



Class 12 Biology | Sexual Reproduction In Flowering Plants

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. One normal microspore mother cell produces how many microspores after meiosis?

- A. 4 B. 2 C. 8 D. 1

2. The nutritive layer surrounding developing pollen in an anther is the

- A. Tapetum B. Middle layer alone
C. Epidermis D. Endothecium

3. The resistant outer wall of a pollen grain contains

- A. Glycogen B. Sporopollenin
C. Chitin D. Peptidoglycan

4. A typical mature Polygonum-type embryo sac has

- A. 8 cells and 8 nuclei B. 7 cells and 8 nuclei
C. 8 cells and 7 nuclei D. 7 cells and 7 nuclei

5. The egg apparatus consists of

- A. One egg and two synergids
B. Two eggs and one synergid
C. One egg and two polar nuclei
D. Three antipodals

6. Pollen transfer between two flowers on the same plant is

- A. Parthenocarpy B. Xenogamy
C. Geitonogamy D. Apomixis

7. Which transfer introduces pollen from a genetically different plant of the same species?

- A. Geitonogamy B. Cleistogamy
C. Autogamy D. Xenogamy

8. A cleistogamous flower most reliably ensures

- A. Wind pollination B. Insect pollination
C. Autogamy D. Xenogamy

9. Self-incompatibility prevents self-fertilisation through

- A. Loss of all ovules
B. Pollen-pistil recognition
C. Absence of every pollen grain
D. Fruit formation without seeds

10. One male gamete fuses with the egg to form the

- A. Diploid zygote
B. Diploid seed coat directly
C. Triploid endosperm nucleus
D. Haploid embryo

11. The other male gamete normally fuses with two polar nuclei to form a

- A. Diploid zygote
B. Tetraploid egg
C. Triploid primary endosperm nucleus
D. Haploid antipodal

12. In a plant with $2n = 24$, normal endosperm nuclei have

- A. 48 chromosomes B. 36 chromosomes
C. 24 chromosomes D. 12 chromosomes

13. After fertilisation, the ovule normally develops into a

- A. Stigma B. Seed C. Fruit wall D. Petal

14. Fruit formation without fertilisation is called

- A. Microsporogenesis B. Parthenocarpy
C. Syngamy D. Polyembryony

15. A seed with multiple embryos illustrates

- A. Dichogamy B. Geitonogamy
C. Dioecy D. Polyembryony

ANSWER KEY — check after completing all 15 questions

1.A 2.A 3.B 4.B 5.A 6.C 7.D 8.C 9.B 10.A 11.C 12.B 13.B 14.B 15.D



Class 12 Biology | Human Reproduction

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Sperm formation normally occurs in the

- A. Epididymis
- B. Prostate
- C. Vas deferens
- D. Seminiferous tubules

2. Leydig cells primarily secrete

- A. Androgens
- B. FSH
- C. hCG
- D. Oxytocin

3. Sertoli cells mainly provide

- A. Oocytes
- B. Urinary filtrate
- C. Placental hormones
- D. Support and nutrition to developing sperm

4. One primary spermatocyte normally produces

- A. Eight spermatids
- B. Two spermatids
- C. One spermatid
- D. Four spermatids

5. The acrosome helps a sperm by providing

- A. Enzymes needed for egg penetration
- B. Mitochondria for tail movement
- C. Progesterone
- D. A diploid nucleus

6. The structure normally released at ovulation is a

- A. Primary oocyte in prophase I
- B. Mature ovum before meiosis II
- C. Diploid oogonium
- D. Secondary oocyte arrested in metaphase II

7. The hormone surge most directly triggering ovulation is

- A. Insulin
- B. LH
- C. Melatonin
- D. Prolactin

8. After ovulation, the ruptured follicle forms the

- A. Endometrium
- B. Morula
- C. Corpus luteum
- D. Placenta immediately

9. The corpus luteum secretes mainly

- A. Progesterone
- B. Oxytocin
- C. FSH
- D. GnRH

10. Normal fertilisation occurs near the

- A. Uterine cervix
- B. Ampullary-isthmic junction
- C. Vagina
- D. Ovarian surface

11. Cleavage increases embryonic cell number without a comparable increase in

- A. Overall embryo size
- B. Number of nuclei
- C. Number of blastomeres
- D. DNA replication events

