

**GENERAL CERTIFICATE OF EDUCATION BOARD**  
General Certificate of Education Examination

**JUNE 2025**

**ADVANCED LEVEL**

Centre Number	
Centre Name	
Candidate Identification Number	
Candidate Name	

**Mobile phones are NOT allowed in the examination room.**

**MULTIPLE CHOICE QUESTION PAPER**

**Duration: One and a Half Hours**

**INSTRUCTIONS TO CANDIDATES**

*Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.*

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

*Before the examination begins:*

3. Check that this question booklet is headed "0710 Biology 1 – ADVANCED LEVEL".
4. Fill in the information required in the spaces above.
5. Fill in the information required in the spaces provided on the answer sheet using your HB pencil:  
**Candidate Name, Exam Session, Subject Code, Centre Number and Candidate Number.**  
Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.

*How to answer the questions in this examination*

6. Answer **ALL** the **50** questions in this Examination. All questions carry equal marks.
7. Each question has **FOUR** suggested answers: **A, B, C** and **D**. Decide which answer is appropriate. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.  
For example, if **C** is your correct answer, mark **C** as shown below:  
**[A] [B] [C] [D]**
8. Calculators are allowed
9. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
10. Avoid spending too much time on any one question. If you find that a question is difficult, move on to the next question. You can come back to this question later on.
11. Do all rough work in this booklet using the blank spaces in the question booklet.
12. **At the end of the examination, the invigilator shall collect the answer sheet first and then the question booklet. DO NOT ATTEMPT TO LEAVE THE EXAMINATION HALL WITH IT.**



1. Intrinsic proteins present in the cell membrane of animal cells function mainly as:
  - A Enzymes.
  - B Receptor molecule.
  - C Pores.
  - D Channels.

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2. Organisms in the phylum Basidiomycota such as mushrooms possess:
  - A Septate hyphae.
  - B Aseptate hyphae.
  - C Conidia.
  - D Ascus.

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3. The spores of *Penicillium* produced as a result of asexual reproduction at the tip of hyphae outside the sporangia are:
  - A Conidia.
  - B Zygosporangia.
  - C Basidiospores.
  - D Ascospores

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4. The spectrum graph showing the efficiency of the different wavelength of light in stimulating photosynthesis is:
  - A Absorption spectrum.
  - B Action spectrum.
  - C Efficiency spectrum.
  - D Reflection spectrum.

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5. Why is a genetic code described as degenerate?
  - A Multiple combinations of different codons can code for the same amino acid.
  - B Three bases in DNA code for one amino acids.
  - C Some codons do not code for any amino acids.
  - D Living organisms contain the same common amino acids and the bases.

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6. The presence of different colors in flowers is caused by the following pigments:
  - A Chlorophyll and carotenoids.
  - B Anthocyanin and carotenoids.
  - C Xanthophyll and anthocyanin.
  - D Chlorophyll and anthocyanin.

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7. It is a simple food chain constructed from the following organisms: Bird, Weevil, Maize, Hawk, and Maggot.
  - A Maize → Weevil → Hawk → Maggot → Bird.
  - B Maize → Hawk → Maggot Weevil → Bird .
  - C Bird → Weevil → Maize → Hawk → Maggot → Bird → Weevil.
  - D Maize → Weevil → Bird → Hawk → Maggot.

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8. The codon determining the amino acid tryptophan is 5'-UGG-3'. What is the anticodon of its corresponding tRNA?
  - A 5'-CCA-3'.
  - B 5'-GGU-3'.
  - C 5'-ACC-3'.
  - D 5'-AGG-3'.

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9. This floral part forms the pericarp after fertilisation.
  - A. Ovule wall.
  - B. Outer integument.
  - C. Ovary wall.
  - D. Inner integument.

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10. Inhibition of enzyme action by blocking its active site is known as:
  - A Allosteric inhibition.
  - B Feedback inhibition.
  - C Competitive inhibition.
  - D Non-competitive inhibition.

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11. In what part of the nephron and by what mechanism does glucose move from the filtrate in the nephron to the bloodstream during normal kidney function?
  - A Collecting duct by active secretion.
  - B Distal convoluted tubule by facilitated diffusion.
  - C Glomerulus by ultrafiltration.
  - D Proximal convoluted tubule by active transport.

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12. Growth of bacteria or microorganisms is described as:
  - A changes in the total population.
  - B increase in the number of cells.
  - C increase in the size of each bacteria cell.
  - D increase in the mass of individual organisms.

