PRACTICE PAPER

21

BIOLOGY

Time allowed: 45 minutes **Maximum Marks: 200**

General Instructions:

(*i*) The examination will consist of **Objective type with Multiple Choice Questions (MCQs)**.

(*ii*) There are **50** questions in total in this paper, out of which **40** questions are to be attempted.

(*iii*) Each question carries **five** marks.

(*iv*) There is **negative** marking of **one** mark for every **incorrect answer**.

Choose the correct option:

1. A few statements describing certain features of reproduction are given below.

(*i*) Gametic fusion takes place **(*ii*) Transfer of genetic material takes place**

(*iii*) Reduction division takes place **(*iv*) Progeny have some resemblance with parents**

Select the options that are true for both asexual and sexual reproduction from the options given below:

(*a*) (*i*) and (*ii*) (*b*) (*ii*) and (*iii*) (*c*) (*ii*) and (*iv*) (*d*) (*i*) and (*iii*)

2. A dicotyledonous plant bears flowers but never produces fruits and seeds. The most probable cause for the above situation is

(*a*) plant is dioecious and bears only pistillate flowers

(*b*) plant is dioecious and bears both pistillate and staminate flowers

(*c*) plant is monoecious

(*d*) plant is dioecious and bears only staminate flowers

3. Which of the following structures are haploid in nature?

(*a*) Nucellus and antipodals (*b*) Microspore and antipodals

(*c*) Egg cell and antipodals (*d*) Egg and central cell

4. Filiform apparatus performs the function of

(*a*) opening the pollen tube (*b*) guiding the pollen tube to egg

(*c*) entry of pollen tube into synergids (*d*) prevents growth of more than one pollen tube

5. The function of tapetum in microsporangium is

(*a*) it nourishes the developing pollen gains

(b) it performs the function of protection

(*c*) it helps in dehiscence of anther to release pollen grains

(*d*) it undergoes meiotic divisions to form microspore tetrads

6. Which hormone of pituitary gland regulates Sertoli cells?

(*a*) LH (*b*) FSH

(*c*) GH (*d*) prolactin

7. **The correct sequence of stages in spermatogenesis are:**
(*a*) spermatogonia → spermatid → spermatocyte → sperm
(*b*) spermatocyte → spermatogonia → spermatid → sperm
(*c*) spermatogonia → spermatocyte → spermatid → sperm
(*d*) spermatid → spermatocyte → spermatogonia → sperm

8. **Seminal plasma in humans is rich in**
(*a*) fructose and calcium
(*b*) glucose and calcium
(*c*) progesterone and testosterone
(*d*) potassium and calcium

9. **The signals of parturition originate from**
(*a*) placenta
(*b*) fully developed foetus
(*c*) oxytocin released from pituitary
(*d*) both placenta and fully developed foetus

10. ***In vitro* fertilisation involves transfer of _____ into the fallopian tube.**
(*a*) embryo up to eight cell stage
(*b*) embryo of thirty two cell stage
(*c*) zygote
(*d*) either zygote or embryo up to eight cell stage

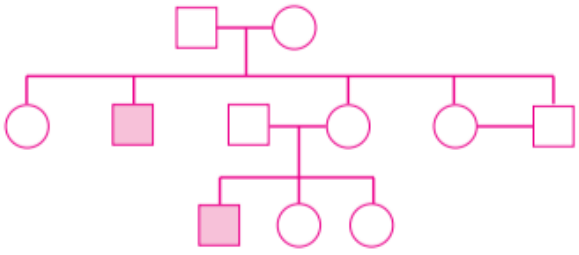
11. **Which one of the following is an example of polygenic inheritance?**
(*a*) Skin colour in humans
(*b*) Flower colour in *Mirabilis jalapa*
(*c*) Production of male honey bee
(*d*) Pod shape in garden pea

