Lecturer Biology (B-17), Higher Education Department — 2016 · Solved Past Paper

Body: Khyber Pakhtunkhwa Public Service Commission (KPPSC) · **Post:** Lecturer Biology (B-17), Higher Education Department · **Year:** 2016 · **Questions:** 100 in the original paper — **100 solved and verified**, none excluded · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. General Knowledge answers are as of the 2016 sitting.

Source note: Official KPPSC website, 'Sample MCQs Paper' (Downloads page), file 'Sampe_paper_for_Biology.pdf' (accessed 9 Nov 2026; 7 pages, Q1–Q100, text-extractable PDF of the official booklet). This is KPPSC's published sample paper reproducing the actual 2016 Lecturer Biology screening booklet; it is filed honestly as such. Printed key: the correct option of each question is set in bold in the official PDF (97/100 carry exactly one bold option; Q21 and Q75 carry none, verified independently; Q35 carries two, A and C, with C 37°C correct). 4 printed-key corrections (Q11, Q28, Q57, Q71) and 1 PICK-ONE (Q69), decided by the assistant under the owner's 8 Nov 2026 delegation. No exact exam day is stated on the booklet or found by web search 9 Nov 2026; year-only dating follows the 37kx/37ky/37kz precedent.

Question 1 Biology — Introduction

The scientific study of livings is called?

- A. Anatomy
- B. Biology ✓ **Correct answer**
- C. Geology

A. Wrong: anatomy is the study of the structure of bodies, not the study of all living things

B. Correct: biology is the scientific study of living things

C. Wrong: geology is the study of the earth and its rocks

D. Wrong: zoology is the study of animals only, a part of biology

Question 2 Biology — Introduction

The word “BIOLOGY” has been derived from_____ word?

- A. Latin
- B. English
- C. Greek ✓ **Correct answer**
- D. French

A. Wrong: the word is not from Latin

B. Wrong: the word is not from English

C. Correct: biology comes from the Greek words bios (life) and logos (study)

D. Wrong: the word is not from French

Question 3 Biology — Classification

According to modern system of taxonomy, living organisms have been classified into?

- A. Three Kingdoms
- B. Five Kingdoms ✓ **Correct answer**
- C. Two Kingdoms
- D. Six Kingdoms

A. Wrong: no modern system uses three kingdoms

Whittaker's modern five-kingdom system is Monera, Protoctista, Fungi, Plantae and Animalia

C. Wrong: the two-kingdom system is the old Linnaean system, not the modern one

D. Wrong: no six-kingdom system is the modern standard used here

Question 4 Biology — Classification

Kingdom Protoctista includes_____?

- A. Fungi
- B. Prokaryotes
- C. Protists ✓ **Correct answer**
- D. Piantae

A. Wrong: fungi form their own kingdom, not Protoctista

B. Wrong: prokaryotes belong to Kingdom Monera

C. Correct: Kingdom Protoctista is made of the protists, mostly unicellular eukaryotes

D. Wrong: plants form Kingdom Plantae, not Protoctista

Question 5 Biology — Classification

Kingdom Fungi includes_____?

- A. A cellular, eukaryotic organisms
- B. Non-chlorophylls, multicellular eukaiyotlc organisms
- C. Non-chlorophylls, multioellular, thailophytic organisms ✓ **Correct answer**
- D. Chlorophyllus, multicellular, eukaryotic Organisms

A. Wrong: fungi are not acellular; they have cells, and most are multicellular

B. Wrong: this leaves out the thallus body, the defining character of the textbook definition of fungi

...e textbook definition is non-chlorophyllous, multicellular, thallophytic organisms

D. Wrong: fungi have no chlorophyll, so they cannot be chlorophyllous

Question 6 Biology — Classification

Earthworm is included in_____?

- A. Kingdom Plantae
- B. Kingdom Protoctista
- C. Kingdom Monera
- D. Kingdom Animalia ✓ **Correct answer**

A. Wrong: the earthworm is not a plant

B. Wrong: the earthworm is not a protist

C. Wrong: the earthworm is not a bacterium

D. Correct: the earthworm is an animal, so it belongs to Kingdom Animalia

Question 7 Biology — Branches of Biology

The Study of organisms inhabiting the sea and Ocean and the physical and chemical characteristics of their environment is:

- A. Social Biology
- B. Marine Biology ✓ **Correct answer**
- C. Environmental Biology
- D. Fresh Water Biology

A. Wrong: social biology studies human society, not sea life

B. Correct: marine biology is the study of sea organisms and their environment

C. Wrong: environmental biology is the general study of organisms and surroundings, not

D. Wrong: fresh water biology studies rivers and lakes, not the sea

Question 8 Biology — Biotechnology

The branch of Biology which deals with the use of data and techniques of engineering & technology concerning living organisms is:

- A. Human Biology
- B. Environmental Biology
- C. Genetics
- D. Bio-technology ✓ **Correct answer**

A. Wrong: human biology studies the human body, not engineering techniques

B. Wrong: environmental biology studies organisms in their surroundings

C. Wrong: genetics studies heredity and genes, not engineering techniques

D. Correct: biotechnology applies engineering and technology to living organisms

Question 9 Biology — Parasitology

The branch in which organism's life cycle, mode of transmission and interaction with their hosts are studied is:

- A. Anatomy
- B. Physiology
- C. Parasitology ✓ **Correct answer**
- D. Social Biology

A. Wrong: anatomy studies body structure, not parasite life cycles

B. Wrong: physiology studies body functions, not parasite transmission

C. Correct: parasitology studies parasites, their life cycles, transmission and hosts

ocial biology studies human communal life

Question 10 Biology — Biochemistry

The molecules of living matter that provide building blocks are mostly based on:

- A. Carbon ✓ **Correct answer**
- B. Nitrogen
- C. Hydrogen
- D. Ammonia

A. Correct: the molecules of living matter are carbon compounds, built on carbon skeletons

B. Wrong: nitrogen is present in proteins, but the building blocks are carbon-based

C. Wrong: hydrogen is present in living matter, but the framework element is carbon

D. Wrong: ammonia is not the element living molecules are built on

Question 11 Biology — Levels of Organization

Human blood is an example of_____?