12. The embryo normally implants at the

- A. Unfertilised oocyte stage
- B. Spermatid stage
- C. Blastocyst stage
- D. Two-cell stage

13. The inner cell mass primarily gives rise to the

- A. Embryo proper
- B. Maternal uterine wall
- C. Ovarian follicle
- D. Umbilical blood from mother directly

14. Which hormone supports the corpus luteum in early pregnancy?

- A. hCG
- B. FSH alone
- C. Thyrocalcitonin
- D. Melatonin

15. Oxytocin during childbirth strengthens uterine contractions through

- A. Permanent inhibition
- B. Negative feedback alone
- C. Positive feedback
- D. Independent assortment

ANSWER KEY — check after completing all 15 questions

1.D 2.A 3.D 4.D 5.A 6.D 7.B 8.C 9.A 10.B 11.A 12.C 13.A 14.A 15.C



Class 12 Biology | Reproductive Health

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Which contraceptive also reduces transmission risk of many STIs?

- A. Oral contraceptive pill
- B. Tubectomy
- C. Condom
- D. Copper IUD

2. Copper ions released by a Cu-T mainly impair

- A. All uterine blood flow
- B. Production of every hormone
- C. Sperm motility and fertilising ability
- D. Ovarian chromosome number

3. Combined oral contraceptives primarily prevent pregnancy by

- A. Destroying all oocytes
- B. Increasing sperm production
- C. Blocking kidneys
- D. Suppressing ovulation

4. A vasectomy interrupts the

- A. Urethra
- B. Vasa deferentia
- C. Seminiferous tubules individually
- D. Ureters

5. Tubectomy interrupts the

- A. Ovaries entirely
- B. Vagina
- C. Fallopian tubes
- D. Cervix

6. Withdrawal before ejaculation is less reliable mainly because

- A. It kills every sperm
- B. It blocks the oviduct
- C. Correct timing is difficult
- D. It permanently stops ovulation

7. Lactational amenorrhoea is most useful as contraception during

- A. Only after regular cycles resume
- B. The first six months with exclusive breastfeeding and no menstruation
- C. Any time after delivery regardless of feeding
- D. All years of breastfeeding

8. Which STI is caused by a virus?

- A. Genital herpes
- B. Gonorrhoea
- C. Syphilis
- D. Chlamydia

9. Untreated reproductive-tract infections can cause

- A. Guaranteed immunity to all STIs
- B. Permanent contraception without harm
- C. Pelvic inflammatory disease and infertility
- D. Identical twins

10. Medical termination of pregnancy is generally safer when performed

- A. Early under qualified medical supervision
- B. Only in late pregnancy at home
- C. Without clinical assessment
- D. Using unverified remedies

11. Amniocentesis is appropriately used to investigate

- A. Non-medical sex selection
- B. The father's blood group only
- C. Ovulation timing
- D. Certain fetal genetic abnormalities

12. In IVF, fertilisation occurs

- A. Without an oocyte
- B. Inside the cervix only
- C. Inside the urinary bladder
- D. Outside the body in laboratory conditions

13. Transfer of a zygote or early embryo up to 8 blastomeres into a tube is

- A. ICSI
- B. IUT
- C. IUI
- D. ZIFT

14. Intra-cytoplasmic sperm injection involves

- A. Removing all sperm nuclei
- B. Injecting a sperm into an oocyte
- C. Transferring only hormones
- D. Injecting an embryo into a vein

15. An embryo with more than 8 blastomeres is generally transferred to the

- A. Urinary bladder
- B. Urethra
- C. Uterus
- D. Ovary

ANSWER KEY — check after completing all 15 questions

1.C 2.C 3.D 4.B 5.C 6.C 7.B 8.A 9.C 10.A 11.D 12.D 13.D 14.B 15.C



Class 12 Biology | Principles Of Inheritance And Variation

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A heterozygous tall pea plant is crossed with a dwarf plant. Expected tall:dwarf ratio is

- A. 1:1 B. 1:3 C. All tall D. 3:1

2. Selfing an Aa plant gives what fraction of aa offspring?

- A. 1/2 B. 1/4 C. 3/4 D. 1

3. A test cross uses an individual with the genotype

- A. Homozygous dominant always
B. Heterozygous always
C. Unknown dominant only
D. Homozygous recessive

