

Time allowed: 45 minutes

Maximum Marks: 200

General Instructions: Same as Practice Paper–1.

Choose the correct option:

1. **There is no natural death in single-celled organisms like *Amoeba* and bacteria because**
(a) they cannot reproduce sexually.
(b) they reproduce by binary fission.
(c) parental body is distributed among the offspring.
(d) they are microscopic.
2. **From among the sets of terms given below, identify those that are associated with the gynoecium.**
(a) Stigma, ovule, embryo sac, placenta
(b) Thalamus, pistil, style, ovule
(c) Ovule, ovary, embryo sac, tapetum
(d) Ovule, stamen, ovary, embryo sac
3. **Choose the correct statement from the following.**
(a) Cleistogamous flowers always exhibit autogamy.
(b) Chasmogamous flowers always exhibit geitonogamy.
(c) Cleistogamous flowers exhibit both autogamy and geitonogamy.
(d) Chasmogamous flowers never exhibit autogamy.
4. **While planning for an artificial hybridisation programme involving dioecious plants, which of the following steps would not be relevant?**
(a) Bagging of female flower
(b) Dusting of pollen on stigma
(c) Emasculation
(d) Collection of pollen
5. **The phenomenon observed in some plants wherein parts of the sexual apparatus is used for forming embryos without fertilisation is called**
(a) parthenocarpy
(b) apomixis
(c) vegetative propagation
(d) sexual reproduction
6. **Which one of the following is not associated with male reproductive system?**
(a) Bulbourethral gland
(b) Bulbovestibular gland
(c) Prostate gland
(d) Cowper's gland
7. **Onset of menstruation is due to**
(a) increased progesterone level.
(b) increase in level of FSH.
(c) fall in progesterone level.
(d) decrease in level of FSH.

8. Match the following and choose the correct option.

Column I	Column II
A. Trophoblast	(i) Morphogenetic movement in the endometrium
B. Cleavage	(ii) Group of cells which form embryo
C. Inner cell mass	(iii) Outer layer of blastocyst
D. Gastrulation	(iv) Mitosis but no growth of the embryo

(a) A—(ii), B—(i), C—(iii), D—(iv)

(b) A—(iii), B—(iv), C—(ii), D—(i)

(c) A—(ii), B—(iv), C—(iii), D—(i)

(d) A—(iii), B—(i), C—(ii), D—(iv)

9. In human beings fertilisation occurs in

(a) uterus

(b) coelom

(c) fimbriated funnel

(d) ampulla

10. The hormones which are mainly present in the oral contraceptive pills are

(a) progesterone and follicle stimulating hormone.

(b) follicle stimulating hormone.

(c) progesterone and estrogen.

(d) progesterone and luteinising hormone.

11. If a plant heterozygous for tallness is selfed, the F_2 generation has both tall and dwarf plants. It proves the principle of

(a) dominance

(b) segregation

(c) independent assortment

(d) incomplete dominance

12. Both husband and wife have normal vision though their fathers are colour blind. The probability of their son becoming colour blind is

(a) 0%

(b) 50%

(c) 25%

(d) 75%

13. What is true about test cross?

(a) It distinguishes homozygous and heterozygous dominants.

(b) It gives more chance for expression of the recessive trait.

(c) It helps to know the genotype of the unknown individual.

(d) All of the above

14. Sex determination in *Drosophila melanogaster* is based on

(a) ratio between X and Y chromosome.

(b) X, Y-chromosome mechanism.

(c) genetic balance between the X-chromosome and autosomes.

(d) chromosome environment interaction.

15. One way of determining sex-linked inheritance is

(a) both son and daughter resemble mother.

(b) son resembles father and daughter resembles mother.

(c) both son and daughter resemble father.

(d) son resembles mother and daughter resembles father.