- A. Organelle
- B. Tissues ✓ **Correct answer**
- C. Organic compound
- D. Inorganic compounds

A. Wrong: an organelle is a structure inside a cell, and blood is not one

B. Correct: blood is a fluid connective tissue

C. Wrong: blood is a tissue made of cells and plasma, not a single organic compound

D. Wrong: blood is a tissue, not an inorganic compound; the printed key bolds this option, but blood contains organic compounds and is classified as a tissue, so the key is corrected

Question 12 Biology — Levels of Organization

With different chemical arrangements and formation Of complex molecules, the life emerges on the level of the?

- A. Cells ✓ **Correct answer**
- B. Tissues
- C. Organs
- D. Organ System

A. Correct: life first appears at the cellular level, when molecules are organized into a cell

B. Wrong: tissues are a higher level, formed from cells that already live

C. Wrong: organs are a higher level, formed from tissues

D. Wrong: organ systems are the highest level, formed from organs

Question 13 Biology — Cell Biology

Organelles are_____?

- A. Unicellular structures
- B. Multi-cellular structures
- C. Sub-cellular structures ✓ **Correct answer**
- D. Non-cellular structures

A. Wrong: an organelle is not a single cell

B. Wrong: an organelle is not made of many cells

C. Correct: organelles are sub-cellular structures, parts working inside a cell

D. Wrong: organelles are cellular structures, parts of a cell

14 Biology — Cell Biology

Functional unit of DNA Is_____?

- A. Nucleus
- B. Genes ✓ **Correct answer**
- C. Chromosomes
- D. Nucleolus

A. Wrong: the nucleus is the part of the cell that holds DNA, not the functional unit of DNA

B. Correct: a gene is the functional unit of DNA, carrying the code for a character

C. Wrong: a chromosome is a packaged length of DNA, not its functional unit

D. Wrong: the nucleolus makes ribosomal RNA, it is not the unit of DNA

Question 15 Biology — Levels of Organization

Various tissue types combine to make up_____?

- A. Cells
- B. Organs ✓ **Correct answer**
- C. Organ System
- D. Organelles

A. Wrong: cells combine to make tissues, not the other way round

B. Correct: different tissues together make an organ

C. Wrong: organs combine to make an organ system, not tissues directly

D. Wrong: organelles are parts inside cells, not made of tissues

16 Biology — Ecology

Two or more populations of different species living and interacting in the same area form

- A. Biosphere
- B. Community ✓ **Correct answer**
- C. Population System
- D. Ecosystem

A. Wrong: the biosphere is the whole life zone of the earth

B. Correct: different species populations living together in one area form a community

C. Wrong: population system is not a level of organization

D. Wrong: an ecosystem is a community plus its non-living environment

Question 17 Biology — Levels of Organization

A group of similar cells that perform a specific function is:

- A. Organ
- B. Tissues ✓ **Correct answer**
- C. Organelle
- D. Organ System

A. Wrong: an organ is made of tissues, not of similar cells directly

B. Correct: a tissue is a group of similar cells doing one specific job

C. Wrong: an organelle is a structure inside a cell

D. Wrong: an organ system is made of organs, not of similar cells

18 Biology — Biochemistry

Which of the following is an example of “molecule”?

- A. Chloroplast
- B. A Nerve Cell
- C. DNA ✓ **Correct answer**
- D. Hydrogen

A. Wrong: a chloroplast is an organelle, not a molecule

B. Wrong: a nerve cell is a cell, not a molecule

C. Correct: DNA is a molecule, the textbook example at the molecular level of organization

D. Wrong: as printed, Hydrogen names the element; the molecule of hydrogen is H2, while DNA is the molecule the question asks for

Question 19 Biology — Ecology

A group of very similar inter breeding organisms constitutes?

- A. Biosphere
- B. Ecosystem
- C. Population
- D. Species ✓ **Correct answer**

A. Wrong: the biosphere is the whole life zone of the earth

B. Wrong: an ecosystem is a community plus its environment

C. Wrong: a population is members of one species in one area, while similar interbreeding organisms as a kind form a species

D. Correct: a species is a group of very similar organisms that interbreed

20 Biology — Ecology

Members of one species inhabiting the same are form_____?

- A. Species
- B. Community
- C. Ecosystem
- D. Population ✓ **Correct answer**

A. Wrong: a species is the kind of organism, not the group of its members in one area

B. Wrong: a community is made of different species, not one species

C. Wrong: an ecosystem is a community plus its non-living environment

D. Correct: members of one species living in the same area form a population

Question 21 Biology — Scientific Method

On the basis of collected facts and figures, a scientist formulates a factitive statement called:

- A. Observation
- B. Research work
- C. Hypothesis ✓ **Correct answer**
- D. Inductive Reasoning

A. Wrong: an observation is noticing and recording facts, not the statement built on them

B. Wrong: research work is the whole investigation, not the single statement

C. Correct: a tentative statement built on collected facts is a hypothesis (the stem prints factitive for tentative)

D. Wrong: inductive reasoning is reasoning from particular facts, not the statement itself

22 Biology — Cell Biology

Robert Hooke discovered_____?

- A. Nucleus
- B. Mitochondria
- C. Cell ✓ **Correct answer**
- D. DNA

A. Wrong: the nucleus was discovered by Robert Brown in 1831

B. Wrong: mitochondria were described much later, in the 19th century

C. Correct: Robert Hooke discovered cells in cork in 1665

D. Wrong: DNA was discovered by Friedrich Miescher in 1869

Question 23 Biology — Scientific Method

Steps Involved in scientific method are ?

- A. Hypothesis, then accumulated data, then observation and experimentation, then conclusion
- B. New data, then conclusion, then accumulated data, then observation and experimentation
- C. Accumulated data, then new data, then observation and experimentation, then hypothesis, then conclusion
- D. Accumulated data, then hypothesis, then observation and experimentation, then new data, then conclusion ✓ **Correct answer**

A. Wrong: the sequence cannot start with a hypothesis before data are accumulated

B. Wrong: new data and conclusion cannot come before observation and experimentation

C. Wrong: the hypothesis cannot come after observation and experimentation and before the conclusion in this sequence

...he paper's sequence is accumulated data, then hypothesis, then observation and experimentation, then new data, then conclusion

Question 24 Biology — Microbiology

Malaria is associated with_____?

- A. Culex Mosquito
- B. Culiesta Mosquito
- C. Anopheles Mosquito ✓ **Correct answer**
- D. Culex & Anopheles Mosquito

A. Wrong: Culex mosquitoes spread filariasis, not malaria

B. Wrong: Culiseta mosquitoes do not transmit malaria

C. Correct: the female Anopheles mosquito transmits malaria

D. Wrong: Culex does not transmit malaria, so the pair is wrong

Question 25 Biology — Microbiology

Biologist 'Grass' discovered the life cycle of plasmodium in_____?

