

Time allowed: 45 minutes

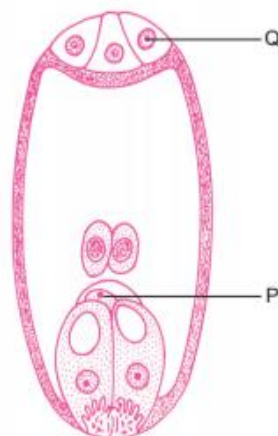
Maximum Marks: 200

**General Instructions:** Same as Practice Paper-1.

**Choose the correct option:**

- There are various types of reproduction. The type of reproduction adopted by an organism depends on
  - the habitat and morphology of the organism.
  - morphology of the organism.
  - morphology and physiology of the organism.
  - the organism's habitat, physiology and genetic makeup.
- Unisexuality of flowers prevent
 

(a) geitonogamy	(b) autogamy
(c) xenogamy	(d) both geitonogamy and xenogamy
- Bagging is done in flowers to
  - prevent contamination of stigma with unwanted pollen.
  - initiate the process of pollination.
  - guide the entry of pollen tube.
  - attract the pollinating agents.
- Identify the diagram given below and choose the correct option.



- |                                         |                                          |
|-----------------------------------------|------------------------------------------|
| (a) Ovule; P-Egg; Q-Polar nuclei        | (b) Embryo sac; P- Egg; Q-Antipodals     |
| (c) Anther; P-Endothecium, Q-Connective | (d) Stigma; P-Central cell; Q-Antipodals |

5. Many insects may consume pollens without bringing out pollination. Such floral visitors are referred to as  
 (a) pollen robbers (b) pollen stimulators  
 (c) pollinators (d) pollen inhibitors
6. Which among the following has 23 chromosomes?  
 (a) Spermatogonia (b) Primary spermatocyte  
 (c) Secondary oocyte (d) Oocyte
7. A mature Graafian follicle of human contains  
 (a) an ovum (b) a primary oocyte  
 (c) a secondary oocyte (d) an oogonium
8. Solid ball-like structure formed by cleavage is called  
 (a) blastula (b) morula  
 (c) gastrula (d) neural tube
9. If for some reason the vasa efferentia in the human gets blocked, it will obstruct the transport of sperms from  
 (a) penis to vagina (b) epididymis to vas deferens  
 (c) testes to epididymis (d) vagina to cervix
10. Choose the incorrect statement.  
 (a) The statutory ban on amniocentesis is to legally check the female foeticide.  
 (b) Embryo with more than 32 blastomers is transferred into the uterus.  
 (c) 10<sup>th</sup> – 17<sup>th</sup> day of the menstrual cycle are called the infertile period.  
 (d) Contraceptive pills prevent ovulation and implantation.
11. How many types of gametes will be produced by an organism with genotype AaBbCc?  
 (a) 2 (b) 4  
 (c) 1 (d) 8
12. Sex chromosomes of a female bird are represented by  
 (a) ZO (b) XX  
 (c) XO (d) ZW
13. Gene for haemophilia is  
 (a) X-linked recessive (b) X-linked dominant  
 (c) Y-linked (d) autosomal
14. 1 : 2 : 1 is a ratio which is found in  
 (a) F<sub>2</sub> genotypic ratio of a monohybrid cross (b) co-dominance  
 (c) incomplete dominance (d) all of the above
15. Segregation of genes occur in  
 (a) Anaphase I (b) Anaphase II  
 (c) Metaphase I (d) Telophase I
16. Hydrogen bonds between cytosine and guanine are  
 (a) 1 (b) 2  
 (c) 3 (d) 4
17. The two strands of DNA are held together by  
 (a) peptide bonds (b) hydrogen bonds  
 (c) S-S bonds (d) phosphodiester bonds
18. The transforming principle was confirmed experimentally by  
 (a) Oswald Avery (b) Collin MacLeod  
 (c) Maclyn McCarty (d) All of them together

**19. The location of terminator in the transcription unit is**

- (a) towards 5' end of template strand.  
 (b) towards 3' end of template strand.  
 (c) towards 5' end of coding strand.  
 (d) towards 3' end of coding strand.

