

SAMPLE Question Paper

1

Maximum Marks : 200

Time : 45 Minutes

General Instructions:

- (i) This paper consists of 50 MCQs, attempt any 40 out of 50 .
- (ii) Correct answer or the most appropriate answer: Five marks (+5) .
- (iii) Any incorrect option marked will be given minus one mark (– 1) .
- (iv) Unanswered/Marked for Review will be given no mark (0) .
- (v) If more than one option is found to be correct then Five marks (+5) will be awarded to only those who have marked any of the correct options .
- (vi) If all options are found to be correct then Five marks (+5) will be awarded to all those who have attempted the question .
- (vii) If none of the options is found correct or a Question is found to be wrong or a Question is dropped then all candidates who have appeared will be given five marks (+5).
- (viii) Calculator / any electronic gadgets are not permitted .

1. Flagellated, motile asexual reproductive structure are called :
 - (1) Megaspores
 - (2) Aplanospores
 - (3) Zoospores
 - (4) Microspores.
 2. A cross between two tall plants resulted in offspring having few dwarf plants. What would be the genotypes of both the parents?
 - (1) TT and Tt
 - (2) Tt and Tt
 - (3) TT and TT
 - (4) Tt and tt
 3. Opium is obtained from:
 - (1) *Papaver somniferum*
 - (2) *Cannabis sativa*
 - (3) *Erythroxylum coca*
 - (4) *Datura metel*
 4. Which of the following bacteria is not a source of restriction endonuclease?
 - (1) *Haemophilus influenzae*
 - (2) *Escherichia coli*
 - (3) *Agrobacterium tumefaciens*
 - (4) *Bacillus amyloliquefaciens*
 5. Amensalism is an association between two species where
 - (1) one species is harmed and other is benefitted.
 - (2) one species is harmed and other is unaffected.
 - (3) one species is benefitted and other is unaffected.
 - (4) both the species are harmed.
 6. In an embryo sac, the cells that degenerate after fertilisation are:
 - (1) Synergids and primary endosperm cell
 - (2) Synergids and antipodals
 - (3) Antipodals and primary endosperm cell
 - (4) Egg and antipodals.
 7. The promoter site and the terminator site for transcription are located at
 - (1) 3' (downstream) end and 5' (upstream) end, respectively of the transcription unit.
 - (2) 5' (upstream) end and 3' (downstream) end, respectively of the transcription unit.
 - (3) the 5' (upstream) end.
 - (4) the 3' (downstream) end.
- Directions :** In the following questions a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as :
- (1) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
 - (2) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
 - (3) Assertion (A) is true but reason (R) is false.
 - (4) Assertion (A) is false but reason (R) is true.
8. **Assertion (A) :** Hybrids result from a cross between two genetically unlike parents.
Reason (R) : Hybrid vigour is the superiority of hybrid over either of the parents.
9. A pro-toxin is
 - (1) a primitive toxin
 - (2) a denatured toxin
 - (3) toxin produced by protozoa
 - (4) inactive toxin

- 10.** How much of the net primary productivity of a terrestrial ecosystem is eaten and digested by herbivores?
 (1) 1% (2) 10%
 (3) 40% (4) 90%
- 11.** Which one of the following is not a male accessory gland?
 (1) Seminal vesicle
 (2) Ampulla
 (3) Prostate
 (4) Bulbo-urethral gland
- 12.** Starting from the innermost part, the correct sequence of parts in an ovule is,
 (1) egg, nucellus, embryo sac, integument.
 (2) egg, embryo sac, nucellus, integument.
 (3) embryo sac, nucellus, integument, egg.
 (4) egg, integument, embryo sac, nucellus.
- 13.** Which one of the following is not a nitrogen-fixing organism?
 (1) *Anabaena* (2) *Nostoc*
 (3) *Azotobacter* (4) *Pseudomonas*
- 14.** An antibiotic resistance gene in a vector usually helps in the selection of
 (1) competent cells (2) transformed cells
 (3) recombinant cells (4) None of the above
- 15.** Which one of the following shows maximum genetic diversity in India ?
 (1) Rice (2) Maize
 (3) Mango (4) Groundnut
- 16.** In case of a couple where the male is having a very low sperm count which technique will be suitable for fertilisation ?
 (1) Intrauterine transfer
 (2) Gamete intracytoplasmic fallopian transfer
 (3) Artificial Insemination
 (4) Intracytoplasmic sperm injection
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- 17 Assertion (1) :** Sickle cell anaemia is an example of point mutation.
Reason (R) : It is caused by addition or deletion of nitrogenous bases in the DNA or mRNA.
- 18.** The chemical test that is used for diagnosis of typhoid is
 (1) ELISA-Test (2) ESR-Test
 (3) PCR-Test (4) Widal-Test
- 19.** Stirred-tank bioreactors have been designed for.
 (1) ensuring anaerobic conditions in culture vessel
 (2) purification of product
 (3) addition of preservatives to product
 (4) availability of oxygen throughout the process
- 20.** Ecotone is
 (1) a polluted area.
 (2) the bottom of a lake.
 (3) a zone of transition between two communities.
 (4) a zone of developing community.
- 21.** Which of the following statements does not support the view that elaborates sexual reproductive process appeared much later in the organic evolution.
 (i) Lower groups of organisms have simpler body design.
 (ii) Asexual reproduction is common in lower groups.
 (iii) Asexual reproduction is common in higher groups of organisms.
 (iv) The high incidence of sexual reproduction in angiosperms and vertebrates.
- Choose the correct answer from the options given below.
 (1) i, ii and iii (2) i, iii and iv
 (3) i, ii and iv (4) ii, iii and iv
- 22.** ZZ / ZW type of sex determination is seen in
 (1) Platypus (2) snails.
 (3) cockroach (4) peacock
- 23.** Which of the following toxic substance is responsible for the malarial fever.
 (1) Haemocyanin (2) Hemozoin
 (3) Haemoglobin (4) Haemoriden
- 24.** Who among the following was awarded the Nobel Prize for the development of PCR technique?
 (1) Herbert Boyer (2) Hargovind Khurana
 (3) Kary Mullis (4) Arthur Kornberg
- 25.** Ecological niche is
 (1) the surface area of the ocean.
 (2) an ecologically adapted zone.
 (3) the physical position and functional role of a species within the community.
 (4) formed of all plants and animals living at the bottom of a lake.
- 26.** A multicellular, filamentous alga exhibits a type of sexual life cycle in which the meiotic division occurs after the formation of zygote. The adult filament of this alga has