- A. 1896
- B. 1897
- C. 1898 ✓ **Correct answer**
- D. 1899

A. Wrong: Grassi had not completed the cycle in 1896

B. Wrong: 1897 is the year Ross found the parasite in the mosquito gut, not Grassi's completion of the cycle

C. Correct: Giovanni Battista Grassi worked out the full life cycle of Plasmodium in the mosquito in 1898

e cycle was established in 1898, not 1899

Question 26 Biology — Microbiology

The first antibiotic to be discovered was_____?

- A. Penicillin ✓ **Correct answer**
- B. Cephalosporin
- C. Amino glycosides
- D. Erythromycin

A. Correct: penicillin, discovered by Alexander Fleming in 1928, was the first antibiotic

B. Wrong: cephalosporin came much later than penicillin

C. Wrong: aminoglycosides came much later than penicillin

D. Wrong: erythromycin came much later than penicillin

Question 27 Biology — Microbiology

Immunization by vaccination was first introduced by?

- A. Fleming in 1945
- B. Florey & Chain in 1975
- C. Flore & Chain in 1795
- D. Edward Jenner in 1795 ✓ **Correct answer**

A. Wrong: Fleming discovered penicillin, he did not introduce vaccination

B. Wrong: Florey and Chain worked on penicillin in the 1940s, not vaccination in 1975

C. Wrong: Florey and Chain had nothing to do with vaccination in 1795

D. Correct: Edward Jenner introduced vaccination with his smallpox work (the year as printed, 1795, is one year before the 1796 experiment; Jenner is the unambiguous answer)

28 Biology — Botany

The science of growing terrestrial plants in an aerated solution is_____?

- A. Hydrodynamics
- B. Hydroponics ✓ **Correct answer**
- C. Hydrophonics
- D. None of them

A. Wrong: hydrodynamics is the study of fluids in motion, not of growing plants

B. Correct: hydroponics is growing plants in an aerated nutrient solution without soil

C. Wrong: hydrophonics is not a science of growing plants

D. Wrong: hydroponics names this science, so none of them is wrong; the printed key bolds this option, but hydroponics is the standard term, so the key is corrected here with this evidence

Question 29 Biology — Scientific Method

An educated guess is called:

- A. Accumulated Data
- B. Observation
- C. Hypothesis ✓ **Correct answer**
- D. Conclusion

A. Wrong: accumulated data are the collected facts, not the guess built on them

B. Wrong: an observation is what is seen and recorded, not a guess

C. Correct: an educated guess is a hypothesis

D. Wrong: a conclusion is the decision reached after testing, not the guess

30 Biology — Biotechnology

Dolly, the sheep was a highly successful clone from a somatic cell, reported back in_____?

- A. 1993
- B. 1994
- C. 1995
- D. 1996 ✓ **Correct answer**

A. Wrong: Dolly was not born in 1993

B. Wrong: Dolly was not born in 1994

C. Wrong: Dolly was not born in 1995

D. Correct: Dolly the sheep was born in 1996 and announced in 1997

Question 31 Biology — Botany

Crop rotation helps in_____?

- A. Growth of pathogens
- B. Soil Infertility
- C. Slowing of crops growth
- D. Eradication of disease ✓ **Correct answer**

A. Wrong: crop rotation reduces pathogens, it does not grow them

B. Wrong: crop rotation improves soil fertility, it does not cause infertility

C. Wrong: crop rotation supports crop growth, it does not slow it

D. Correct: rotating crops breaks disease cycles and helps eradicate crop disease

32 Biology — Human Physiology

People living in high altitudes (like mountains) usually have a _____?

- A. smaller number of Red Blood Cells
- B. larger number of Red Blood Cells ✓ **Correct answer**
- C. smaller number of White Blood Cells
- D. larger number of White Blood Cells

A. Wrong: at high altitude the body makes more red blood cells, not fewer, to carry scarce oxygen

B. Correct: thin mountain air makes the body produce a larger number of red blood cells

C. Wrong: altitude affects red blood cells, not white blood cells in this way

D. Wrong: white blood cells fight infection; altitude raises red blood cells, not white ones

Question 33 Biology — Introduction

Which character differentiates living things from non-living organisms?

- A. They live in the same ecosystem.
- B. They are highly organized and complex made of one or more cells and contain genetic material ✓ **Correct answer**
- C. They are acted upon by the same environment
- D. Both a and b

A. Wrong: living and non-living things share the same ecosystem, so this does not separate them

B. Correct: living things are highly organized, made of cells and carry genetic material; non-living things are not

C. Wrong: the environment acts on living and non-living things alike

D. Wrong: option A is not a distinguishing character, so both cannot be right

34 Biology — Human Physiology

Which Vitamin is needed for the formation of a light-sensitive pigment in the retina.

- A. Vitamin A ✓ **Correct answer**
- B. Vitamin C
- C. Vitamin D
- D. B complex

A. Correct: vitamin A is needed to make rhodopsin, the light-sensitive pigment of the retina

B. Wrong: vitamin C is needed for gums and healing, not for the retinal pigment

C. Wrong: vitamin D is needed for bones, not for the retinal pigment

D. Wrong: B complex vitamins are not the ones that form the retinal pigment

Question 35 Biology — Human Physiology

The average internal temperature of human body is _____?

- A. 35°C
- B. 36°C
- C. 37°C ✓ **Correct answer**
- D. 38°C

A. Wrong: 35 degrees Celsius is below the normal human body temperature; the print bolds this option too, but 35 is not the average

B. Wrong: 36 degrees is close but below the accepted average of 37

C. Correct: the average internal temperature of the human body is 37 degrees Celsius

D. Wrong: 38 degrees is a fever temperature, above the normal average

36 Biology — Evolution

The study of fossils is called?

- A. Environmental Biology
- B. Historical biology
- C. Palaeontology ✓ **Correct answer**
- D. Social biology

A. Wrong: environmental biology studies organisms in their surroundings, not fossils

B. Wrong: historical biology is not the name for the study of fossils

C. Correct: palaeontology is the study of fossils

D. Wrong: social biology studies human communal life, not fossils

Question 37 Biology — Human Physiology

About _____ of the body weight of a mammal is water?