12. **In Mendel's experiments with garden pea, round seed shape (RR) was dominant over wrinkled seeds (rr) and yellow cotyledon (YY) was dominant over green cotyledon (yy). Which of the following are the expected phenotypes of the cross RRYY × rryy?**
(*a*) Round seeds with yellow cotyledons, and wrinkled seeds with yellow cotyledons
(*b*) Only round seeds with green cotyledons
(*c*) Only round seeds with yellow cotyledons
(*d*) Only wrinkled seeds with green cotyledons

13. **Test cross involves**
(*a*) crossing between two genotypes with dominant trait.
(*b*) crossing between two genotypes with recessive trait.
(*c*) crossing between two F_1 hybrids.
(*d*) crossing the F_1 hybrid with a double recessive genotype.

14. **If a colour blind woman marries a normal visioned man, their sons will be**
(*a*) all colour blind
(*b*) all normal visioned
(*c*) one-half colour blind and one-half normal
(*d*) three-fourths colour blind and one-fourth normal

15. **Study the pedigree chart given below. What does it show?**



(*a*) Inheritance of a condition like phenylketonuria as an autosomal recessive trait.
(*b*) The pedigree chart is wrong as this is not possible.
(*c*) Inheritance of a recessive sex-linked disease like haemophilia.
(*d*) Inheritance of a sex-linked inborn error of metabolism like phenylketonuria.

16. Amino acid sequence in protein synthesis is decided by the sequence of

(*a*) *r*RNA (*b*) *t*RNA (*c*) *m*RNA (*d*) *c*DNA

17. Antiparallel strands of a DNA molecule means that

(*a*) one strand turns clockwise.

(*b*) one strand turns anti-clockwise.

(*c*) the phosphate groups of two DNA strands, at their ends, share the same position.

(*d*) the phosphate groups at the start of two DNA strands are in opposite positions (pole).

18. Removal of introns and joining the exons in a defined order in a transcription unit is called

(*a*) tailing (*b*) transformation (*c*) capping (*d*) splicing

19. The net electric charge on DNA and histones is

(*a*) both positive (*b*) both negative

(*c*) negative and positive, respectively (*d*) zero

20. Which of the following statements is the most appropriate for sickle cell anaemia?

(*a*) It cannot be treated with iron supplements. (*b*) It is a molecular disease.

(*c*) It confers resistance to acquiring malaria. (*d*) All of the above

21. The concept of chemical evolution is based on

(*a*) interaction of water, air and clay under intense heat.

(*b*) effect of solar radiation on chemicals.

(*c*) possible origin of life by combination of chemicals under suitable environmental condition.

(*d*) crystallization of chemicals.

22. When two species of different genealogy come to resemble each other as a result of adaptation, the phenomenon is termed as

(*a*) microevolution (*b*) co-evolution

(*c*) convergent evolution (*d*) divergent evolution.

23. Analogous organs arise due to

(*a*) divergent evolution (*b*) artificial selection

(*c*) genetic drift (*d*) convergent evolution

24. The term 'Health' is defined in many ways. The most accurate definition of the health would be:

(*a*) Health is the state of body and mind in a balanced condition.

(*b*) Health is the reflection of a smiling face.

(*c*) Health is a state of complete physical, mental and social well-being.

(*d*) Health is the symbol of economic prosperity.

25. The organisms which cause diseases in plants and animals are called:

(*a*) Pathogens (*b*) Vectors (*c*) Insects (*d*) Worms

26. The clinical test that is used for diagnosis of typhoid is

(*a*) ELISA (*b*) ESR (*c*) PCR (*d*) Widal

27. Diseases are broadly grouped into infectious and non-infectious diseases.
In the list given below, identify the infectious diseases.

