

PRACTICE PAPER

17

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Y

Time allowed: 45 minutes

Maximum Marks: 200

General Instructions: Same as Practice Paper-I.

Choose the correct option:

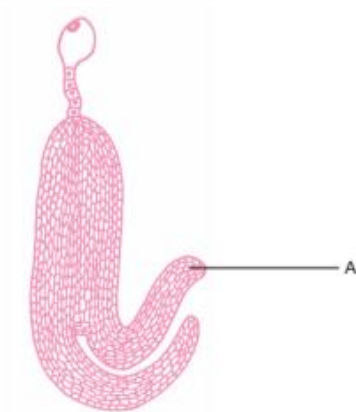
1. Identify the incorrect statement.

- (a) In asexual reproduction, the offspring produced are morphologically and genetically identical to the parent.
- (b) Zoospores are sexual reproductive structures.
- (c) In asexual reproduction, a single parent produces offspring with or without the formation of gametes.
- (d) Conidia are asexual structures in *Penicillium*.

2. From among the situations given below, choose the one that prevents both autogamy and geitonogamy.

- (a) Monoecious plant bearing unisexual flowers.
- (b) Dioecious plant bearing only male or female flowers.
- (c) Monoecious plant with bisexual flowers.
- (d) Dioecious plant with bisexual flowers.

3. Which of the following option correctly identify 'A' and its function?

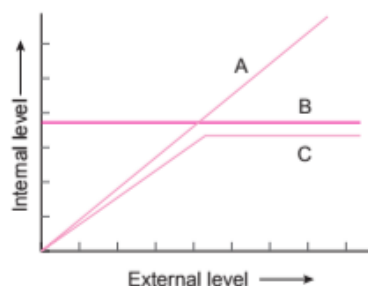


- (a) Suspensor - Protects the radicle
 - (b) Root cap - Gives protection to the plant
 - (c) Cotyledon - Contains reserved food material that are used by embryo
 - (d) Coleoptile - Gives protection to the radicle
- 4. Type of tissue present in the fertilised ovules of an angiosperm plant to supply food and nourishment to developing embryo is**
- (a) tapetum
 - (b) sporogenous tissue
 - (c) endosperm
 - (d) synergids

5. In which of the following, self pollination is must?
 (a) Cleistogamous condition (b) Chasmogamous condition
 (c) Heterostyly (d) Both (b) and (c)
6. In human female, secretion of which of the following hormones doesn't decrease during menopause?
 (a) FSH (b) LH
 (c) Both (a) and (b) (d) Estrogen
7. Ovulation occurs
 (a) alternately from two ovaries.
 (b) simultaneously from both the ovaries.
 (c) from one ovary throughout the life.
 (d) according to temperature condition of female body.
8. Which of the following stages of the human embryo is implanted in the uterus?
 (a) Morula (b) Blastocyst (c) Zygote (d) Gastrula
9. Choose the correct statement.
 (a) No cell division is involved in spermiogenesis.
 (b) Ovulation occurs under the influence of follicle stimulating hormone.
 (c) After the release of secondary oocyte, the Graafian follicle develops into corpus callosum.
 (d) The outermost thin membranous part of uterine wall is called myometrium.
10. A couple went to a doctor for the regular checkup of the developing foetus. The doctor ran some tests and found that the developing foetus had chromosomal abnormalities and suggested the couple to undergo abortion, the technique used by doctor to check the abnormalities is
 (a) vasectomy (b) ICSI (c) amniocentesis (d) ZIFT
11. How many genotypes can be produced by two alleles T and t?
 (a) 3 (b) 4 (c) 1 (d) 2
12. Down's syndrome is represented by genotype
 (a) 44+XO (b) 44+XXY
 (c) 44+XXX (d) an extra chromosome in 21st pair
13. A child has blood group A and his mother has blood group O. What is the probability that a man having blood group AB claiming to be the father is saying the truth?
 (a) $\frac{1}{2}$ (b) $\frac{1}{4}$ (c) 0 (d) $\frac{1}{16}$
14. The process of removing stamens from the flower bud during hybridisation is called
 (a) crossing (b) selfing (c) emasculation (d) copying
15. The term 'genotype' was introduced by
 (a) Johanssen (b) Castle (c) Correns (d) Morgan
16. Double hydrogen bonds occur in DNA between
 (a) adenine and thymine (b) uracil and thymine
 (c) adenine and guanine (d) thymine and cytosine
17. DNA replication is
 (a) continuous and conservative (b) discontinuous and semi-conservative
 (c) semi-discontinuous and semi-conservative (d) conservative and semi-discontinuous
18. RNA polymerase III transcribes
 (a) tRNA (b) 5 srRNA (c) snRNA (d) all of these

