

PRACTICE PAPER

6

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Y

Time allowed: 45 minutes

Maximum Marks: 200

General Instructions: Same as Practice Paper–I.

Choose the correct option:

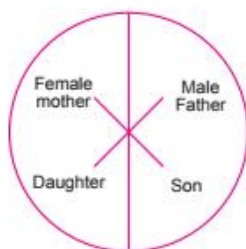
- The male gametes of rice plant have 12 chromosomes in their nucleus. The chromosome number in the female gamete, zygote and the cells of the seedling will be, respectively
(a) 12, 24, 12 (b) 24, 12, 12
(c) 12, 24, 24 (d) 24, 12, 24.
- The chromosome number in gametes (n) of maize is 10. So, the number of chromosomes in its endosperm would be
(a) 30 (b) 10
(c) 20 (d) 40
- Fertilisation by a self-incompatible pollen is prevented by
(a) inhibiting the germination of the pollen
(b) retarding the growth of pollen tube
(c) both (a) and (b)
(d) unsynchronized pollen release and stigma receptivity
- Which of the following statements is incorrect w.r.t. wind-pollinated plants?
(a) Pollen grains are light. (b) Pollen grains are non-sticky.
(c) They possess well exposed stamens. (d) Pollen grains have mucilaginous covering.
- Choose the correct order of stages of development of dicotyledonous embryo.
(a) Zygote \longrightarrow embryo \longrightarrow globular embryo \longrightarrow heart shaped embryo
(b) Zygote \longrightarrow globular embryo \longrightarrow mature embryo
(c) Embryo \longrightarrow proembryo \longrightarrow mature embryo \longrightarrow globular embryo
(d) Zygote \longrightarrow proembryo \longrightarrow globular embryo \longrightarrow heart-shaped embryo
- Match the following and choose the correct option.

Column I	Column II
(A) Trophoblast	(i) Embedding of blastocyst in the endometrium
(B) Cleavage	(ii) Group of cells that would differentiate as embryo
(C) Inner cell mass	(iii) Outer layer of blastocyst attached to the endometrium
(D) Implantation	(iv) Mitotic division of zygote

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

7. Human females are
 - (a) heterogametic
 - (b) monogametic
 - (c) agametic
 - (d) homogametic
8. Choose the correct statement regarding oxytocin.
 - (a) It helps in contraction of uterine muscles.
 - (b) It controls the blood pressure.
 - (c) It facilitates parturition.
 - (d) It helps to expand the ligaments.
9. Cells which secrete milk in mammary glands are
 - (a) acinar cells
 - (b) chondrocytes
 - (c) leucocytes
 - (d) cells of mammary alveoli
10. Which of the following is not a cause of population explosion in India?
 - (a) Better healthcare
 - (b) Increased IMR
 - (c) Declining MMR
 - (d) Increased population of reproductive age
11. What will never be father's blood group if the mother has blood group B and child has blood group O?
 - (a) A
 - (b) B
 - (c) AB
 - (d) O
12. Occasionally, a single gene may express more than one effect. The phenomenon is called
 - (a) multiple allelism
 - (b) dominance
 - (c) pleiotropy
 - (d) polygeny
13. In the F_2 generation of a Mendelian dihybrid cross the number of phenotypes and genotypes are
 - (a) phenotypes - 4; genotypes - 16
 - (b) phenotypes - 9; genotypes - 4
 - (c) phenotypes - 4; genotypes - 8
 - (d) phenotypes - 4; genotypes - 9
14. Organisms phenotypically similar but genotypically dissimilar are due to the phenomenon of
 - (a) mutations
 - (b) heterozygosity
 - (c) homozygosity
 - (d) monozygosity
15. The gene controlling the seven different characters of pea, studied by Mendel are now known to be located on how many different chromosomes?
 - (a) 1 pair
 - (b) 2 pair
 - (c) 3 pair
 - (d) 4 pair
16. In some viruses, DNA is synthesised by using RNA as template. Such a DNA is called
 - (a) A-DNA
 - (b) B-DNA
 - (c) cDNA
 - (d) rDNA
17. A sample of DNA has 30% adenine. What is the quantity of cytosine present?
 - (a) 30%
 - (b) 20%
 - (c) 50%
 - (d) 15%
18. The process of addition of methyl guanosine triphosphate at the 5' end of hnRNA is
 - (a) capping
 - (b) tailing
 - (c) termination
 - (d) splicing
19. At which phase the replication of DNA takes place in eukaryotes?
 - (a) S-phase
 - (b) G_2 phase
 - (c) M-phase
 - (d) Cytokinesis phase
20. The strongest evidence that DNA is the genetic material comes from
 - (a) the fact that chromosomes are made of DNA.
 - (b) studies on the transformation of bacterial cells.
 - (c) the knowledge that DNA is present in the nucleus.
 - (d) the finding that DNA is not present in the cytoplasm.
21. According to Hugo de Vries, speciation is due to
 - (a) accumulation of small variations
 - (b) intraspecific breeding
 - (c) inter specific breeding
 - (d) saltation