16. Pyrimidine base present in RNA in place of thymine of DNA is

(a) uracil

(b) adenine

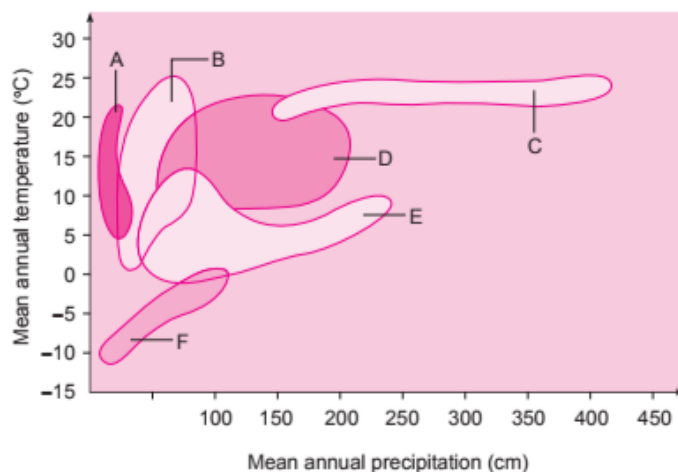
(c) cytosine

(d) guanine

- 17. Find out the correct answers out of the following discoveries.**
- 1. Griffith—transformation**
 - 2. Gamow—triplet code**
 - 3. Meischer—nucleic acid**
- (a) 1, 2 and 3 are correct (b) 1 and 2 are correct, 3 is incorrect
(c) 1 is correct, 2 and 3 are incorrect (d) 1 and 3 are correct, 2 is incorrect
- 18. A bacterium *E.coli* with completely radioactive DNA was allowed to replicate in a non-radioactive medium for two generations. What percentage of the bacteria should contain radioactive DNA?**
- (a) 100% (b) 25% (c) 50% (d) 12.5%
- 19. RNA polymerase which is on the promoter, moves to the structural genes to transcribe them. However, it happens when**
- (a) there is no repressor on the operator. (b) there is repressor on the operator.
(c) inducer binds to structural genes. (d) RNA polymerase shifts first to regulator gene.
- 20. Choose the incorrect statement.**
- (a) During splicing in eukaryotes, the exons are joined to form the RNA.
(b) Sigma factor functions as the initiation factor in the transcription of prokaryotes.
(c) VNTR belongs to a class of satellite DNA called micro-satellite.
(d) Frederick Meischer discovered DNA and named it called nuclein.
- 21. Thorn of *Bougainvillea* and tendril of *Cucurbita* are examples of**
- (a) vestigial organs (b) retrogressive evolution
(c) analogous organs (d) homologous organs
- 22. Darwin's finches are an excellent examples of**
- (a) brood parasitism (b) connecting links
(c) adaptive radiation (d) seasonal migration
- 23. In the case of peppered moth (*Biston betularia*) the black-coloured form becomes dominant over the light-coloured form in England during industrial revolution. This is an example of**
- (a) appearance of the darker coloured individuals due to very poor sunlight.
(b) protective mimicry.
(c) inheritance of darker colour character acquired due to the darker environment.
(d) natural selection whereby the darker forms were selected.
- 24. In which of the following diseases, lips and fingernails turn grey and in severe cases bluish?**
- (a) Jaundice (b) Pneumonia (c) Typhoid (d) Malaria
- 25. PMNL are**
- (a) cellular barriers of immunity (b) cytokine barriers of immunity
(c) physical barriers of immunity (d) not related to immunity
- 26. When a person is bitten by snake, he or she is given anti-toxin. This immunity is called**
- (a) active immunisation (b) passive immunisation
(c) innate immunisation (d) humoral immunity
- 27. Which one of the following is a correct match?**
- (a) Morphine—hallucinogen (b) Cocaine—opiate narcotic
(c) Bhang—analgesic (d) Barbiturate—tranquilliser
- 28. Somatic hybridisation refers to**
- (a) fusion of male and female gamete artificially (b) fusion of protoplasts
(c) fusion of cytoplasm (d) fusion of male gamete with antipodals