- 19. Regulation of *lac* operon by repressor is**
 (a) negative regulation (b) positive regulation
 (c) neutral regulation (d) no regulation at all
- 20. Which molecule acts as an adaptor during translation?**
 (a) mRNA (b) rRNA
 (c) tRNA (d) hnRNA
- 21. The process by which organisms with different evolutionary history evolve similar phenotypic adaptations in response to a common environmental challenge, is called**
 (a) non-random evolution (b) adaptive radiation
 (c) natural selection (d) convergent evolution
- 22. The eye of octopus and eye of cat show different patterns of structure, yet they perform similar function. This is an example of**
 (a) analogous organs that have evolved due to convergent evolution.
 (b) analogous organs that have evolved due to divergent evolution.
 (c) homologous organs that have evolved due to convergent evolution.
 (d) homologous organs that have evolved due to divergent evolution.
- 23. In a population of 1000 individuals 360 belong to genotype AA, 480 to Aa and the remaining 160 to aa. Based on this data, the frequency of allele A in the population is**
 (a) 0.4 (b) 0.5 (c) 0.6 (d) 0.7
- 24. The lymphoid tissue present in the lining of digestive, respiratory and urinogenital tracts is called**
 (a) CLAT (b) LAST (c) BLAST (d) MALT
- 25. Which antibody can cross through the placenta?**
 (a) IgG (b) IgA (c) IgM (d) IgE
- 26. Driving after drinking is not advised because**
 (a) it affects behaviour and vision (b) the judgment and co-ordination is disturbed
 (c) the reaction delays (d) All of these
- 27. To protect a person against tetanus, inoculation of which one of the following would save his life?**
 (a) Attenuated organisms (b) Killed tetanus bacteria
 (c) Tetanus antibodies (d) Dead bacteria
- 28. An alga which can be employed as food in human being is**
 (a) *Ulothrix* (b) *Chlorella*
 (c) *Spirogyra* (d) *Polysiphonia*
- 29. To obtain virus - free healthy plants from a diseased one 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
- 30. A technique of micropropagation is**
 (a) protoplast fusion (b) embryo rescue
 (c) somatic hybridisation (d) somatic embryogenesis
- 31. Cyclosporin A, produced from *Trichoderma polysporum* is used as**
 (a) clot buster (b) immunosuppressant
 (c) anaesthetic (d) nutritional supplement

32. Primary treatment of sewage waste involves which of the following processes?
 (a) Filtration and incubation (b) Sedimentation and decantation
 (c) Filtration and sedimentation (d) Sedimentation and microbial proliferation
33. Which of the following statements is true of *Nucleopolyhedrovirus*?
 (a) They are species-specific insecticides.
 (b) They are narrow-spectrum insecticides.
 (c) They have no negative impacts on other organisms.
 (d) All of the above
34. The host that produces a foreign gene product is called
 (a) recombinant host (b) competent host
 (c) foreign host (d) gene host
35. There is a restriction endonuclease called *EcoRI*. What does R part in it stand for?
 (a) Coenzyme (b) Restriction site
 (c) Resistance (d) Strain
36. A bioreactor refers to
 (a) fermentation tank (b) tank for biochemical reactions
 (c) organisms reacting to a stimulus (d) tank for biochemical waste
37. After completion of biosynthetic stage, the product has to be subjected through a series of processes before it is ready for marketing as a finished product. This series of processes is called
 (a) insertional inactivation (b) downstream processing
 (c) elution (d) gel electrophoresis
38. The site of production of ADA in the body is
 (a) RBC (b) lymphocytes (c) plasma (d) serum
39. *Bacillus thuringiensis* (Bt) strains have been used for designing
 (a) biofertilisers (b) bio-metallurgical techniques
 (c) bio-mineralisation processes (d) bio-insecticidal plants
40. C-peptide of human insulin is
 (a) a part of mature insulin molecule.
 (b) responsible for formation of disulphide bridges.
 (c) removed during maturation of pro-insulin to insulin.
 (d) responsible for its biological activity.
41. Roots of plant release a water-soluble substance that inhibits the growth of adjacent seedling of other plant. This represents
 (a) proto-cooperation (b) amensalism (c) commensalism (d) parasitism
42. Identify the types of organisms marked as A, B and C on the basis of responses of organisms towards the fluctuating environment conditions.