- (1) haploid vegetative cells and diploid gametangia.
 (2) diploid vegetative cells and diploid gametangia.
 (3) diploid vegetative cells and haploid gametangia.
 (4) haploid vegetative cells and haploid gametangia.
- 27.** A human female with Turner's syndrome.
 (1) has 45 chromosome with XO
 (2) has one additional X chromosome
 (3) exhibits male characters
 (4) is able to produce children with normal husband
- 28.** A collection of all the alleles of all the genes of a crop plant is called
 (1) germplasm collection.
 (2) protoplasm collection.
 (3) herbarium.
 (4) somaclonal collection.
- 29.** is a first transgenic cow.
 (1) Dolly (2) Molly
 (3) Shelly (4) Rosie
- 30.** Which one of the cell in an embryo-sac produce endosperm after double fertilisation?
 (1) Synergids cell (2) Antipodal cell
 (3) Central Cell (4) Egg
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- 32.** The net electric charge on DNA and histone is
 (1) both positive
 (2) both negative
 (3) negative and positive, respectively
 (4) zero
- 33.** Big holes in Swiss cheese are made by
 (1) a machine
 (2) a bacterium that produces methane gas
 (3) a bacterium producing a large amount of carbon dioxide
 (4) a fungus that releases a lot of gases during its metabolic activities
- 34.** 'Restriction' in Restriction enzyme refers to
 (1) cleaving of phosphodiester bond in DNA by the enzyme.
 (2) cutting of DNA at specific position only.
 (3) prevention of the multiplication of bacteriophage in bacteria.
 (4) All of the above
- 35.** Which one of the following is not a major characteristic feature of biodiversity hot-spots?
 (1) Large number of species
 (2) Abundance of endemic species
 (3) Large number of exotic species
 (4) Mostly located in polar regions
- 36.** The correct surgical procedure as a contraceptive method is
 (1) ovariectomy. (2) hysterectomy.
 (3) vasectomy. (4) castration.
- 37.** Synthetic drugs structurally related to adrenaline are
 (1) Hallucinogens (2) Analgesics
 (3) Amphetamines (4) Barbiturates
- 38.** Protoplast is
 (1) another name for protoplasm.
 (2) an animal cell.
 (3) a plant cell without a cell wall.
 (4) a plant cell.
- 39.** Which of the following is a post-fertilisation event in flowering plants?
 (1) Transfer of pollen grains
 (2) Embryo development
 (3) Formation of flower
 (4) Formation of pollen grains
- 40.** From among the situations given below, choose the one that prevents both autogamy and geitonogamy.
 (1) Monoecious plant bearing unisexual flowers.
 (2) Dioecious plant bearing only male or female flowers.
 (3) Monoecious plant with bisexual flowers.
 (4) Dioecious plant with bisexual flowers.
- 41.** Which type of immune response is responsible for the rejection of tissues/organs in the patient's body post transplantation ?
 (1) auto-immune response
 (2) humoral immune response
 (3) physiological immune response
 (4) cell-mediated immune response
- 42.** A nitrogen-fixing microbe associated with *Azolla* in rice fields is :
 (1) *Spirulina* (2) *Anabaena*
 (3) *Frankia* (4) *Tolypothrix*
- 43.** Non-biodegradable pollutants are created by
 (1) nature
 (2) excessive use of resources
 (3) humans
 (4) natural disasters
- 44.** Which of the following is not a cause for loss of biodiversity?
 (1) Destruction of habitat
 (2) Invasion by alien species
 (3) Keeping animals in zoological parks
 (4) Over-exploitation of natural resources

45. Pyramid of numbers is

- (1) always upright.
- (2) always inverted.
- (3) either upright or inverted.
- (4) neither upright nor inverted.

Read the following text and answer the following questions on the basis of the same :

Down syndrome (sometimes called Down's syndrome) is a condition in which a child is born with an extra copy of their 21st chromosome hence its other name, trisomy 21. The affected individual mental retarded, short statured with small round, head, furrowed tongue and partially open mouth, Physical, psychomotor and mental development is retarded.

46. The number of chromosomes a child with Down syndrome has is

- (1) 45
- (2) 46
- (3) 47
- (4) 48

47. Down syndrome is

- (1) Sex-linked
- (2) Chromosomal
- (3) dominant
- (4) recessive

48. One of this trait is seen in a person with Down syndrome

- (1) Upward slant eye
- (2) Baldness
- (3) Short stature
- (4) Long neck

49. Down Syndrome is an extra copy of which chromosome

- (1) 22nd chromosome
- (2) 21st chromosome
- (3) 45th chromosome
- (4) 47th chromosome

50. Down syndrome is caused due to

- (1) bacterial infection
- (2) lack of oxygen supply to the brain during birth
- (3) Viral infection
- (4) a chromosomal abnormality