4. For unlinked genes, AaBb produces how many equally likely gamete types?

- A. 4 B. 2 C. 16 D. 8

5. The phenotypic ratio 9:3:3:1 in an F₂ supports

- A. Independent assortment with complete dominance
B. Only maternal inheritance
C. Complete linkage
D. Absence of segregation

6. Pink snapdragons selfed produce red:pink:white in the ratio

- A. 3:1:0 B. 1:2:1 C. 9:3:4 D. 1:1:1

7. Expression of both I^A and I^B in blood group AB illustrates

- A. Incomplete dominance
B. Sex linkage
C. Complete dominance
D. Codominance

8. An I^Ai parent and an I^Bi parent can produce a child with blood group

- A. A, B, AB or O
B. Only AB
C. Only A or B
D. Only O

9. Two linked genes are more likely to be inherited together when they are

- A. Closer on the same chromosome
B. Always on mitochondrial DNA
C. On different chromosomes
D. Farther apart on the same chromosome

10. A trait controlled by several genes with additive effects is

- A. Polygenic
B. Always sex-linked
C. Always mitochondrial
D. Always recessive

11. One gene influencing several phenotypic traits shows

- A. Independent assortment
B. Pleiotropy
C. Codominance necessarily
D. Polyploidy

12. A normal man and carrier woman for haemophilia have what fraction of sons expected to be affected?

- A. 1 B. 0 C. 1/2 D. 1/4

13. A human male receives his X chromosome from his

- A. Father
B. Both parents equally as one chromosome
C. Mother
D. Paternal grandfather directly

14. Trisomy of chromosome 21 causes

- A. Sickle-cell anaemia B. Turner syndrome
C. Down syndrome D. Klinefelter syndrome

15. An individual with XO sex chromosomes has

- A. Down syndrome B. Klinefelter syndrome
C. Phenylketonuria D. Turner syndrome

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.D 4.A 5.A 6.B 7.D 8.A 9.A 10.A 11.B 12.C 13.C 14.C 15.D

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 12 Biology | Molecular Basis Of Inheritance

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. In double-stranded DNA, adenine is 30%. Guanine is

- A. 30% B. 40% C. 20% D. 10%

2. DNA strands run in opposite directions, described as

- A. Parallel
B. Identical in sequence
C. Unconnected
D. Antiparallel

3. A nucleosome contains DNA wrapped around a

- A. Histone octamer B. Cellulose fibre
C. Lipid micelle D. Ribosome

4. Semiconservative replication means each daughter DNA has

- A. Only one strand total
B. Two old strands
C. Two entirely new strands always
D. One old and one new strand

5. DNA polymerase extends a growing DNA strand in the

- A. Both directions equally
B. Direction from protein to RNA
C. 5' to 3' direction
D. 3' to 5' direction

6. Short fragments on the lagging strand are joined by

- A. Helicase B. Peptidase
C. RNA polymerase D. DNA ligase

7. If the template is 3'-TAC-5', the RNA codon is

- A. 5'-UAC-3' B. 5'-AUG-3'
C. 5'-TAC-3' D. 5'-ATG-3'

8. The enzyme synthesising RNA from DNA is

- A. DNA ligase
B. RNA polymerase
C. Reverse transcriptase necessarily
D. Protease

9. Removal of introns from primary RNA is called

- A. Translation B. Splicing
C. Charging D. Replication

10. Several codons coding for one amino acid illustrates code

- A. Degeneracy
B. Non-universality in every organism
C. Ambiguity
D. Overlapping reading

11. Which codon generally initiates translation?

- A. UAA B. UGA C. AUG D. UAG

12. During translation, the adaptor carrying an amino acid is

- A. tRNA B. rRNA only C. Histone D. DNA

13. In the lac operon, lactose acts as an inducer by

- A. Changing all structural genes
B. Inactivating the repressor
C. Blocking RNA polymerase permanently
D. Destroying the operator

14. Without lactose, the lac repressor normally binds the

- A. tRNA anticodon B. Operator
C. Terminator protein D. Ribosome

15. DNA fingerprinting exploits variation in

- A. Repetitive DNA sequences
B. All ribosomal proteins
C. The universal genetic code alone
D. Every person's chromosome number

ANSWER KEY — check after completing all 15 questions

1.C 2.D 3.A 4.D 5.C 6.D 7.B 8.B 9.B 10.A 11.C 12.A 13.B 14.B 15.A



Class 12 Biology | Evolution

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The Miller experiment demonstrated abiotic formation of