22. Represented below is the inheritance pattern of a certain type of trait in humans. Which one of the following conditions could be an example of this pattern?



- (a) Phenylketonuria (b) Sickle cell anaemia
(c) Haemophilia (d) Thalassemia
23. Which type of selection explains industrial melanism observed in moth, *Biston bitularia*?
(a) Stabilising (b) Directional
(c) Disruptive (d) Artificial
24. AIDS is caused by HIV. Among the following, which one is not a mode of transmission of HIV?
(a) Transfusion of contaminated blood. (b) Sharing the infected needles.
(c) Shaking hands with infected persons. (d) Sexual contact with infected persons.
25. LSD is obtained from
(a) *Erythroxylum coca* (b) *Cannabis sativa*
(c) *Claviceps purpurea* (d) *Papaver somniferum*
26. Natural killer cells destroy the target cell by
(a) phagocytosis (b) producing antibodies
(c) releasing histamines (d) creating perforin-lined pores
27. HIV attacks which of the following?
(a) B-cells (b) T-cells
(c) Antigen presenting cells (d) T-helper cells
28. The scientific process by which crop plants are enriched with certain desirable nutrients is called
(a) crop protection (b) breeding (c) biofortification (d) bioremediation.
29. Given below are a few statements regarding somatic hybridisation. Choose the correct statements.
(i) Protoplasts of different cells of the same plant are fused.
(ii) Protoplasts from cells of different species can be fused.
(iii) Treatment of cells with cellulase and pectinase is mandatory.
(iv) The hybrid protoplast contains characters of only one parental protoplast.
(a) (i) and (iii) (b) (i) and (ii) (c) (i) and (iv) (d) (ii) and (iii)
30. An explant is
(a) dead plant (b) part of the plant
(c) part of the plant used in tissue culture (d) part of the plant that expresses a specific gene.
31. What would happen if oxygen availability to activated sludge flocs is reduced?
(a) It will slow down the rate of degradation of organic matter
(b) The center of flocs will become anoxic, which would cause death of bacteria and eventually breakage of flocs.
(c) Flocs would increase in size as anaerobic bacteria would grow around flocs.
(d) Protozoa would grow in large numbers.