(*i*) Cancer **(*ii*) Influenza**

(*iii*) Allergy **(*iv*) Small pox**

(*a*) (*i*) and (*ii*) (*b*) (*ii*) and (*iii*)

(*c*) (*iii*) and (*iv*) (*d*) (*ii*) and (*iv*)

28. Somaclones are obtained by

(*a*) plant breeding (*b*) irradiation

(*c*) genetic engineering (*d*) tissue culture

29. Breeding of crops with high levels of minerals, vitamins and proteins is called

(*a*) somatic hybridisation (*b*) biofortification

(*c*) biomagnification (*d*) micropropagation

30. "Jaya" and "Ratna" developed for Green revolution in India are the varieties of

(*a*) maize (*b*) rice (*c*) wheat (*d*) bajra

31. The vitamin whose content increases following the conversion of milk into curd by lactic acid bacteria is

(*a*) vitamin C (*b*) vitamin D (*c*) vitamin B_{12} (*d*) vitamin E

32. Wastewater treatment generates a large quantity of sludge, which can be treated by

(*a*) anaerobic digesters (*b*) floc (*c*) chemicals (*d*) oxidation pond

33. Treatment of wastewater is done by _____ naturally present in the sewage.

(*a*) water (*b*) heterotrophic microbes

(*c*) chlorine (*d*) antibiotics

34. Which of the following enzymes catalyse the removal of nucleotides from the ends of DNA?

(*a*) endonuclease (*b*) exonuclease (*c*) DNA ligase (*d*) *Hind*II

35. The transfer of genetic material from one bacterium to another through the mediation of a viral vector is termed as

(*a*) transduction (*b*) conjugation (*c*) transformation (*d*) translation

36. 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 in visible light.

(*c*) Ethidium bromide stained DNA can be seen in visible light.

(*d*) Ethidium bromide stained DNA can be seen under exposure to UV light.

37. The most important feature in a plasmid to be used as a vector is

(*a*) origin of replication (*ori*) (*b*) presence of a selectable marker

(*c*) presence of sites for restriction endonuclease (*d*) its size

38. Bt cotton is not

(*a*) a GM plant (*b*) insect resistant

(*c*) a bacterial gene expressing system (*d*) resistant to all pesticides

39. 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 proinsulin to insulin.

(*d*) responsible for its biological activity.

40. GEAC stands for

(*a*) Genome Engineering Action Committee (*b*) Ground Environment Action Committee

(*c*) Genetic Engineering Approval Committee (*d*) Genetic and Environment Approval committee

41. In a logistic growth curve, an asymptote is obtained when

(*a*) K=N (*b*) K>N

(*c*) K<N (*d*) the value of 'r' approaches zero

42. **Adaptation can be**

(*a*) behavioural (*b*) morphological (*c*) physiological (*d*) all of these

43. **Mycorrhizae are the example of**

(*a*) amensalism (*b*) mutualism (*c*) commensalism (*d*) parasitism

44. **Mass of living matter at a trophic level in an area at any time is called**

(*a*) standing crop (*b*) detritus (*c*) humus (*d*) standing state

45. **Which one of the following is not a gaseous biogeochemical cycle in ecosystem?**

(*a*) Oxygen cycle (*b*) Phosphorus cycle (*c*) Nitrogen cycle (*d*) Carbon cycle

46. **Identify the possible link "A" in the following food chain.**

Plant → insect → frog → "A" → eagle

(*a*) rabbit (*b*) wolf (*c*) cobra (*d*) parrot

47. **Which one of the following areas is a hot-spot of biodiversity in India?**

(*a*) Sunderbans (*b*) Western Ghats (*c*) Both (a) and (b) (*d*) Gangetic Plain

48. **Which one of the following is an example of *ex-situ* conservation?**

(*a*) National park (*b*) Wildlife sanctuary (*c*) Seed bank (*d*) Sacred groves

49. **Biochemical oxygen demand (BOD) in a river water**

(*a*) has no relationship with concentration of oxygen in the water.

(*b*) gives a measure of *Salmonella* in the water.

(*c*) increases when sewage gets mixed with river water.

(*d*) remains unchanged when algal bloom occurs.

50. **Montreal Protocol aims at**

(*a*) biodiversity conservation (*b*) control of water pollution

(*c*) control of CO_2 emission (*d*) reduction of ozone depleting substances

Answers

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