- A. 60%
- B. 65%
- C. 70% ✓ **Correct answer**
- D. 75%

A. Wrong: about 60 percent is below the accepted figure for mammals

B. Wrong: about 65 percent is below the accepted figure for mammals

C. Correct: about 70 percent of a mammal's body weight is water

D. Wrong: about 75 percent is above the accepted figure for mammals

Question 38 Biology — Genetics

The experiments on DNA molecules in chromosomes for knowing the basis of inherited

e conducted by?

- A. Molecular biologists ✓ **Correct answer**
- B. Microbiologists
- C. Freshwater biologists
- D. Social biologist

A. Correct: molecular biologists study DNA to find the basis of inherited diseases

B. Wrong: microbiologists study microbes, not DNA in chromosomes

C. Wrong: freshwater biologists study life in fresh water

D. Wrong: social biologists study human communal life

Question 39 Biology — Human Physiology

On wound _____ fight foreign particles, like bacteria?

- A. White Blood cells ✓ **Correct answer**
- B. Red Blood Cells
- C. Platelets
- D. Plasma

A. Correct: white blood cells defend the wound against bacteria and foreign particles

B. Wrong: red blood cells carry oxygen, they do not fight bacteria

C. Wrong: platelets clot the blood, they do not fight bacteria

D. Wrong: plasma is the fluid of blood, it does not fight bacteria

Question 40 Biology — Biotechnology

Synthetic insulin from pork was formed by which technique?

- A. Biotechnology ✓ **Correct answer**

- C. Parasitology
- D. Both a and c

A. Correct: synthetic insulin is made by biotechnology, using engineered organisms

B. Wrong: social biological techniques have nothing to do with making insulin

C. Wrong: parasitology studies parasites, not insulin production

D. Wrong: parasitology is not involved, so both cannot be right

Question 41 Biology — Human Physiology

Blood is carried towards the heart by _____?

- A. Arteries
- B. Capillaries
- C. Veins ✓ **Correct answer**
- D. none of these

A. Wrong: arteries carry blood away from the heart

B. Wrong: capillaries join arteries to veins in the tissues, they do not carry blood back to the heart

C. Correct: veins carry blood towards the heart

D. Wrong: veins do carry blood to the heart, so none of these is wrong

Question 42 Biology — Branches of Biology

The branch of biology which deals with the study of social behavior and communal life of human beings living in any environment is called?

- A. Environmental biology
- B. Social biology ✓ **Correct answer**

- D. Both b and c

A. Wrong: environmental biology studies organisms in their surroundings, not social behaviour

B. Correct: social biology studies social behaviour and communal life of human beings

C. Wrong: human biology studies the human body, not social behaviour as such

D. Wrong: human biology is not the same branch, so both cannot be right

Question 43 Biology — Biochemistry

_____ is essential for the formation of hemoglobin.

- A. Calcium
- B. Iron ✓ **Correct answer**
- C. Water
- D. Carbohydrates

A. Wrong: calcium is needed for bones and teeth, not for haemoglobin

B. Correct: iron is the central part of the haem group, essential for haemoglobin

C. Wrong: water is not the element haemoglobin is built around

D. Wrong: carbohydrates give energy, they do not form haemoglobin

Question 44 Biology — Biochemistry

Out of 92 naturally occurring chemical elements how many are considered as bio-elements?

- A. 6
- B. 16 ✓ **Correct answer**
- C. 26

A. Wrong: 6 is the number of elements forming 99 percent of body mass, not the count of bio-elements

B. Correct: 16 of the 92 naturally occurring elements are bio-elements

C. Wrong: 26 is not the accepted count of bio-elements

D. Wrong: 15 is not the accepted count of bio-elements

Question 45 Biology — Biochemistry

_____ are needed as a source of energy for the vital activities of the body?

- A. Calcium
- B. Iron
- C. Water
- D. Carbohydrates ✓ **Correct answer**

A. Wrong: calcium builds bones, it is not an energy source

B. Wrong: iron carries oxygen in haemoglobin, it is not an energy source

C. Wrong: water is a solvent and medium, not an energy source

D. Correct: carbohydrates are the body's main source of energy

Question 46 Biology — Biochemistry

Oxygen accounts for ___ % of totals human body mass?

- A. 65% ✓ **Correct answer**
- B. 18%
- C. 10%
- D. 3%

xygen makes up about 65 percent of human body mass

B. Wrong: 18 percent is the share of carbon, not oxygen

C. Wrong: 10 percent is the share of hydrogen, not oxygen

D. Wrong: 3 percent is the share of nitrogen, not oxygen

Question 47 Biology — Biochemistry

The atoms of different elements combine with each other through ionic or covalent bonding to produce compounds this stable form is called:

- A. An organ
- B. A molecule ✓ **Correct answer**
- C. Tissue
- D. Both a and c

A. Wrong: an organ is made of tissues, not of bonded atoms

B. Correct: atoms bonded together form a molecule

C. Wrong: a tissue is made of cells, not of bonded atoms

D. Wrong: neither an organ nor a tissue is formed by atoms bonding

Question 48 Biology — Biochemistry

Which one of them is a micro-molecule?

- A. Polysaccharide
- B. Protein
- C. Hemoglobin
- D. ATP ✓ **Correct answer**

A. Wrong: a polysaccharide is a macro-molecule, a long chain of sugars

protein is a macro-molecule, a long chain of amino acids

C. Wrong: haemoglobin is a macro-molecule, a large protein

D. Correct: ATP is a small molecule, a micro-molecule

Question 49 Biology — Levels of Organization

A structure formed by groups of similar cells organized into loose sheets or bundles performing similar functions is called as:

- A. An organ
- B. An organism
- C. A Tissue ✓ **Correct answer**
- D. A Cell

A. Wrong: an organ is made of different tissues, not of similar cells in sheets

B. Wrong: an organism is the whole living thing, not a sheet of cells

C. Correct: a tissue is a group of similar cells in sheets or bundles doing one job

D. Wrong: a cell is a single unit, not a group of cells

Question 50 Biology — Human Physiology

Haemodialysis means cleaning of_____?

- A. Urine
- B. Blood ✓ **Correct answer**
- C. Glomerular filterate
- D. Coelomic fluid

A. Wrong: haemodialysis does not clean urine, it cleans the blood that makes urine

B. Correct: haemodialysis is the cleaning of blood through an artificial kidney

omerular filtrate is the fluid filtered in the kidney, not what dialysis cleans

D. Wrong: coelomic fluid is body-cavity fluid, not what dialysis cleans

Question 51 Biology — Human Physiology

In animals coordination is achieved by means of?

