mosquito larva, is
(a) *Gambusia* (b) cutter fish
(c) *Anabus* (d) rohu. *(1999)*

15. Life span of a worker bee is
(a) 6 weeks (b) 10 weeks
(c) 10 days (d) 15 days. *(1999)*

16. High milk yielding varieties of cows are obtained by
(a) use of surrogate mothers
(b) superovulation
(c) artificial insemination
(d) all of these. *(1997)*

17. Honey is
(a) alkaline
(b) basic after some days
(c) acidic
(d) neutral. *(1997)*

18. Pebrine is a disease of
(a) silkworm (b) lac insect
(c) honeybee (d) fish. *(1997)*

19. Which one of the following constitutes natural silk?
(a) Nitrogen (b) Magnesium
(c) Potassium (d) Phosphorus *(1996)*

20. Which one of the following fish is introduced into India by foreigners?
(a) *Mystus singhala* (b) *Clarius batrachus*
(c) *Labeo rohita* (d) *Pomfret* *(1996)*

21. The silkworm silk is the product of
(a) salivary gland of the larva
(b) salivary gland of the adult
(c) cuticle of the larva
(d) cuticle of the adult. *(1995)*

22. Silk is produced by
(a) adult moth (b) cocoon
(c) larva (d) both (a) and (c). *(1994)*

23. Which among the following is the real product of the honeybee?
(a) Honey (b) Propolis
(c) Pollen (d) Beewax *(1994)*

24. Silk thread is obtained from silk moth during
(a) pupal stage (b) larval stage
(c) nymph stage (d) adult stage. *(1988)*

9.2 Plant Breeding

25. A true breeding plant is
(a) one that is able to breed on its own
(b) produced due to cross-pollination among unrelated plants
(c) near homozygous and produces offspring of its own kind
(d) always homozygous recessive in its genetic constitution. *(NEET-II 2016)*

26. A system of rotating crops with legume or grass pasture to improve soil structure and fertility is called
(a) strip farming (b) shifting agriculture
(c) ley farming (d) contour farming. *(NEET-I 2016)*

27. A cell at telophase stage is observed by a student in a plant brought from the field. He tells his teacher that this cell is not like other cells at telophase stage. There is no formation of cell plate and thus the cell is containing more number of chromosomes as compared to other dividing cells. This would result in
(a) somaclonal variation
(b) polyteny
(c) aneuploidy
(d) polyploidy. *(NEET-I 2016)*

28. In plant breeding programmes, the entire collection (of plants/seeds) having all the diverse alleles for all genes in a given crop is called
(a) evaluation and selection of parents
(b) germplasm collection
(c) selection of superior recombinants
(d) cross-hybridisation among the selected parents. *(NEET 2013)*

29. Green revolution in India occurred during
(a) 1960's (b) 1970's
(c) 1980's (d) 1950's. *(Mains 2012)*

30. A collection of plants and seed having diverse alleles of all the genes of a crop is called
(a) herbarium (b) germplasm
(c) gene library (d) genome. *(2011)*

31. "Jaya" and "Ratna" developed for green revolution in India are the varieties of
(a) maize (b) rice
(c) wheat (d) bajra. *(2011)*

32. 'Himgiri' developed by hybridisation and selection for disease resistance against rust pathogens is a variety of

(a) chilli (b) maize
(c) sugarcane (d) wheat. *(2011)*

33. Breeding of crops with high levels of minerals, vitamins and proteins is called
(a) somatic hybridisation
(b) biofortification
(c) biomagnification
(d) micropropagation. *(2010)*

34. Haploids are more suitable for mutation studies than the diploids. This is because
(a) haploids are more abundant in nature than diploids
(b) all mutations, whether dominant or recessive are expressed in haploids
(c) haploids are reproductively more stable than diploids
(d) mutagens penetrate in haploids more effectively than in diploids. *(2008)*

35. Which one of the following is linked to the discovery of Bordeaux mixture as a popular fungicide?
(a) Loose smut of wheat
(b) Black rust of wheat
(c) Bacterial leaf blight of rice
(d) Downy mildew of grapes *(2008)*

36. Consider the following four measures (A-D) that could be taken to successfully grow chickpea in an area where bacterial blight disease is common.
(A) Spray with Bordeaux mixture
(B) Control of the insect vector of the disease pathogen
(C) Use of only disease-free seeds
(D) Use of varieties resistant to the disease
Which two of the above measures can control the disease?
(a) (C) and (D) (b) (A) and (D)
(c) (B) and (C) (d) (A) and (B) *(2008)*

37. In maize, hybrid vigour is exploited by
(a) crossing of two inbred parental lines
(b) harvesting seeds from the most productive plants
(c) inducing mutations
(d) bombarding the seeds with DNA. *(2007)*