- A. Oxygen-rich oceans
- B. Modern cells
- C. Some organic molecules
- D. Living mammals

2. Similar basic forelimb structure in humans and whales is evidence of

- A. No common ancestry
- B. Analogy only
- C. Homology
- D. Artificial cloning

3. Wings of birds and butterflies are an example of

- A. Homology in basic wing structure
- B. Vestigial organs
- C. Identical ancestry of wings
- D. Analogy

4. Homologous organs usually illustrate

- A. No evolution
- B. Spontaneous generation
- C. Convergent evolution only
- D. Divergent evolution

5. Similar adaptations in unrelated lineages illustrate

- A. Artificial selection necessarily
- B. Genetic drift necessarily
- C. Convergent evolution
- D. Biological extinction

6. Industrial melanism is explained by

- A. Dark moths always lacking predators
- B. Soot changing every moth's genes directly
- C. Moths choosing dark bodies
- D. Differential survival of pre-existing variants

7. Antibiotic resistance spreads because antibiotics select

- A. All sensitive bacteria to become viruses
- B. Only larger bacterial cells
- C. Only bacteria intentionally adapting
- D. Resistant variants already present or arising by mutation

8. A population's allele frequencies change by chance after a disaster. This is

- A. Genetic drift
- B. Gene flow only
- C. Artificial selection
- D. Directed mutation

9. A few individuals establish an isolated population with altered allele frequencies. This is the

- A. Law of segregation alone
- B. Founder effect
- C. Hardy-Weinberg equilibrium necessarily
- D. Convergent evolution

10. For two alleles in Hardy-Weinberg equilibrium, $p + q$ equals

- A. 2
- B. 0
- C. 0.5
- D. 1

11. If $q = 0.2$ under Hardy-Weinberg equilibrium, recessive homozygote frequency is

- A. 0.2
- B. 0.64
- C. 0.04
- D. 0.4

12. If $p = 0.6$ and $q = 0.4$, heterozygote frequency is

- A. 0.24
- B. 0.36
- C. 0.48
- D. 0.16

13. Which condition helps maintain Hardy-Weinberg equilibrium?

- A. Random mating in a large population
- B. High mutation rate
- C. Frequent migration
- D. Strong natural selection

14. Darwin's finches are a classic example of

- A. Adaptive radiation
- B. Asexual reproduction only
- C. Identical diets in all species
- D. No diversification

15. Selection favouring intermediate phenotypes is

- A. Disruptive selection
- B. Stabilising selection
- C. Random mating
- D. Directional selection

ANSWER KEY — check after completing all 15 questions

1.C 2.C 3.D 4.D 5.C 6.D 7.D 8.A 9.B 10.D 11.C 12.C 13.A 14.A 15.B



Class 12 Biology | Human Health And Disease

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The infective stage of Plasmodium introduced by a mosquito is the

- A. Merozoite only
- B. Gametocyte
- C. Zygote
- D. Sporozoite

2. Recurring malarial fever follows rupture of infected

- A. Red blood cells
- B. Platelets only
- C. Neurons
- D. Bone cells

3. Typhoid is caused by

- A. Ascaris lumbricoides
- B. Plasmodium vivax
- C. Wuchereria bancrofti
- D. Salmonella typhi

4. Ringworm is a disease caused by

- A. Tapeworms
- B. Viruses only
- C. Fungi
- D. Protozoa

5. Skin is part of which defence?

- A. Innate physical barrier
- B. Acquired antibody memory
- C. Artificial passive immunity
- D. Autoimmunity

6. Antibodies are secreted chiefly by

- A. Neutrophils only
- B. Red blood cells
- C. Plasma cells derived from B cells
- D. Platelets

7. Cell-mediated immunity mainly involves

- A. Erythrocytes
- B. Platelets
- C. T lymphocytes
- D. Albumin

8. Vaccination usually produces

- A. Permanent passive immunity
- B. Immediate antibodies without immune activation
- C. Active acquired immunity
- D. Only innate immunity

9. Giving preformed antibodies provides

- A. Natural selection
- B. Active immunity only
- C. Autoimmune disease necessarily
- D. Passive immunity

10. A stronger secondary immune response depends on

- A. Only skin thickness
- B. Memory cells
- C. Loss of all lymphocytes
- D. Absence of antigen recognition