32. **Big holes in Swiss cheese are made by**
 (a) a machine.
 (b) a bacterium that produces methane gas.
 (c) a bacterium producing a large amount of carbon dioxide.
 (d) a fungus that releases a lot of gases during its metabolic activities.
33. **In 1928, a scientist discovered the first effective antibiotic. Choose the correct option regarding the scientist and the antibiotic.**
 (a) Fleming – Streptomycin (b) Fleming – Penicillin
 (c) Waksman – Penicillin (d) Waksman – Streptomycin
34. **During the process of isolation of DNA, the RNA can be removed by treatment with**
 (a) protease (b) lipase (c) ribonuclease (d) deoxyribonuclease
35. **The linking of antibiotic resistance gene with the plasmid vector became possible with**
 (a) DNA polymerase (b) exonucleases (c) DNA ligase (d) endonucleases
36. **The DNA molecule to which the gene of interest is ligated is called**
 (a) vector (b) transformer (c) template (d) carrier
37. **Which of the following is present in a vector that helps in identifying the transformants and eliminating the non-transformants?**
 (a) *ori* (b) Selectable marker (c) Cloning sites (d) Recognition sites
38. **Silencing of a gene could be achieved through the use of**
 (a) RNAi only (b) antisense RNA only
 (c) both RNAi and antisense RNA (d) none of the above
39. **A transgenic crop which may help in solving the problem of night blindness in developing countries is**
 (a) golden rice (b) starlink maize (c) Flavrsavr tomatoes (d) Bt soyabean
40. **Transgenic animals carry**
 (a) foreign DNA in its germ cells (b) foreign DNA in all its cells
 (c) foreign DNA in its somatic cells (d) none of these
41. **Which of the following equations correctly represents the exponential population growth curve?**
 (a) $dN/dt = rN$ (b) $N_t = N_0 e^{rt}$ (c) Both (a) and (b) (d) $dN/dt = rN\{(K-N)/K\}$
42. _____ **influence population density under normal conditions.**
 (a) Immigration (b) Emigration
 (c) Deaths (d) Both (a) and (b)
43. **Which of the following statements is true about *Opuntia*?**
 (a) They have no leaves as they are reduced to spines.
 (b) The photosynthetic function is taken over by the flattened stems.
 (c) The rate of transpiration is reduced due to the presence of spine-like leaves.
 (d) All of the above
44. **Climax community is in a state of**
 (a) non-equilibrium (b) equilibrium
 (c) disorder (d) constant change.
45. **Among the following biogeochemical cycles which one does not have losses due to respiration?**
 (a) Phosphorus (b) Nitrogen
 (c) Sulphur (d) All of the above

46. The sequence of communities of primary succession in water is
 (a) phytoplankton, sedges, free-floating hydrophytes, rooted hydrophytes, grasses and trees.
 (b) phytoplankton, free-floating hydrophytes, rooted hydrophytes, sedges, grasses and trees.
 (c) free-floating hydrophytes, sedges, phytoplankton, rooted hydrophytes, grasses and trees.
 (d) phytoplankton, rooted submerged hydrophytes, floating hydrophytes, reed swamp, sedges, meadow and trees.
47. How many of following represent *in-situ* (I) and *ex-situ* (E) conservation strategies?
 Sacred groves, Wildlife sanctuary, Biosphere reserve, Home gardens, Seed bank, Gene bank, National park, Sacred lakes, Botanical garden, Zoological park
 (a) I – 5, E – 5 (b) I – 6, E – 4
 (c) I – 3, E – 7 (d) I – 8, E – 2
48. 'Broadly utilitarian' argument for the conservation of biodiversity includes
 (a) pollination (b) aesthetic value
 (c) climatic regulation (d) all of the above
49. Match the items given in Column I with those in Column II and select the correct option given below:
- | Column I | Column II |
|------------------------------------|------------------------------------|
| A. Eutrophication | (i) UV-B radiation |
| B. Sanitary landfills | (ii) Deforestation |
| C. Snow blindness | (iii) Nutrient enrichment |
| D. Jhum cultivation | (iv) Waste disposal |
| (a) A-(iii), B-(iv), C-(i), D-(ii) | (b) A-(i), B-(iii), C-(iv), D-(ii) |
| (c) A-(ii), B-(i), C-(iii), D-(iv) | (d) A-(i), B-(ii), C-(iv), D-(iii) |
50. The expanded form of DDT is
 (a) dichloro diphenyl trichloroethane (b) dichloro diethyl trichloroethane
 (c) dichloro dipyrydyl trichloroethane (d) dichloro diphenyl tetrachloroacetate

Answers

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