- 29. Pesticides are considered hazardous in nature. This is because they**
 (a) kill pests (b) persist in the environment
 (c) do not enter the food chain (d) are not absorbed by the plants
- 30. 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.
- 31. Benefits of mycorrhiza are :**
 (1) Resistance to root-borne pathogens
 (2) Tolerance to salinity
 (3) Overall increase in plant growth and development
 (4) Tolerance to drought
Which of the above benefits are correct?
 (a) 1, 2 and 3 (b) 1 and 3
 (c) 1, 2 and 4 (d) 1, 2, 3 and 4
- 32. Major component of gobar gas is**
 (a) propane (b) methane
 (c) ammonia (d) butane
- 33. Curd is nutritionally superior to milk because**
 (a) it is a concentrated product. (b) it contains rich amount of vitamin B₁₂.
 (c) it contains useful intestinal bacteria. (d) it contains less impurities.
- 34. Which of the following is known as “molecular scissors”?**
 (a) Plasmids (b) Restriction endonuclease
 (c) Selectable markers (d) DNA ligase
- 35. Elution refers to**
 (a) making the DNA bands visible under UV radiation.
 (b) isolating alien DNA from the choice organism.
 (c) separating DNA fragments on agarose gel.
 (d) cutting and extraction of DNA bands from the agarose gel.
- 36. Commonly used vectors for human genome sequencing are**
 (a) BAC and YAC (b) T-DNA
 (c) expression vectors (d) none of these
- 37. The thermostable enzymes ‘*Taq*’ and ‘*Pfu*’, isolated from thermophilic bacteria are**
 (a) RNA polymerases (b) DNA polymerases
 (c) Restriction endonucleases (d) DNA ligases
- 38. The process of RNAi has been used in the development of plants resistant to**
 (a) fungi (b) nematodes
 (c) viruses (d) bacteria
- 39. Which of the following methods can cure a genetic disorder?**
 (a) Recombinant DNA technology (b) Embryo transfer
 (c) Gene therapy (d) IVF
- 40. The ADA deficiency is due to the _____ of the gene for adenosine deaminase.**
 (a) deletion (b) addition
 (c) substitution (d) inversion

41. The most important factor which contributes to increase in population growth in a new habitat which is just colonised is
 (a) mortality (b) natality
 (c) immigration (d) emigration
42. *Paramecium aurelia*, when kept in a water beaker along with *P. caudatum*, will kill *P. caudatum*. This represents
 (a) competitive exclusion (b) co-existence
 (c) resource partitioning (d) predation
43. Identify the biomes A, B, D and E represented below graphically.



	A	B	D	E
(a)	Grassland	Desert	Temperate forest	Coniferous forest
(b)	Desert	Grassland	Temperate forest	Coniferous forest
(c)	Desert	Grassland	Coniferous forest	Temperate forest
(d)	Desert	Temperate forest	Grassland	Coniferous forest

44. Of the total incident solar radiation, the proportion of PAR is
 (a) about 70% (b) about 60%
 (c) less than 50% (d) more than 80%
45. Large woody vines are more commonly found in
 (a) temperate forests (b) mangroves
 (c) tropical rainforests (d) alpine forests
46. Which one of the following statements is correct for secondary succession?
 (a) It begins on a bare rock.
 (b) It occurs on a deforested site.
 (c) It follows primary succession.
 (d) It is similar to primary succession except that it has a relatively fast pace.
47. Choose the incorrect option w.r.t. genetic diversity.
 (a) Increases adaptability to the environment.
 (b) Diversity occur in difference of alleles, entire genes and chromosomal structure.
 (c) Helps in formation of ecophene.
 (d) Useful for speciation.