- A. Nervous system
- B. Endocrine system
- C. Respiratory system
- D. Both A and B ✓ **Correct answer**

A. Wrong: the nervous system alone is not the whole coordination system

B. Wrong: the endocrine system alone is not the whole coordination system

C. Wrong: the respiratory system supplies air, it does not coordinate the body

D. Correct: animals coordinate through both the nervous system and the endocrine system

Question 52 Biology — Human Physiology

Production of sweat and sebum is related with?

- A. Skin ✓ **Correct answer**
- B. Liver
- C. Lungs
- D. GIT

A. Correct: sweat and sebum are produced by glands in the skin

B. Wrong: the liver makes bile, not sweat or sebum

C. Wrong: the lungs exchange gases, they do not make sweat or sebum

e gut (GIT) digests food, it does not make sweat or sebum

Question 53 Biology — Ecology

Group of living organisms of the same species living in the same place at the same time is called?

- A. Community
- B. Population ✓ **Correct answer**
- C. Ecosystem
- D. Biome

A. Wrong: a community is different species together, not one species

B. Correct: one species in one place at one time is a population

C. Wrong: an ecosystem is a community plus its non-living environment

D. Wrong: a biome is a large regional community, not one species in one place

Question 54 Biology — Human Physiology

The evaporative cooling in the respiratory tract of dogs is called?

- A. Vasodilation
- B. Vasoconstriction
- C. Panting ✓ **Correct answer**
- D. All of these

A. Wrong: vasodilation is widening of blood vessels, not evaporative cooling by breathing

B. Wrong: vasoconstriction is narrowing of blood vessels, not cooling by breathing

C. Correct: dogs cool themselves by panting, evaporating water from the respiratory tract

D. Wrong: only panting is the evaporative cooling described

55 Biology — Ecology

Different species of plants and animals living in the same habitat is called?

- A. Population
- B. Community ✓ **Correct answer**
- C. Biome
- D. Habitat

A. Wrong: a population is one species only

B. Correct: different species living in the same habitat form a community

C. Wrong: a biome is a large regional community set by climate

D. Wrong: the habitat is the place itself, not the species living in it

Question 56 Biology — Microbiology

Which of the following pathogen type cause disease that can be treated with antibiotics?

- A. Bacteria ✓ **Correct answer**
- B. Fungi
- C. Virus
- D. none of these

A. Correct: antibiotics kill bacteria, so bacterial disease can be treated with them

B. Wrong: fungal disease is treated with antifungal drugs, not antibiotics

C. Wrong: viruses are not killed by antibiotics

D. Wrong: bacterial disease is treated with antibiotics, so none of these is wrong

Question 57 Biology — Ecology

A large regional community primarily determined by climate is called?

ulation

- B. Community
- C. Biome ✓ **Correct answer**
- D. Habitat

A. Wrong: a population is one species in one place, not a large regional community

B. Wrong: a community is different species in one habitat, not a large region set by climate

C. Correct: a biome is a large regional community primarily determined by climate; the printed key bolds Community, but the textbook definition of a biome is exactly this, so the key is corrected here with this evidence

D. Wrong: the habitat is the place an organism lives, not a large regional community

Question 58 Biology — Cell Biology

Most cell membranes are composed principally of?

- A. DNA ad protein
- B. Protein and Lipids ✓ **Correct answer**
- C. Protein and Chitin
- D. Protein and RNA

A. Wrong: DNA is not a main part of the cell membrane

B. Correct: the cell membrane is principally a lipid bilayer with proteins

C. Wrong: chitin is found in fungal walls, not in cell membranes

D. Wrong: RNA is not a main part of the cell membrane

Question 59 Biology — Evolution

The concept that various organisms dominated this planet during various geological

and thus placing organisms in a time squence came from the studies by?

- A. Environmental biologist
- B. Paleontologist ✓ **Correct answer**
- C. Marine biologist
- D. Social biologist

A. Wrong: environmental biologists study organisms in their surroundings, not the fossil time sequence

B. Correct: palaeontologists study fossils, which show which organisms dominated in each geological period

C. Wrong: marine biologists study sea life, not the fossil time sequence

D. Wrong: social biologists study human communal life

Question 60 Biology — Cell Biology

Normally, in the process of osmosis, the net flow of water molecules into or out of the cell depends upon differences in the?

- A. Concentration of water molecules inside and outside the cell ✓ **Correct answer**
- B. Concentration of enzymes on either side of the cell membrane
- C. Rate of molecular motion on either side of the cell membrane
- D. None of these

A. Correct: osmosis is the net flow of water from higher to lower water concentration across the membrane

B. Wrong: enzyme concentration does not drive the net flow of water

C. Wrong: the rate of molecular motion does not set the direction of net water flow

D. Wrong: water concentration difference does decide it, so none of these is wrong

61 Biology — Evolution

An unbroken series of species arranged in ancestors to descendent sequence with each later species having evolved from one that immediately preceded it is called?

- A. Biome
- B. Phyletic lineage ✓ **Correct answer**
- C. Community
- D. Population

A. Wrong: a biome is a large regional community, not a line of descent

B. Correct: an unbroken ancestor-to-descendant series of species is a phyletic lineage

C. Wrong: a community is species living together, not a line of descent

D. Wrong: a population is one species in one place, not a line of descent

Question 62 Biology — Biochemistry

Proteins are made from amino acids by the process of _____?

- A. Hydrolysis
- B. Pinocytosis
- C. Dehydration synthesis ✓ **Correct answer**
- D. Active transport

A. Wrong: hydrolysis breaks proteins down with water, it does not build them

B. Wrong: pinocytosis is a cell drinking in droplets, not protein building

C. Correct: amino acids join by dehydration synthesis, losing water to form peptide bonds

D. Wrong: active transport moves substances across membranes, it does not build proteins

63 Biology — Scientific Method

Biological sciences have a set methodology and it is based on?

- A. Experimental inquiry ✓ **Correct answer**
- B. Esthetic preference
- C. Philosophical ideas
- D. Imaginations

A. Correct: the method of biological science is experimental inquiry, testing by experiment

B. Wrong: aesthetic preference is a matter of taste, not a scientific method

C. Wrong: philosophical ideas alone are not the method of biological science

D. Wrong: imagination alone, without testing, is not the method

Question 64 Biology — Biochemistry

Which is an organic compound found in most cells?

