

PRACTICE PAPER

23

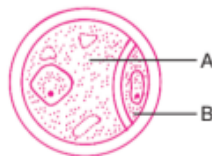
Time allowed: 45 minutes

Maximum Marks: 200

General Instructions: Same as Practice Paper-1.

Choose the correct option:

- In *Bryophyllum* adventitious buds arise from
(a) leaves (b) root (c) stems (d) flowers
- Identify 'A' and 'B' in the following diagram of a mature pollen grain.



- A—Generative cell
 - A—Vegetative cell
 - A—Vacuole
 - A—Nucleus
 - B—Vegetative cell
 - B—Generative cell
 - B—Nucleus
 - B—Vacuole
- A female plant with the ploidy level as $8n$ is crossed with a male plant with the ploidy level as $4n$ in an experiment. The ploidy of endosperm after double fertilisation would be
(a) $10n$ (b) $12n$ (c) $8n$ (d) $16n$
 - The number of meiotic divisions which are required to produce 20 seeds are
(a) 25 (b) 20 (c) 10 (d) 5
 - A flower pollinated by water is
(a) *Vallisneria* (b) Water hyacinth (c) Both (a) and (b) (d) *Yucca*
 - Which of the following statements is incorrect?
(a) GnRH stimulates secretion of FSH and LH.
(b) LH stimulates the Leydig cells to secrete androgen.
(c) FSH acts on the Sertoli cells and stimulates spermiogenesis.
(d) None of these
 - Spermiation is the process of release of sperms from
(a) seminiferous tubules (b) vas deferens (c) epididymis (d) prostate gland
 - Acrosomal reaction of the sperm occurs due to
(a) its contact with zona pellucida of the ova.
(b) reactions within the uterine environment of the female.
(c) reactions within the epididymal environment of the male.
(d) androgens produced in the uterus.

9. Which one of the following is not a male accessory gland?
(a) Seminal vesicle (b) Ampulla
(c) Prostate (d) Bulbourethral gland
10. The method of directly injecting a sperm into ovum in Assisted Reproductive Technology is called
(a) GIFT (b) ZIFT (c) ICSI (d) ET
11. Distance between the genes and percentage of recombination shows
(a) a direct relationship (b) an inverse relationship
(c) a parallel relationship (d) no relationship
12. In sickle cell anaemia, glutamic acid is replaced by valine. Which one of the following triplets codes for valine?
(a) G G G (b) A A G (c) G A A (d) G U G
13. Which of the following will not result in variations among siblings?
(a) Independent assortment of genes (b) Crossing over
(c) Linkage (d) Mutation
14. Mendel's Law of independent assortment holds good for genes situated on the
(a) non-homologous chromosomes (b) homologous chromosomes
(c) extra-nuclear genetic element (d) same chromosome
15. In a certain taxon of insects some have 17 chromosomes and the others have 18 chromosomes. The 17 and 18 chromosome bearing organisms are
(a) males and females, respectively (b) females and males, respectively
(c) all males (d) all females
16. In the DNA molecule
(a) the proportion of adenine in relation to thymine varies with the organism.
(b) there are two strands which run antiparallel—one in $5' \rightarrow 3'$ direction and other in $3' \rightarrow 5'$.
(c) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal.
(d) there are two strands which run parallel in the $5' \rightarrow 3'$ direction.
17. With regard to mature mRNA in eukaryotes
(a) exons and introns do not appear in the mature RNA.
(b) exons appear but introns do not appear in the mature RNA.
(c) introns appear but exons do not appear in the mature RNA.
(d) both exons and introns appear in the mature RNA.
18. Who amongst the following scientists had no contribution in the development of the double helix model for the structure of DNA?
(a) Rosalind Franklin (b) Maurice Wilkins
(c) Erwin Chargaff (d) Meselson and Stahl
19. Control of gene expression in prokaryotes take place at the level of
(a) DNA replication (b) transcription
(c) translation (d) none of the above
20. Which of the following are the functions of RNA?
(a) It is a carrier of genetic information from DNA to ribosomes synthesising polypeptides.
(b) It carries amino acids to ribosomes.
(c) It is a constituent component of ribosomes.
(d) All of the above