48. According to IUCN Red Data Book which category has maximum extinction of species in last 500 years?

- (a) Vertebrates (b) Invertebrates
(c) Plants (d) Mammals

49. Match the items in column I and column II and choose the correct option.

Column I

- A. UV
B. Biodegradable Organic matter
C. DDT
D. Phosphates

Column II

- (i) Biomagnification
(ii) Eutrophication
(iii) Snow blindness
(iv) BOD

The correct match is:

- (a) A-(ii), B-(i), C-(iv), D-(iii) (b) A-(iii), B-(ii), C-(iv), D-(i)
(c) A-(iii), B-(iv), C-(i), D-(ii) (d) A-(iii), B-(i), C-(iv), D-(ii)

50. Algal blooms impart a distinct colour to water due to

- (a) their pigments.
(b) excretion of coloured substances.
(c) formation of coloured chemicals in water facilitated by physiological degradation of algae.
(d) absorption of light by algal cell wall.



Answers

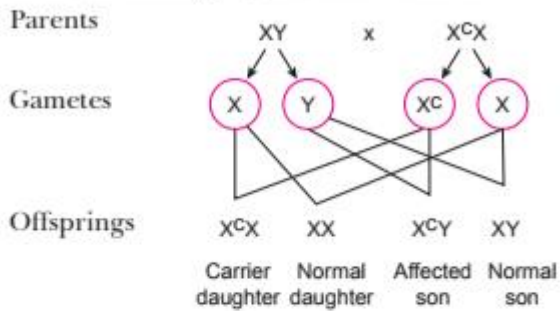
PRACTICE PAPER – 13

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|---------|---------|---------|---------|---------|---------|---------|
| 1. (c) | 2. (a) | 3. (a) | 4. (c) | 5. (b) | 6. (b) | 7. (c) |
| 8. (b) | 9. (d) | 10. (c) | 11. (b) | 12. (c) | 13. (a) | 14. (c) |
| 15. (d) | 16. (a) | 17. (a) | 18. (c) | 19. (a) | 20. (c) | 21. (d) |
| 22. (c) | 23. (d) | 24. (b) | 25. (a) | 26. (b) | 27. (d) | 28. (b) |
| 29. (b) | 30. (d) | 31. (d) | 32. (b) | 33. (b) | 34. (b) | 35. (d) |
| 36. (a) | 37. (b) | 38. (b) | 39. (c) | 40. (a) | 41. (c) | 42. (a) |
| 43. (b) | 44. (c) | 45. (c) | 46. (b) | 47. (c) | 48. (b) | 49. (c) |
| 50. (a) | | | | | | |

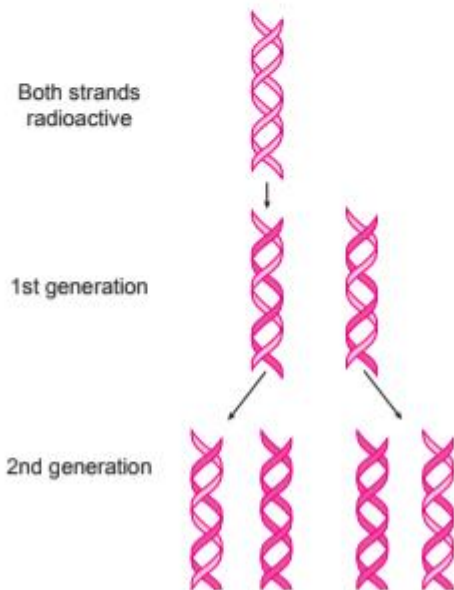
Explanations

PRACTICE PAPER – 13

12. (c) Gene for colourblindness is X-linked. If the husband and wife both have normal visions, husband does not have any gene for colourblindness whereas wife is a carrier (got from her father), So, the cross would be:



18. (c) The mode of replication of DNA is semi-conservative. Therefore, it is depicted as follows:



So, 50% of generation contains the radioactive DNA.

25. (a) PMNL stands for polymorphonuclear leukocyte.

27. (d) Morphine is an opioid, cocaine is a coca alkaloid and bhang is a hallucinogen.

47. (c) Ecophene refers to the phenotype that is temporarily adopted to the new habitat.