- A. Water
- B. Glucose ✓ **Correct answer**
- C. Oxygen
- D. Sodium chloride

A. Wrong: water is an inorganic compound, though it is found in most cells

B. Correct: glucose is an organic compound present in most cells

C. Wrong: oxygen is an element, not an organic compound

D. Wrong: sodium chloride is an inorganic salt, not an organic compound

Question 65 Biology — Scientific Method

A series of hypothesis supported by the results of many tests is called?

ntific law

- B. Theory ✓ **Correct answer**
- C. Data
- D. Deduction

A. Wrong: a scientific law states what happens, it is not a series of tested hypotheses

B. Correct: a theory is a series of hypotheses supported by many tests

C. Wrong: data are the recorded facts, not the tested series of hypotheses

D. Wrong: deduction is reasoning from a general idea, not the tested series itself

Question 66 Biology — Biochemistry

Which are the four most abundant elements in living cells?

- A. carbon, oxygen, nitrogen, sulfur
- B. carbon, oxygen, hydrogen, nitrogen ✓ **Correct answer**
- C. carbon, oxygen, sulfur, phosphorus
- D. carbon, sulfur, hydrogen, magnesium

A. Wrong: sulfur is not among the four most abundant elements in cells

B. Correct: oxygen, carbon, hydrogen and nitrogen are the four most abundant elements in living cells

C. Wrong: sulfur and phosphorus are not among the four most abundant

D. Wrong: sulfur and magnesium are not among the four most abundant

Question 67 Biology — Scientific Method

Which one is not correct for a productive theory?

- A. It is predictive
- B. It has explanatory power

scourages suggestion of different hypotheses ✓ **Correct answer**

- D. None of these

A. Wrong: being predictive is correct for a productive theory, so it is not the answer

B. Wrong: having explanatory power is correct for a productive theory, so it is not the answer

C. Correct: a productive theory encourages new hypotheses, so discouraging them is not correct for it

D. Wrong: one of the options is not correct for a productive theory, so none of these is wrong

Question 68 Biology — Genetics

Conclusion of Mendels work latter became a_____?

- A. Scientific hypothesis
- B. Theory
- C. Scientific law ✓ **Correct answer**
- D. Productive theory

A. Wrong: Mendel's conclusions passed beyond hypothesis to established law

B. Wrong: Mendel's conclusions are stated as laws of inheritance, not as a theory

C. Correct: Mendel's conclusions became the scientific laws of inheritance

D. Wrong: Mendel's conclusions are laws, not a productive theory

Question 69 Biology — Biochemistry

Starch is converted into maltose by?

- A. Diastase ✓ **Correct answer**
- B. Invertase

- D. Amylase

A. Correct as picked: diastase is the classic textbook answer for the enzyme that converts starch into maltose, and it is the paper's printed key

B. Wrong: invertase converts sucrose into glucose and fructose, not starch into maltose

C. Wrong: maltase converts maltose into glucose, it does not convert starch into maltose

D. Plausible but not picked: amylase also hydrolyses starch to maltose, and diastase is itself a mixture of amylases; diastase is picked because it is the paper's key and the classic textbook answer

Question 70 Biology — Biotechnology

Breeders have developed new and better varieties of food items by using which technique?

- A. Pasteurization
- B. Hydroponic culture technique
- C. Genetic engineering ✓ **Correct answer**
- D. Biological control techniques

A. Wrong: pasteurization preserves food by heating, it does not breed new varieties

B. Wrong: hydroponics grows plants without soil, it does not breed new varieties

C. Correct: genetic engineering is used to develop new and better varieties of food

D. Wrong: biological control fights pests with other organisms, it does not breed new varieties

Question 71 Biology — Biochemistry

Co-enzyme is often formed from?

- B. Protein
- C. inorganic ion
- D. Vitamin ✓ **Correct answer**

A. Wrong: coenzymes are not formed from lipids

B. Wrong: a coenzyme is by definition a non-protein part of an enzyme, so it cannot be formed from protein; the printed key bolds this option, but coenzymes are non-protein organic molecules, so the key is corrected here with this evidence

C. Wrong: an inorganic ion is a cofactor, not the usual source of a coenzyme

D. Correct: many coenzymes are formed from vitamins, such as NAD from niacin and FAD from riboflavin

Question 72 Biology — Biotechnology

Production of genetically identical copies of organisms/cells by asexula reproduction is called?

- A. Mitosis
- B. Replication
- C. Cloning ✓ **Correct answer**
- D. Biological control

A. Wrong: mitosis is cell division, not the production of identical copies of whole organisms

B. Wrong: replication is the copying of DNA, not the production of identical organisms

C. Correct: cloning is the production of genetically identical copies of organisms or cells

D. Wrong: biological control fights pests with other organisms, it is not cloning

73 Biology — Cell Biology

Messenger RNA is formed in_____?

- A. Nucleus ✓ **Correct answer**
- B. Chloroplast
- C. Mitochondria
- D. none of these

A. Correct: messenger RNA is formed by transcription in the nucleus

B. Wrong: chloroplasts make their own RNA, but messenger RNA for the cell is formed in the nucleus

C. Wrong: mitochondria make their own RNA, but messenger RNA for the cell is formed in the nucleus

D. Wrong: the nucleus does form messenger RNA, so none of these is wrong

Question 74 Biology — Botany

Astronauts may use which technique to grow fruits and vegetables?

- A. Tissue culture techniques
- B. Cloning
- C. Pasterisation
- D. Hydroponic culture technique ✓ **Correct answer**

A. Wrong: tissue culture grows small plant pieces in the laboratory, it is not the method astronauts use to grow food

B. Wrong: cloning copies organisms, it does not grow fruits and vegetables for astronauts

C. Wrong: pasteurisation preserves food by heating, it does not grow it

D. Correct: astronauts grow fruits and vegetables by hydroponics, in nutrient solution without soil

75 Biology — Microbiology

Number of chromosomes in E.coli?

- A. 1 ✓ **Correct answer**
- B. 2
- C. 4
- D. 6

A. Correct: E. coli has a single circular chromosome

B. Wrong: E. coli does not have two chromosomes

C. Wrong: E. coli does not have four chromosomes

D. Wrong: E. coli does not have six chromosomes

Question 76 Biology — Microbiology

Which statement is incorrect for pasteurization?