38. In the hexaploid wheat, the haploid (n) and basic (x) numbers of chromosomes are
(a) $n = 21$ and $x = 21$ (b) $n = 21$ and $x = 14$
(c) $n = 21$ and $x = 7$ (d) $n = 7$ and $x = 21$. *(2007)*

39. Crop plants grown in monoculture are
(a) highly prone to pests
(b) low in yield
(c) free from intraspecific competition
(d) characterised by poor root system. *(2006)*

40. In maize, hybrid vigour is exploited by
(a) inducing mutations
(b) bombarding the protoplast with DNA
(c) crossing of two inbred parental lines
(d) harvesting seeds from the most productive plants. *(2006)*

41. *Triticale,* the first man-made cereal crop, has been obtained by crossing wheat with
(a) barley (b) rye
(c) pearl millet (d) sugarcane. *(2006)*

42. Three crops that contribute maximum to global food grain production are
(a) wheat, rice and maize
(b) wheat, rice and barley
(c) wheat, maize and sorghum
(d) rice, maize and sorghum. *(2005)*

43. Which of the following is generally used for induced mutagenesis in crop plants?
(a) X-rays
(b) UV (260 nm)
(c) Gamma rays (from cobalt-60)
(d) Alpha particles *(2005)*

44. The name of Norman Borlaug is associated with
(a) white revolution (b) green revolution
(c) yellow revolution (d) blue revolution. *(2005)*

45. India's wheat yield revolution in the 1960s was possible primarily due to
(a) hybrid seeds
(b) increased chlorophyll content
(c) mutations resulting in plant height reduction
(d) quantitative trait mutations. *(2004)*

46. When a diploid female plant is crossed with a tetraploid male, the ploidy of endosperm cells in the resulting seed is
(a) tetraploidy (b) pentaploidy
(c) diploidy (d) triploidy. *(2004)*

47. If a diploid cell is treated with colchicine then it becomes
(a) triploid (b) tetraploid
(c) diploid (d) monoploid. *(2002)*

48. Which of the following crops have been brought to India from New world?
(a) Cashewnut, potato, rubber
(b) Mango, tea
(c) Tea, rubber, mango
(d) Coffee *(2002)*

49. Before the European invader which vegetable was absent in India?
(a) Potato and tomato
(b) Shimla mirch and brinjal
(c) Maize and chichinda
(d) Bitter gourd *(2001)*

50. *Triticale* is obtained by crossing wheat with
(a) oat (b) barley
(c) maize (d) rye. *(2001)*

51. The new varieties of plants are produced by
(a) introduction and mutation
(b) selection and introduction
(c) selection and hybridization
(d) mutation and selection. *(1999)*

52. The reason for vegetatively reproducing crop plants to suit for maintaining hybrid vigour is that
(a) they are more resistant to diseases
(b) once a desired hybrid produced, no chances of losing it
(c) they can be easily propagated
(d) they have a longer life span. *(1998)*

53. If an angiospermic male plant is diploid and female plant tetraploid, the ploidy level of endosperm will be
(a) tetraploid (b) pentaploid
(c) haploid (d) triploid. *(1997)*

54. Which of the following is the New World spice, that has become an essential part of Indian cuisine?
(a) Red pepper (b) Black pepper
(c) Ginger (d) Cardamom *(1995)*

55. Haploid plants can be obtained by culturing
(a) pollen grains (b) root tips
(c) young leaves (d) endosperm. *(1994)*

56. Haploid plants are preferred over diploids for mutation study because in haploids
(a) recessive mutation express immediately
(b) induction of mutations is easier
(c) culturing is easier
(d) dominant mutation express immediately. *(1993)*

57. Which crop variety is not due to induced mutations?
(a) Reimei of rice (b) Prabhat of arhar
(c) Sharbati Sonora of wheat
(d) Aruna of castor *(1993)*

58. In crop movement programme, haploids are important because they
(a) require one half of nutrients
(b) are helpful in study of meiosis
(c) grow better under adverse conditions
(d) form perfect homozygous. *(1989)*

9.3 Single Cell Proteins (SCP)

59. An alga which can be employed as food for human being is
(a) *Ulothrix* (b) *Chlorella*
(c) *Spirogyra* (d) *Polysiphonia.* *(2014)*

60. Consider the following four statements (A - D) and select the option which includes all the correct ones only.
(A) Single cell *Spirulina* can produce large quantities of food rich in protein, minerals, vitamins, etc.
(B) Body weight-wise the microorganism *Methylophilus methylotrophus* may be able to produce several times more proteins than the cows per day.
(C) Common button mushrooms are a very rich source of vitamin C.
(D) A rice variety has been developed which is very rich in calcium.
(a) Statements (C) and (D)
(b) Statements (A), (C) and (D)
(c) Statement (B), (C) and (D)
(d) Statement (A) and (B) *(Mains 2012)*