11. Allergic reactions commonly involve

- A. Bile and pepsin
- B. IgE and histamine
- C. Haemoglobin and insulin
- D. DNA ligase and ATP only

12. HIV primarily damages

- A. Red blood cells only
- B. Bone matrix
- C. Platelets only
- D. Helper T lymphocytes

13. Uncontrolled cell division with invasion of distant tissues characterises

- A. Benign encapsulated tumours only
- B. Normal wound healing
- C. Malignant tumours
- D. Contact inhibition

14. Cancer cells often escape the normal property of

- A. DNA presence
- B. Protein synthesis
- C. Cell membrane formation
- D. Contact inhibition

15. Repeated substance use requiring increasing doses for the same effect is called

- A. Tolerance
- B. Vaccination
- C. Passive immunity
- D. Metastasis

ANSWER KEY — check after completing all 15 questions

1.D 2.A 3.D 4.C 5.A 6.C 7.C 8.C 9.D 10.B 11.B 12.D 13.C 14.D 15.A



Class 12 Biology | Microbes In Human Welfare

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Milk becomes curd mainly through the activity of

- A. Plasmodium B. Bacteriophages only
C. Lactic acid bacteria D. Methanogens

2. Lactic acid bacteria improve curd's nutritional quality by increasing

- A. Cellulose B. Starch C. Vitamin B12 D. Uric acid

3. Bread dough rises because yeast produces

- A. Carbon dioxide
B. Hydrogen sulphide only
C. Nitrogen
D. Oxygen

4. Brewer's yeast is commonly

- A. *Penicillium roqueforti*
B. *Rhizobium leguminosarum*
C. *Saccharomyces cerevisiae*
D. *Aspergillus niger*

5. Large holes in Swiss cheese arise mainly from production of

- A. CO₂ by *Propionibacterium*
B. Methane by yeast
C. N₂ by viruses
D. O₂ by algae

6. Industrial citric acid production commonly uses

- A. *Lactobacillus* B. *Acetobacter aceti*
C. *Aspergillus niger* D. *Clostridium butylicum*

7. Streptokinase is used medically as a

- A. Digestive acid
B. Clot-busting enzyme
C. Vaccine against malaria
D. Blood sugar hormone

8. Cyclosporin A, produced by a fungus, is used as an

- A. Oxygen carrier B. Contraceptive barrier
C. Antacid D. Immunosuppressant

9. Statins lower cholesterol mainly by inhibiting an enzyme involved in its

- A. Transport through stomata
B. Synthesis
C. Excretion as oxygen
D. Conversion to DNA

10. In sewage treatment, flocs are masses of bacteria associated with

- A. Fungal filaments B. Red blood cells
C. Sand grains only D. Plant seeds

11. A fall in sewage BOD after aeration indicates

- A. Complete absence of every organism
B. Increased toxic metal concentration necessarily
C. More oxygen-consuming organic waste
D. Reduced biodegradable organic load

12. Anaerobic sludge digesters commonly produce

- A. Only ozone B. Methane-rich biogas
C. Pure oxygen D. Only nitrogen dioxide

13. Rhizobium benefits legumes mainly by

- A. Producing human insulin
B. Digesting all roots
C. Releasing oxygen at night
D. Fixing atmospheric nitrogen

14. Mycorrhizae commonly improve plant uptake of

- A. Atmospheric oxygen only
B. Phosphorus
C. Urea from animal blood
D. Haemoglobin

15. Baculoviruses are useful in biological control because of their

- A. Ability to replace fertilisers
B. Universal toxicity to all vertebrates
C. Narrow host specificity
D. Production of all antibiotics

ANSWER KEY — check after completing all 15 questions

1.C 2.C 3.A 4.C 5.A 6.C 7.B 8.D 9.B 10.A 11.D 12.B 13.D 14.B 15.C



Class 12 Biology | Biotechnology: Principles And Processes

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A restriction endonuclease recognises a specific

- A. DNA sequence
- B. Lipid composition
- C. Cell colour
- D. Amino-acid chain only

2. Many restriction sites are palindromic, meaning the sequence reads the same

- A. As a protein sequence
- B. 5' to 3' on both complementary strands
- C. 3' to 3' on one strand
- D. Without complementary pairing

3. Sticky ends facilitate recombinant DNA formation because they

- A. Destroy ligase
- B. Prevent all hydrogen bonding
- C. Base-pair with complementary ends
- D. Contain no nucleotides