**20. Match the terms in column I with those in column II.**

Column I	Column II
A. RNA polymerase I	1. A set of three bases on tRNA that is complementary to the bases.
B. Anticodon	2. A unit of DNA that codes for a polypeptide.
C. Cistron	3. Transcribes rRNAs

(a) A-2, B-3, C-1

(b) A-1, B-2, C-3

(c) A-3, B-2, C-1

(d) A-3, B-1, C-2

**21. According to Darwin, the organic evolution is due to**

- (a) competition within closely related species  
 (b) reduced feeding efficiency in one species due to the presence of interfering species  
 (c) intraspecific competition  
 (d) interspecific competition

**22. The tendency of population to remain in genetic equilibrium may be disturbed by**

- (a) lack of mutations  
 (b) lack of random mating  
 (c) random mating  
 (d) lack of migration

**23. An important evidence in favour of organic evolution is the occurrence of**

- (a) homologous and analogous organs only  
 (b) homologous, analogous and vestigial organs  
 (c) analogous and vestigial organs only  
 (d) fossils only

**24. Histamine is secreted by**

- (a) plasma cell  
 (b) lymphocytes  
 (c) mast cell  
 (d) PMNL

**25. Antibodies are**

- (a)  $\beta$ -globulins  
 (b) proteins or polysaccharides  
 (c) glycoproteins  
 (d) immunoglobulins

**26. Damage to thymus in a child would lead to**

- (a) loss of antibody mediated immunity.  
 (b) loss of cell-mediated immunity.  
 (c) a reduction in stem cell production.  
 (d) reduction in haemoglobin content of blood.

**27. Match the following :**

Column I	Column II
(A) Pneumonia	1. <i>Wuchereria</i>
(B) Common cold	2. <i>Plasmodium</i>
(C) Malaria	3. Rhinovirus
(D) Filariasis	4. <i>H. influenzae</i>

(a) A—1 , B—2 , C—4 , D—3

(b) A—4, B—3, C—2, D—1

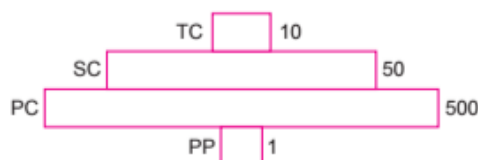
(c) A—4, B—3, C—1, D—2

(d) A—3, B—1, C—2, D—4

28. Consider the following statements (A–D) about organic farming
- Utilizes genetically modified crops like Bt cotton
  - Uses only naturally produced inputs like compost
  - Does not use pesticides and urea
  - Produced vegetable rich in vitamins and minerals
- Which of the above statements are correct?
- B, C and D
  - C and D only
  - B and C only
  - A and B only
29. Consider the following four statements (A–D) and select the option which includes all the correct ones only.
- Single cell *Spirulina* can produce large quantities of food rich in protein, minerals, vitamins etc.
  - Body weight-wise the microorganism *Methylophilus methylotrophus* may be able to produce several times more proteins than the cows per day.
  - Common button mushrooms are a very rich source of vitamin C.
  - A rice variety has been developed which is very rich in calcium.
- Statement (C) and (D)
  - Statement (A), (C) and (D)
  - Statement (B), (C) and (D)
  - Statements (A) and (B)
30. In plant breeding programmes, the entire collection (of plant seeds) having all the diverse alleles for all genes in a given crop is called
- evaluation and selection of parents.
  - germaplasm collection.
  - selection of superior recombinants.
  - cross-hybridisation among the selected parents.
31. The mould and bacteria involved in the work of Alexander Fleming are
- Penicillium notatum* and *Staphylococci*
  - Penicillium chrysogenum* and *Streptococci*
  - Penicillium notatum* and *Streptococci*
  - Penicillium chrysogenum* and *Staphylococci*
32. The greater the BOD of waste water, \_\_\_\_\_ is its polluting potential.
- lesser
  - more
  - equal
  - none of these
33. Choose the correct statement.
- Glomus* species of fungi form mycorrhizae.
  - Biofertilisers are organisms which deplete the nutrient quality of the soil.
  - IARI means International Agrochemical Research Institute.
  - Monascus purpureus* is used in production of Swiss cheese.
34. Which of the following statements is true about 'cloning vectors'?
- They are used to make multiple copies of the desired DNA/ gene.
  - They are used to transfer the gene of interest to the host cell.
  - The tumor inducing plasmid of *Agrobacterium tumifaciens* is modified into a cloning vector which is no more pathogenic to the plants but is still able to use the mechanisms to deliver genes of our interest into a variety of plants.
  - All of the above
35. The enzyme used to join the fragments of DNA is
- DNA polymerase
  - DNA ligase
  - Endonuclease
  - Helicase