9.4 Tissue Culture

61. A protoplast is a cell
(a) undergoing division
(b) without cell wall
(c) without plasma membrane
(d) without nucleus. *(2015)*

62. A technique of micropropagation is
(a) protoplast fusion (b) embryo rescue
(c) somatic hybridisation
(d) somatic embryogenesis. *(2015 Cancelled)*

63. Which of the following enhances or induces fusion of protoplasts?
(a) IAA and kinetin
(b) IAA and gibberellins
(c) Sodium chloride and potassium chloride
(d) Polyethylene glycol and sodium nitrate *(2015 Cancelled)*

64. To obtain virus - free healthy plants from a diseased one by tissue culture technique, which part/parts of the diseased plant will be taken?
(a) Apical meristem only
(b) Palisade parenchyma
(c) Both apical and axillary meristems
(d) Epidermis only *(2014)*

65. Tissue culture technique can produce infinite number of new plants from a small parental tissue. The economic importance of the technique is in raising

(a) genetically uniform population identical to the original parent
(b) homozygous diploid plants
(c) new species
(d) variants through picking up somaclonal variations.
(Karnataka NEET 2013)

66. Which of the following statements is not true about somatic embryogenesis?
(a) The pattern of development of a somatic embryo is comparable to that of a zygotic embryo.
(b) Somatic embryos can develop from microspores.
(c) Somatic embryo is induced usually by an auxin such as 2, 4-D.
(d) A somatic embryo develops from a somatic cell.
(Karnataka NEET 2013)

67. Which part would be most suitable for raising virus-free plants for micropropagation ?
(a) Bark (b) Vascular tissue
(c) Meristem (d) Node *(2012)*

68. Somaclones are obtained by
(a) plant breeding (b) irradiation
(c) genetic engineering (d) tissue culture. *(2009)*

69. In order to obtain virus-free plants through tissue culture the best method is
(a) meristem culture
(b) protoplast culture
(c) embryo rescue
(d) anther culture. *(2006)*

70. The technique of obtaining large number of plantlets by tissue culture method is called
(a) plantlet culture (b) organ culture
(c) micropropagation (d) macropropagation.
(2004)

71. Cellular totipotency is demonstrated by
(a) only gymnosperm cells
(b) all plant cells
(c) all eukaryotic cells
(d) only bacterial cells. *(2003)*

72. In tissue culture medium, the embryoids formed from pollen grains is due to
(a) cellular totipotency (b) organogenesis
(c) double fertilization (d) test tube culture.
(2002)

73. Coconut milk is used in tissue culture in which present
(a) cytokinin (b) auxin
(c) gibberellin (d) ethylene. *(2000)*

74. Cellular totipotency was demonstrated by
(a) Theodore Schwann (b) A.V. Leeuwenhoek
(c) F.C. Steward (d) Robert Hooke. *(1991)*

75. Which ones produce androgenic haploids in anther cultures?
(a) Anther wall
(b) Tapetal layer of anther wall
(c) Connective tissue
(d) Young pollen grains *(1990)*

ANSWER KEY

1.	(c)	**2.**	(d)	**3.**	(d)	**4.**	(b)	**5.**	(d)	**6.**	(a)	**7.**	(b)	**8.**	(a)	**9.**	(b)	**10.**	(a)
11.	(a)	**12.**	(c)	**13.**	(d)	**14.**	(a)	**15.**	(a)	**16.**	(d)	**17.**	(c)	**18.**	(a)	**19.**	(a)	**20.**	(d)
21.	(a)	**22.**	(c)	**23.**	(d)	**24.**	(a)	**25.**	(c)	**26.**	(c)	**27.**	(d)	**28.**	(b)	**29.**	(a)	**30.**	(b)
31.	(b)	**32.**	(d)	**33.**	(b)	**34.**	(b)	**35.**	(d)	**36.**	(b)	**37.**	(a)	**38.**	(c)	**39.**	(a)	**40.**	(c)
41.	(b)	**42.**	(a)	**43.**	(c)	**44.**	(b)	**45.**	(d)	**46.**	(a)	**47.**	(b)	**48.**	(a)	**49.**	(a)	**50.**	(d)
51.	(c)	**52.**	(b)	**53.**	(b)	**54.**	(a)	**55.**	(a)	**56.**	(a)	**57.**	(d)	**58.**	(d)	**59.**	(b)	**60.**	(d)
61.	(b)	**62.**	(d)	**63.**	(d)	**64.**	(c)	**65.**	(a)	**66.**	(b)	**67.**	(c)	**68.**	(d)	**69.**	(a)	**70.**	(c)
71.	(b)	**72.**	(a)	**73.**	(a)	**74.**	(c)	**75.**	(d)										