- A. It is used to preserve yogurt and milk
- B. It was developed by Louis Pasteur.
- C. It involves heating the substance at high temperature for just few sec.
- D. It can be used to preserve vegetables and meat. ✓ **Correct answer**

A. Wrong as an incorrect statement: pasteurization is used to preserve milk and yogurt, so this statement is correct

B. Wrong as an incorrect statement: pasteurization was developed by Louis Pasteur, so this statement is correct

C. Wrong as an incorrect statement: pasteurization does heat the substance briefly at high temperature, so this statement is correct

D. Correct as the incorrect statement: pasteurization is not used to preserve vegetables and meat; that needs canning or sterilization

77 Biology — Cell Biology

Protein factory is_____?

- A. Nucleus
- B. Ribosome ✓ **Correct answer**
- C. golgi complex
- D. Centriole

A. Wrong: the nucleus holds DNA and directs the cell, it does not make protein

B. Correct: the ribosome is the protein factory of the cell

C. Wrong: the Golgi complex packs and ships proteins, it does not make them

D. Wrong: the centriole organizes cell division, it does not make protein

Question 78 Biology — Microbiology

What is the mode of transmission of Hepatitis virus?

- A. Aerosol
- B. Parentral (via blood) ✓ **Correct answer**
- C. Skin penetration
- D. Unknown

A. Wrong: hepatitis is not spread by aerosol droplets

B. Correct: hepatitis virus is transmitted parenterally, through blood (the stem prints Parentral for Parenteral)

C. Wrong: skin penetration is not the stated mode of transmission of hepatitis virus

D. Wrong: the mode of transmission is known, so unknown is wrong

79 Biology — Microbiology

Smallest disease causing agents in plants are?

- A. Virion
- B. Mycoplasma
- C. Viroids ✓ **Correct answer**
- D. Prions

A. Wrong: a virion is a complete virus particle, larger than a viroid

B. Wrong: mycoplasmas are small bacteria, larger than viroids

C. Correct: viroids, naked RNA molecules, are the smallest disease-causing agents in plants

D. Wrong: prions are infectious proteins of animals, not the smallest plant agents

Question 80 Biology — Microbiology

Which disease can be controlled by vaccination?

- A. Measles ✓ **Correct answer**
- B. Cancer
- C. Diabetes
- D. Heart attack

A. Correct: measles is controlled by vaccination

B. Wrong: cancer is not controlled by vaccination

C. Wrong: diabetes is not controlled by vaccination

D. Wrong: heart attack is not controlled by vaccination

81 Biology — Microbiology

The major cell infected by the HIV is lymphocyte?

- A. helper-T ✓ **Correct answer**
- B. B
- C. both T and B
- D. none of these

A. Correct: HIV mainly infects helper T lymphocytes, the CD4 cells

B. Wrong: B lymphocytes are not the major cells HIV infects

C. Wrong: HIV does not mainly infect both T and B cells

D. Wrong: helper T cells are infected, so none of these is wrong

Question 82 Biology — Microbiology

Vaccine was first developed by_____?

- A. Louis Pasture
- B. Edward Jenner ✓ **Correct answer**
- C. Jaber Ibn Hayan
- D. Aristotle

A. Wrong: Louis Pasteur developed pasteurization and later vaccines, but the first vaccine was Jenner's (the option prints Pasture for Pasteur)

B. Correct: Edward Jenner developed the first vaccine, against smallpox

C. Wrong: Jaber Ibn Hayan worked in chemistry, not vaccines

D. Wrong: Aristotle was a philosopher, not a vaccine developer

83 Biology — Botany

Pigment present in red algae is_____?

- A. Fucoxanthin
- B. Phycocyanin
- C. Phycoerythrin ✓ **Correct answer**
- D. Bilirubin

A. Wrong: fucoxanthin is the brown pigment of brown algae

B. Wrong: phycocyanin is the blue pigment of blue-green algae

C. Correct: phycoerythrin is the red pigment of red algae

D. Wrong: bilirubin is a bile pigment of animals, not of red algae

Question 84 Biology — Microbiology

Which disease has been totally eradicated from the world because of effective vaccination?

- A. Measles
- B. Polio
- C. Small pox ✓ **Correct answer**
- D. Hepatitis

A. Wrong: measles still occurs in the world, it is not eradicated

B. Wrong: polio still occurs in a few places, it is not eradicated

C. Correct: smallpox was totally eradicated by vaccination in 1980

D. Wrong: hepatitis still occurs in the world, it is not eradicated

85 Biology — Classification

Nutrition in fungi is_____?

- A. Photosynthetic
- B. Chemosynthetic
- C. Completely parasitic
- D. Absorptive heterotrophs ✓ **Correct answer**

A. Wrong: fungi have no chlorophyll, so they cannot be photosynthetic

B. Wrong: fungi do not make food by chemosynthesis

C. Wrong: most fungi are saprophytes, not parasites, so completely parasitic is wrong

D. Correct: fungi are absorptive heterotrophs, taking in food from their surroundings

Question 86 Biology — Microbiology

Which of the following statement is incorrect about antibiotics?

- A. They are used against microorganisms
- B. They are always effective against bacteria
- C. They are used in diseases like tuberculosis and pneumonia
- D. They are derived from bacteria only ✓ **Correct answer**

A. Wrong as an incorrect statement: antibiotics are used against microorganisms, so this statement is correct (the printed cell carries a stray word Used before this text, recorded in the reproduction notes)

B. Wrong as an incorrect statement: the paper treats antibiotics as always effective against bacteria, so this is not the intended incorrect statement

C. Wrong as an incorrect statement: antibiotics are used in tuberculosis and pneumonia, so this statement is correct

D. Correct as the incorrect statement: antibiotics are derived from bacteria and also from

s penicillin from Penicillium, so from bacteria only is false

Question 87 Biology — Classification

Fungi resemble plants because they lack_____?

- A. Cell wall
- B. Cytoplasm
- C. Centriole ✓ **Correct answer**
- D. Nucleus

A. Wrong: fungi have a cell wall, so they do not lack it

B. Wrong: fungi have cytoplasm, so they do not lack it

C. Correct: fungi, like plants, lack centrioles, which animals have

D. Wrong: fungi have a nucleus, so they do not lack it

Question 88 Biology — Human Physiology

Which treatment is instituted in a cancerous patient?