- (a) A = 99% of animals and nearly all plants, B = Mammals and birds, C = Prototherians
 (b) A = Partial regulator, B = Regulator, C = Conformer
 (c) A = Mammals and birds, B = 99% of animals and nearly all plants, C = Prototherians
 (d) A = Regulator, B = Partial regulator, C = Conformer

43. When birth rate equals death rate then

- (a) a population grows rapidly.
 (b) the size of a population remains constant.
 (c) density-dependent limiting factors do not affect the population.
 (d) a population is in danger of extinction.

44. The upright pyramid of number is absent in

- (a) pond (b) forest (c) lake (d) grassland

45. The rate of formation of new organic matter by rabbit in a grassland, is called

- (a) net productivity (b) secondary productivity
 (c) net primary productivity (d) gross primary productivity

46. Natural reservoir of phosphorus is

- (a) rock (b) fossils (c) sea water (d) animal bones

47. The value of slope of regression (Z) of species-area relationship for frugivorous birds and mammals in the tropical forests of different continents is _____.

- (a) 1.15 (b) 2.65 (c) 3.25 (d) 6.12

48. _____ is one of the *ex-situ* conservation methods for endangered species.

- (a) Wildlife sanctuaries (b) Biosphere reserves (c) Cryopreservation (d) Sacred groves

49. A renewable exhaustable natural resource is

- (a) coal (b) petroleum (c) minerals (d) forest

50. dB is a standard abbreviation used for the quantitative express of

- (a) the density of bacteria in a medium (b) a particular pollutant
 (c) the dominant *Bacillus* in a culture (d) a certain pesticide

Answers

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

Explanations

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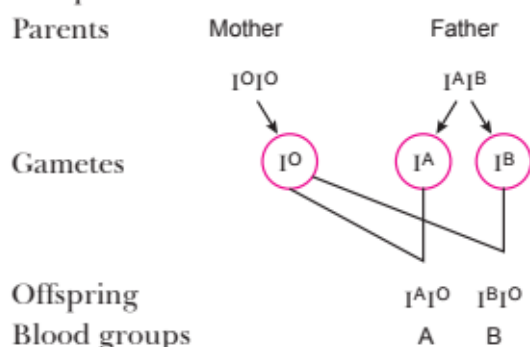
9. (a) Rapid secretion of luteinising hormone leading to its maximum level leads to ovulation.

After the release of secondary oocyte at the time of ovulation, graffian follicle develops into corpus luteum.

The outermost layer of uterine wall is called perimetrium.

11. (a) The possible genotypes by two alleles T and t are TT, Tt, tt.

13. (a) The possible cross would be:



So, the probability of the man being the father is 1/2 or 50%.

23. (c) Applying the Hardy-Weinberg principle:

$$(p + q)^2 = p^2 + 2pq + q^2 = 1$$

Here, p^2 = frequency of AA = 360

$$q^2 = \text{frequency of aa} = 160$$

$$2pq = \text{frequency of Aa} = 480$$

$$p = \text{frequency of allele A.}$$

$$q = \text{frequency of allele a.}$$

Given, $q^2 = 16$ out of 100 individual

$$\text{So, } q = \sqrt{\frac{16}{100}} = 0.4$$

$$\text{As } (p + q)^2 = 1$$

$$p + q = 1$$

$$p = 1 - q$$

$$p = 1 - 0.4$$

$$p = 0.6$$

24. (d) MALT stands for muscosa associated lymphoid tissue.

42. (a) In the given graph,

A = Conformers which include 99% animals and plants.

B = Regulators which include all birds and mammals and few vertebrate and invertebrates.

C = Partial regulators

50. (b) Decibel (dB) is a unit of measurement of noise pollution.