36. In genetic engineering, the antibiotics are used  
 (a) as selectable markers (b) to keep the cultures free of infection  
 (c) to select healthy vectors (d) as sequence from where replication starts
37. Which of the given statements is correct in the context of observing DNA separated by agarose gel electrophoresis?  
 (a) DNA can be seen in visible light.  
 (b) DNA can be seen without staining.  
 (c) Ethidium bromide stained DNA can be seen in visible light.  
 (d) Ethidium bromide stained DNA can be seen on exposure to UV light.
38. Which of the following statements is true ?  
 1. There are an estimated 200,000 varieties of rice in India alone.  
 2. 27 documented varieties of Basmati are grown in India.  
 3. In 1997, an American company got patent rights on Basmati rice through the US Patent and Trademark Office.  
 (a) 1 and 2 (b) 1 and 3 (c) only 3 (d) 1, 2 and 3
39. Bt corn has been made resistant from corn borer disease by introduction of the gene  
 (a) *CryI b* (b) *Amp<sup>R</sup>* (c) *CryIIAb* (d) *Trp*
40. RNAi takes place in all \_\_\_\_\_ as a method of cellular defence.  
 (a) bacteria (b) plants (c) eukaryotic organisms (d) unicellular organisms
41. The carrying capacity of an area is 500 and the population density is 400. If the intrinsic rate of natural increase is 0.01, then what is  $dN/dt$  for this population ?  
 (a) 0.01 (b) 0.8 (c) 80 (d) 40
42. The salt concentration (measured as salinity in parts per thousand) for hypersaline lagoons is A, for sea is B and for inland water is C. Which of the following is correct?  
 (a)  $A \leq 5, B \geq 100, C = 30-50$  (b)  $A \leq 5, B = 30-35, C \geq 100$   
 (c)  $A \geq 1000, B = 30-35, C \leq 5$  (d)  $A \geq 100, B = 30-35, C \leq 5$
43. Connell conducted experiments on the rocky coast of Scotland on barnacles to prove  
 (a) resource partitioning (b) competitive exclusion  
 (c) competitive release (d) all of these
44. Identify the possible link "A" in the following food chain.  
 Plant  $\rightarrow$  insect  $\rightarrow$  frog  $\rightarrow$  "A"  $\rightarrow$  eagle  
 (a) rabbit (b) wolf  
 (c) cobra (d) parrot
45. Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels?



- (a) Level PC is "insects" and level SC is "small insectivorous birds"  
 (b) Level PP is "phytoplanktons" in sea and "whale" on top level TC  
 (c) Level one PP is "pipal trees" and the level SC is "sheep"  
 (d) Level PC is "rats" and level SC is "cats"

- 46. Which one of the following is not a functional unit of an ecosystem?**
- (a) Energy flow (b) Decomposition  
(c) Productivity (d) Stratification
- 47. Maximum diversity occurs where**
- (a) species of taxonomically different groups occur in almost equal abundance  
(b) species of taxonomically same group occur in almost equal abundance  
(c) species of taxonomically different group occur in unequal proportion  
(d) species of taxonomically same group occur in unequal proportion
- 48. We should care about loss in biodiversity in the populations of other species because of**
- (a) potential loss of medicinal plants and other products yet undiscovered from threatened species  
(b) potential loss of genes, some of which may code for proteins useful to humans  
(c) the risk of global ecological instability  
(d) all of the above
- 49. Montreal Protocol aims at**
- (a) biodiversity conservation (b) control of water pollution  
(c) control of CO<sub>2</sub> emission (d) reduction of ozone depleting substance
- 50. DDT residue are rapidly passed through food chain causing biomagnification because DDT is**
- (a) moderately toxic (b) non-toxic to aquatic animals  
(c) water soluble (d) liposoluble



# Answers

## PRACTICE PAPER – 16

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

## Explanations

### PRACTICE PAPER – 16

2. (b) Autogamy refers to the mode of pollination in which pollen grains are transferred to the stigma of the same flower.
10. (c) 10th – 17th day of the menstrual cycle are the most fertile days. This is the time when ovulation takes place.

11. (d) Organisms



26. (b) Thymus is the primary lymphoid organ which provides the micro-environment for the development and maturation of T-lymphocytes. Damage to thymus will affect cell-mediated immunity.

33. (a) Biofertilisers are the microorganisms which enrich the nutrient quality of the soil. IARI means Indian Agriculture Research Institute. Swiss cheese is formed by *Propionibacterium Sharmanii*.

41. (b) The logistic population growth model is given as

$$\frac{dN}{dt} = rN \left( \frac{K - N}{K} \right)$$

Here,  $N$  = Population density = 400

$r$  = intrinsic rate of natural increase = 0.01

$K$  = carrying capacity = 500

$$\text{So, } \frac{dN}{dt} = 0.01 \times 400 \left( \frac{500 - 400}{500} \right)$$

$$= 0.8$$

45. (a) PP stands for primary producers, PC stands for primary consumers, SC stands for secondary consumers and TC stands for tertiary consumers.