- A. Antibiotic therapy
- B. Radiotherapy ✓ **Correct answer**
- C. Gene therapy
- D. None of these

A. Wrong: antibiotic therapy treats bacterial infection, not cancer

B. Correct: radiotherapy is a standard treatment for cancer

C. Wrong: gene therapy is not the standard treatment named for a cancerous patient here

D. Wrong: radiotherapy is instituted, so none of these is wrong

89 Biology — Botany

Which is a parasitic plant?

- A. Cuscuta ✓ **Correct answer**
- B. Rose
- C. Ferns
- D. Mosses

A. Correct: Cuscuta, the dodder, is a parasitic plant

B. Wrong: the rose is not a parasite

C. Wrong: ferns are not parasitic plants

D. Wrong: mosses are not parasitic plants

Question 90 Biology — Biotechnology

Which statement is incorrect for cloning?

- A. The nucleus of a fertilized egg is replaced by the nucleus from the cell of a fully developed individual
- B. Division of a single egg into one or more separate embryos.
- C. The individual is the mirror image of the parent organism
- D. It involve methods of sexual reproduction ✓ **Correct answer**

A. Wrong as an incorrect statement: in cloning the egg nucleus is replaced by a body-cell nucleus, so this statement is correct

B. Wrong as an incorrect statement: division of one egg into separate embryos is a form of cloning, so this statement is correct

C. Wrong as an incorrect statement: a clone is the mirror image of the parent organism, so this statement is correct

D. Correct as the incorrect statement: cloning does not involve sexual reproduction, it is

Question 91 Biology — Botany

True roots absent in_____?

- A. Ferns
- B. Bryophytes ✓ **Correct answer**
- C. Gymnosperms
- D. Angiosperms

A. Wrong: ferns have true roots

B. Correct: bryophytes have no true roots, only rhizoids

C. Wrong: gymnosperms have true roots

D. Wrong: angiosperms have true roots

Question 92 Biology — Ecology

Removal or degradation of environmental pollutants or toxic materials by living organisms is called_____?

- A. Integrated disease management
- B. Hydroponic culture technique
- C. Pasteurization
- D. Bioremediation ✓ **Correct answer**

A. Wrong: integrated disease management controls crop disease, not pollutants

B. Wrong: hydroponics grows plants in nutrient solution, it does not clean pollutants

C. Wrong: pasteurization preserves food by heating, it does not clean pollutants

D. Correct: bioremediation is the removal or breakdown of pollutants by living organisms

93 Biology — Biochemistry

The mechanism for ATP synthesis is_____?

- A. Chemosynthesis
- B. Photosynthesis
- C. Phosphorylation
- D. Chemiosmosis ✓ **Correct answer**

A. Wrong: chemosynthesis makes food from chemicals, it is not the mechanism of ATP synthesis

B. Wrong: photosynthesis makes food from light, it is not the mechanism of ATP synthesis itself

C. Wrong: phosphorylation adds phosphate, but the mechanism driving ATP synthesis is chemiosmosis

D. Correct: chemiosmosis, the flow of protons down their gradient, drives ATP synthesis

Question 94 Biology — Microbiology

Which of the following is not a viral disease?

- A. Cowpox
- B. Mumps
- C. Tetanus ✓ **Correct answer**
- D. Small pox

A. Wrong as a non-viral disease: cowpox is caused by a virus

B. Wrong as a non-viral disease: mumps is caused by a virus

C. Correct: tetanus is caused by a bacterium, Clostridium tetani, not by a virus

D. Wrong as a non-viral disease: smallpox is caused by a virus

95 Biology — Biochemistry

Enzyme present in the saliva is_____?

- A. Lipase
- B. Trypsin
- C. Ptyalin ✓ **Correct answer**
- D. Invertase

A. Wrong: lipase digests fats, it is not the saliva enzyme

B. Wrong: trypsin digests protein in the gut, it is not the saliva enzyme

C. Correct: ptyalin, salivary amylase, is the enzyme present in saliva

D. Wrong: invertase digests sucrose, it is not the saliva enzyme

Question 96 Biology — Biochemistry

In human body 99% of total mass is formed of_____?

- A. 16 Bio-elements
- B. 12 Bio-elements
- C. 10 Bio-elements
- D. 6 Bio-elements ✓ **Correct answer**

A. Wrong: 16 is the count of bio-elements, not the count forming 99 percent of body mass

B. Wrong: 12 is not the count forming 99 percent of body mass

C. Wrong: 10 is not the count forming 99 percent of body mass

D. Correct: 6 bio-elements, oxygen, carbon, hydrogen, nitrogen, calcium and phosphorus, form 99 percent of body mass

97 Biology — Biochemistry

Nitrogen is present in_____?

- A. Carbohydrates
- B. Proteins ✓ **Correct answer**
- C. Lipids
- D. Carbonates

A. Wrong: carbohydrates contain carbon, hydrogen and oxygen, not nitrogen

B. Correct: proteins contain nitrogen in their amino groups

C. Wrong: lipids contain carbon, hydrogen and oxygen, not nitrogen

D. Wrong: carbonates contain carbon and oxygen, not nitrogen

Question 98 Biology — Levels of Organization

Biological organization is_____?

- A. Simple
- B. Advance
- C. Complex
- D. highly complex ✓ **Correct answer**

A. Wrong: biological organization is not simple

B. Wrong: advance is not the word for the complexity of biological organization

C. Wrong: complex alone is less than the textbook description of biological organization

D. Correct: biological organization is highly complex

Question 99 Biology — Zoology

Operculum is present in_____?

y fish ✓ **Correct answer**

- B. sea fish
- C. cartilaginous fish
- D. none of these

A. Correct: the operculum, the gill cover, is present in bony fish

B. Wrong: sea fish is a habitat group, not the group with an operculum

C. Wrong: cartilaginous fish have gill slits and no operculum

D. Wrong: bony fish do have an operculum, so none of these is wrong

Question 100 Biology — Cell Biology

The arrangement of _____ speaks of the division of labour within cell?

- A. Molecule
- B. Subatomic particles
- C. Atoms
- D. Organelles ✓ **Correct answer**

A. Wrong: molecules do not show the division of labour within a cell

B. Wrong: subatomic particles do not show the division of labour within a cell

C. Wrong: atoms do not show the division of labour within a cell

D. Correct: the arrangement of organelles shows the division of labour within the cell

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