4. The enzyme used to join DNA fragments covalently is

- A. DNA ligase
- B. Protease
- C. Amylase
- D. Lipase

5. The ori region of a vector is required for

- A. Gel staining
- B. Initiation of DNA replication
- C. Protein digestion
- D. Cell wall formation

6. An antibiotic-resistance marker mainly helps identify

- A. Cells carrying the vector
- B. All untransformed cells only
- C. Every cell with a nucleus
- D. Cells without ribosomes

7. Insertional inactivation identifies recombinants by

- A. Doubling every chromosome
- B. Disrupting a marker gene
- C. Removing all DNA
- D. Blocking all cell division

8. A bacterium made competent can

- A. Become an animal cell
- B. Take up foreign DNA more efficiently
- C. Always make gametes
- D. Lose all enzymes

9. PCR requires a thermostable polymerase because the reaction includes

- A. Permanent freezing
- B. Continuous acid boiling
- C. No template DNA
- D. Repeated high-temperature denaturation

10. PCR primers provide

- A. Restriction sites only
- B. Free 3' ends for DNA extension
- C. The final protein product
- D. A source of amino acids

11. Starting with one DNA target, ideal PCR doubling for 5 cycles gives

- A. 10 copies
- B. 25 copies
- C. 32 copies
- D. 5 copies

12. During agarose electrophoresis, DNA moves towards the

- A. Air above the gel
- B. Well centre only
- C. Positive electrode
- D. Negative electrode

13. Shorter DNA fragments generally move through agarose

- A. Farther than longer fragments
- B. Only towards the negative electrode
- C. Exactly the same distance
- D. Less far than longer fragments

14. A bioreactor chiefly provides

- A. Only gel staining
- B. Controlled conditions for large-scale biological production
- C. Only DNA sequencing
- D. Uncontrolled outdoor exposure

15. Downstream processing includes

- A. Product separation and purification
- B. Only inserting a gene
- C. Only PCR denaturation
- D. Only preparing agarose

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.C 4.A 5.B 6.A 7.B 8.B 9.D 10.B 11.C 12.C 13.A 14.B 15.A



Class 12 Biology | Biotechnology And Its Applications

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Bt cotton contains genes obtained from

- A. Bacillus thuringiensis B. Saccharomyces
C. Plasmodium D. Rhizobium

2. Bt toxin is produced by the bacterium as an inactive

- A. Antibody B. Protoxin C. Steroid D. Nucleotide

3. In susceptible insects, Bt protoxin is activated mainly by

- A. Leaf chlorophyll
B. Human insulin
C. Strongly acidic blood
D. Alkaline gut conditions

4. Activated Bt toxin kills susceptible insects chiefly by

- A. Stopping plant photosynthesis
B. Forming pores in midgut cells
C. Increasing insect haemoglobin
D. Destroying the plant nucleus

5. Different cry genes are useful because their proteins

- A. All act only on viruses
B. Contain no amino acids
C. Kill every organism equally
D. Target different insect groups

6. RNA interference silences a target by acting on its

- A. Whole chromosome number
B. Lipid droplets
C. Cellulose wall
D. Complementary mRNA

7. Transgenic tobacco resistant to Meloidogyne uses

- A. Nitrogen-fixing nodules
B. Human growth hormone
C. Blood antibodies
D. RNA interference

8. Mature human insulin consists of

- A. A and B chains linked by disulphide bonds
B. Four identical chains
C. One chain with C peptide retained
D. Only C peptide

9. Recombinant insulin production avoids the need to extract insulin from

- A. Human sweat B. Animal pancreases
C. Wheat roots D. Sea salt

10. Gene therapy for ADA deficiency aims to supply a functional

- A. Chlorophyll gene B. Haemoglobin pigment
C. Bt toxin D. ADA gene

11. Repeated infusion of modified lymphocytes may be required because they

- A. Cannot contain DNA
B. Have a limited lifespan
C. Always become bacteria
D. Produce no proteins

12. PCR helps early infection diagnosis by

- A. Removing all microbes
B. Replacing vaccination
C. Amplifying small amounts of pathogen nucleic acid
D. Producing antibodies in the patient

13. ELISA relies principally on

- A. Water diffusion
B. Specific antigen-antibody interaction
C. ATP synthesis
D. Random DNA pairing

14. A transgenic animal carries

- A. Only naturally inherited genes
B. No chromosomes
C. A plant cell wall
D. An introduced foreign gene in its genome

15. Biopiracy involves

- A. All plant breeding
B. Unauthorised exploitation of biological resources or traditional knowledge
C. All public research
D. Every vaccination programme

ANSWER KEY — check after completing all 15 questions

1.A 2.B 3.D 4.B 5.D 6.D 7.D 8.A 9.B 10.D 11.B 12.C 13.B 14.D 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper



Class 12 Biology | Organisms And Populations

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Which is a population attribute rather than an individual attribute?