- 21. The theory of spontaneous generation stated that**
 (a) life arose from living forms only.
 (b) life can arise from both living and non-living.
 (c) life can arise from non-living things only.
 (d) life arises spontaneously, neither from living nor from the non-living.
- 22. Homologous organs show**
 (a) natural selection (b) divergent evolution
 (c) parallel evolution (d) convergent evolution
- 23. The bones of forelimbs of whale, bat, cheetah and man are similar in structure, because**
 (a) one organism has given rise to another. (b) they share a common ancestor.
 (c) they perform the same function. (d) they have biochemical similarities.
- 24. The disease chikungunya is transmitted by**
 (a) house fly (b) *Aedes* mosquito
 (c) cockroach (d) female *Anopheles*
- 25. When an apparently healthy person is diagnosed as unhealthy by a psychiatrist, the reason could be that**
 (a) the patient was not efficient at his work.
 (b) the patient was not economically prosperous.
 (c) the patient shows behavioural and social maladjustment.
 (d) he does not take interest in sports.
- 26. Transplantation of tissues/organs to save certain patients often fails due to rejection of such tissues/organs by the patient. Which type of immune response is responsible for such rejections?**
 (a) Auto-immune response (b) Humoral immune response
 (c) Physiological immune response (d) Cell-mediated immune response
- 27. Which of the following is not a lymphoid tissue?**
 (a) Spleen (b) Tonsils (c) Pancreas (d) Thymus
- 28. A group of animals which are related by descent and share many similarities are referred to as**
 (a) breed (b) race (c) variety (d) species
- 29. Inbreeding is carried out in animal husbandry because it**
 (a) increases vigour (b) improves the breed
 (c) increases heterozygosity (d) increases homozygosity
- 30. Bull semen for the purpose of artificial insemination is stored in**
 (a) ice (b) liquid oxygen (c) liquid nitrogen (d) liquid CO₂
- 31. The primary treatment of waste water involves the removal of**
 (a) dissolved impurities (b) stable particles
 (c) toxic substances (d) harmful bacteria.
- 32. The technology of biogas production from cow dung was developed in India largely due to the efforts of**
 (a) Gas Authority of India
 (b) Oil and Natural Gas Commission
 (c) Indian Agricultural Research Institute and Khadi & Village Industries Commission
 (d) Indian Oil Corporation.
- 33. Which sentence is the odd one?**
 (a) Progesterone is useful as an immunosuppressor. (b) Statins are useful to reduce cholesterol.
 (c) Streptokinase is useful to prevent blood clotting. (d) Lipase is useful to remove oily stains.

- 34. In agarose gel electrophoresis, DNA molecules are separated on the basis of their**
 (a) charge only (b) size only
 (c) charge to size ratio (d) All of the above
- 35. Which of the following contributed in popularising the PCR (polymerase chain reactions) technique?**
 (a) Easy availability of DNA template.
 (b) Availability of synthetic primers.
 (c) Availability of cheap deoxyribonucleotides.
 (d) Availability of 'Thermostable' DNA polymerase.
- 36. Significance of 'heat shock' method in bacterial transformation is to facilitate**
 (a) binding of DNA to the cell wall.
 (b) uptake of DNA through membrane transport proteins.
 (c) uptake of DNA through transient pores in the bacterial cell wall.
 (d) expression of antibiotic resistance gene.
- 37. A bacterial cell was transformed with a recombinant DNA molecule that was generated using a human gene. However, the transformed cells did not produce the desired protein. Reasons could be:**
 (a) Human gene may have intron which bacteria cannot process
 (b) Amino acid codons for humans and bacteria are different
 (c) Human protein is formed but degraded by bacteria
 (d) All of the above
- 38. The site of production of ADA in the body is**
 (a) erythrocytes (b) lymphocytes
 (c) blood plasma (d) osteocytes
- 39. A protoxin is**
 (a) a primitive toxin (b) a denatured toxin
 (c) toxin produced by protozoa (d) inactive toxin
- 40. In RNAi, genes are silenced using**
 (a) ssDNA (b) dsDNA
 (c) dsRNA (d) ssRNA
- 41. Which animal is capable of obtaining water by oxidation of lipid?**
 (a) Rat (b) Earthworm
 (c) Mole (d) Kangaroo rat
- 42. If "+" sign is given to beneficial interaction, "-" sign is given to detrimental interaction and "0" to neutral interaction then the population interaction represented by "+" "-" refers to**
 (a) parasitism (b) predation
 (c) commensalism (d) both (a) and (b)
- 43. Example of a biome include**
 (a) desert (b) rainforest
 (c) tundra (d) all of these
- 44. Decomposers like fungi and bacteria are**
 (i) autotrophs (ii) heterotrophs
 (iii) saprotrophs (iv) chemo-autotrophs
 (a) (i) and (iii) (b) (i) and (iv)
 (c) (ii) and (iii) (d) (i) and (ii)

- 45. The process of mineralisation by microorganisms helps in the release of**
 (a) inorganic nutrients from humus.
 (b) both organic and inorganic nutrients from detritus.
 (c) organic nutrients from humus.
 (d) inorganic nutrients from detritus and formation of humus.
- 46. Productivity is the rate of production of biomass expressed in terms of**
 (i) $(\text{kcal m}^{-3}) \text{ yr}^{-1}$ (ii) $\text{g}^{-2} \text{ yr}^{-1}$
 (iii) $\text{g}^{-1} \text{ yr}^{-1}$ (iv) $(\text{kcal m}^{-2}) \text{ yr}^{-1}$
 (a) (ii) (b) (iii) (c) (ii) and (iv) (d) (i) and (iii)
- 47. Which of the following is related to *ex-situ* conservation of threatened animals and plants?**
 (a) Wildlife safari parks (b) Biodiversity hot spots
 (c) Amazon rainforest (d) Himalayan region
- 48. Red list contains information on**
 (a) all economically important plants (b) plants whose products are in international trade
 (c) threatened species (d) marine vertebrates only
- 49. "Good ozone" is found in the**
 (a) mesosphere (b) troposphere
 (c) stratosphere (d) ionosphere
- 50. In an area where DDT had been used extensively, population of birds declined significantly because**
 (a) birds stopped laying eggs. (b) earthworms in the area got eradicated.
 (c) cobras were feeding exclusively on birds. (d) many of the birds laid eggs which did not hatch.



Answers

PRACTICE PAPER – 3

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