- A. Body mass
- B. Birth rate
- C. Blood group
- D. Leaf length

2. A population has 200 animals; 20 are born in a year. Per-capita natality is

- A. 0.10 per year
- B. 10 per year
- C. 0.01 per year
- D. 20 per year

3. A population starts at 100; births 12, deaths 5, immigration 4 and emigration 3 occur. Final size is

- A. 110
- B. 104
- C. 114
- D. 108

4. Unlimited resources favour which population growth model?

- A. Logistic at carrying capacity
- B. Zero growth only
- C. Linear decline
- D. Exponential

5. In $\frac{dN}{dt} = rN$, r represents

- A. Intrinsic rate of natural increase
- B. Number of immigrants only
- C. Resource concentration
- D. Carrying capacity

6. In logistic growth, the maximum sustainable population is

- A. Immigration I
- B. Natality b
- C. Mortality d
- D. Carrying capacity K

7. At $N = K$ in the ideal logistic model, net population growth is

- A. Maximum positive
- B. Equal to K
- C. Zero
- D. Equal to rK

8. A broad-based age pyramid generally indicates a population that is

- A. Expanding
- B. Without young individuals
- C. Entirely post-reproductive
- D. Declining rapidly

9. An orchid on a mango tree, with no measurable harm to the tree, illustrates

- A. Predation
- B. Commensalism
- C. Competition
- D. Parasitism

10. An interaction benefiting both partners is

- A. Predation
- B. Amensalism
- C. Mutualism
- D. Competition

11. A tick feeding on a dog exemplifies

- A. Parasitism
- B. Mutualism
- C. Neutralism
- D. Commensalism

12. Two species competing for the same limiting resource are generally affected

- A. Neutrally, neutrally
- B. Positively, neutrally
- C. Positively, positively
- D. Negatively, negatively

13. Predators can maintain diversity by

- A. Stopping all reproduction
- B. Always eliminating every prey species
- C. Removing all resources
- D. Preventing one prey competitor from dominating

14. Gause's competitive exclusion principle concerns species with

- A. Only mutualistic relations
- B. No overlap in resources
- C. Identical limiting-resource requirements
- D. No interaction

15. Different feeding times or sites can allow competitors to coexist through

- A. Absence of evolution
- B. Unlimited predation
- C. Complete resource identity
- D. Resource partitioning

ANSWER KEY — check after completing all 15 questions

1.B 2.A 3.D 4.D 5.A 6.D 7.C 8.A 9.B 10.C 11.A 12.D 13.D 14.C 15.D



Class 12 Biology | Ecosystem

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. The producers in a typical pond food chain are mainly

- A. Small fish
- B. Large fish
- C. Zooplankton
- D. Phytoplankton

2. Gross primary productivity minus plant respiration equals

- A. Total decomposition
- B. Secondary productivity
- C. Standing state
- D. Net primary productivity

3. GPP is 1000 and plant respiration is 400 g m⁻² yr⁻¹. NPP is

- A. 1400 g m⁻² yr⁻¹
- B. 600 g m⁻² yr⁻¹
- C. 400 g m⁻² yr⁻¹
- D. 250 g m⁻² yr⁻¹

4. Which organisms mainly carry out decomposition?

- A. Only herbivorous birds
- B. Only fish
- C. Only green plants
- D. Bacteria and fungi

5. Earthworms physically break detritus into smaller particles by

- A. Photosynthesis
- B. Fragmentation
- C. Leaching
- D. Nitrification only

6. Water dissolving nutrients from detritus and moving them downward causes

- A. Leaching
- B. Humification
- C. Assimilation
- D. Pollination

7. Formation of a dark, resistant organic substance during decomposition is

- A. Mineralisation
- B. Grazing
- C. Nitrogen fixation
- D. Humification

8. Release of inorganic nutrients from organic matter is

- A. Photosynthesis
- B. Humification
- C. Food-chain formation
- D. Mineralisation

9. Decomposition is generally fastest under

- A. Permanent oxygen absence for aerobic decomposers
- B. Cold, dry conditions
- C. Warm, moist, aerobic conditions
- D. Extreme dryness alone

10. A grazing food chain begins with

- A. Decomposer spores only
- B. Dead detritus
- C. Living green producers
- D. Top carnivores

11. A detritus food chain begins with

- A. A carnivore
- B. Only flowering plants
- C. Sunlight as a living organism
- D. Dead organic matter

12. Energy flow through an ecosystem is

- A. Unidirectional
- B. Independent of producers always
- C. From decomposers back to sunlight
- D. Cyclic like mineral nutrients

13. If producers contain 10,000 kJ, about how much reaches secondary consumers at 10% transfer per step?

- A. 1000 kJ
- B. 10 kJ
- C. 100 kJ
- D. 5000 kJ

14. The pyramid of energy is always

- A. Circular
- B. Upright
- C. Inverted
- D. Spindle-shaped

15. An inverted biomass pyramid can occur in a pond because phytoplankton have

- A. No productivity
- B. No consumers
- C. Low standing biomass but rapid turnover
- D. More mass than all consumers always

ANSWER KEY — check after completing all 15 questions

1.D 2.D 3.B 4.D 5.B 6.A 7.D 8.D 9.C 10.C 11.D 12.A 13.C 14.B 15.C



Class 12 Biology | Biodiversity And Conservation

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. Variation among rice varieties represents mainly

- A. No biodiversity
- B. Only atmospheric diversity
- C. Genetic diversity
- D. Ecosystem diversity

2. The variety of habitats such as forests, deserts and wetlands represents

- A. Only chromosome number
- B. Ecological diversity
- C. Only genetic diversity
- D. Only nucleotide diversity

3. Species richness generally increases from

- A. Tropics to Antarctica
- B. Sea level to every mountain peak
- C. Poles towards the equator
- D. Equator towards poles

4. A major explanation for high tropical diversity is

- A. Long evolutionary time and relatively stable climate
- B. No seasonal history anywhere
- C. No sunlight
- D. Complete absence of competition

5. The species-area relationship is commonly written as

- A. $S = Z - CA$
- B. $S = C - AZ$
- C. $S = A/CZ$
- D. $S = CA^Z$

6. In a log species-area plot, the slope represents

- A. Z
- B. Area itself
- C. C alone
- D. S alone

7. Which is a major cause of biodiversity loss?

- A. Habitat destruction and fragmentation
- B. Seed banking
- C. Restoration of native habitat
- D. Protected-area expansion

8. Overharvesting a species faster than it can reproduce is

- A. Overexploitation
- B. Mutualism
- C. Adaptive radiation
- D. In situ conservation

9. An introduced species that spreads and harms native biodiversity is

- A. Endemic species necessarily
- B. Invasive alien species
- C. Keystone species necessarily
- D. A native producer by definition

10. Loss of a host causing extinction of its specialised parasite is

- A. Convergent evolution
- B. Ecological succession necessarily
- C. Immigration
- D. Co-extinction

11. Conserving a species in its natural habitat is

- A. Cryopreservation only
- B. In situ conservation
- C. Artificial selection
- D. Ex situ conservation

12. A seed bank is an example of

- A. Ex situ conservation
- B. In situ conservation
- C. Habitat fragmentation
- D. Biological invasion

13. A biodiversity hotspot combines high endemism with

- A. Only low temperatures
- B. No species diversity
- C. Complete absence of people
- D. Severe habitat loss or threat

14. Sacred groves support conservation primarily by

- A. Allowing unrestricted logging
- B. Eliminating genetic diversity
- C. Replacing all wild species with crops
- D. Protecting habitat through community traditions

15. The strongest conservation reason for maintaining diverse ecosystems is that they

- A. Guarantee no species will ever go extinct
- B. Remove every climatic fluctuation
- C. Support ecosystem services and ecological resilience
- D. Eliminate every disease

ANSWER KEY — check after completing all 15 questions

1.C 2.B 3.C 4.A 5.D 6.A 7.A 8.A 9.B 10.D 11.B 12.A 13.D 14.D 15.C