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13. Hemolytic disease of the newborn:
  - A causes jaundice which clears rapidly after birth.
  - B. can be treated by transfusing the affected baby with Rh-positive blood.
  - C. can be prevented by injecting the mother with anti-D agglutinins just after delivery.
  - D occurs mainly in babies who are not of blood group O



14. When there is an injury in the hypothalamus of the brain, it is most likely to affect:
- the regulation of body temperature.
  - coordination during locomotion.
  - short-term memory.
  - decision making.

15. The offspring of viviparous animals have a better chance of survival, because:
- they are fewer in number and get more parental attention.
  - they get parental care, attention and protection.
  - they easily escape from danger..
  - they have a natural tendency to survive.

16. This organism carries out photosynthesis by using light energy:
- Iron bacteria.
  - Copper bacteria.
  - Cyanobacteria.
  - Fungi.

17. Select the pair from column I and II that is correctly matched.

	Column I	Column II
A	Oxygen and nitrogen	Greenhouse gases
B	CFCs	Ozone layer depletion
C	CFCs	Acid rain
D	Sanitary landfill	Eutrophication in aquatic plants

18. Chaetae are short, brittle and used for movement. In which of the following animals can we see chaetae?
- Planaria.
  - Millipede.
  - Ascaris.
  - Earthworm.

19. For the set of terms given below, identify those that constitute the gynoecium:
- Anthers, pistil, style, ovule.
  - Ovule, ovary, embryo sac, Anthers.
  - Ovule, stamen, ovary, embryo sac.
  - Stigma, ovule, embryo sac, placenta.

20. If a man with blood group A marries a woman with blood group B, what will be the possible blood groups of their offspring?
- A, B, AB and O.
  - A, B, and AB.
  - AB, B and O.
  - A, B, and O.

**For questions 21-28, one or more of the responses is/are correct. Choose:**

- If (i), (ii), and iii) are correct.
- If (i) and (iii) are correct.
- If (ii) and iv) are correct.
- If only (iv) is correct.

21. A chemical substance can be considered as a neurotransmitter if it meets the following conditions:
- Is located on the post synaptic neuron
  - Diffuses across the synaptic cleft.
  - Must be stimulated by anti-diuretic hormones(ADH) to effect a change on the presynaptic neuron.
  - Hydrolysed by enzymes after their action.

22. During the control of overheating in humans:
- superficial blood capillaries dilate so that more blood is to pumped to the skin surface.
  - there is increased production of sweat.
  - erector pilli muscles of the hair contract making the hair to lie flat.
  - erector muscle of hair relax making hairs to lie flat.

23. Identify the factor(s) that negatively affect human health.
- Infections.
  - Recreational drug use.
  - Life style.
  - Exercise.

24. Which of the following enzyme(s) is (are) correctly matched with its (their) role?
- DNA ligase - joins Okazaki fragments to form a continuous strand.
  - RNA primase - binds tRNA molecules to anticodons.
  - DNA polymerase - adds daughter nucleotides on the parent strands.
  - DNA helicase – cuts DNA strands at specific points.

25. Select the mechanism(s) that will favour self-pollination.
- Dichogamy.
  - Cleistogamy.
  - Self-sterility.
  - Monoecious.



26. The pathway by which water flows through the cell walls of plants is/are the:
- Symplast pathway.
  - Cuticular pathway.
  - Vacuolar pathway.
  - Apoplast pathway.
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27. Alcoholic beverages, dairy products, and bread are produced with the help of:
- Yeast.
  - Bacteria.
  - Lactobacillus.
  - Methanobacteria.
- 
28. The possible ecological relationship(s) that exist between a toad and a hibiscus plant is (are):
- feeding relationship.
  - gaseous exchange relationship.
  - reproduction relationship.
  - shelter relationship.
- 
29. This occurs during pregnancy.
- High concentration of FSH in blood.
  - The appearance of human chorionic gonadotrophin in urine.
  - The development of the corpus luteum.
  - Stimulation of the development of the Graafian follicle.
- 
30. This is a function of the Golgi Complex.
- Contain enzymes that digest redundant structures in the cells.
  - Ribosome synthesis.
  - $\text{Ca}^{2+}$  storage in muscle cells.
  - Modifying and packing of proteins and lipids into vesicles.
- 
31. An example of the control of gene induction is:
- a non-functional protein produced from edited mRNA.
  - $\beta$ -galactosidase activity in *Escherichia coli* exposed to lactose.
  - liver cells beginning glycogenolysis in response to glucagon.
  - a gene product acting as a transcription factor for many other genes.
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32. Biogas released during the digestion of sludge by the anaerobic bacteria consists of:
- Methane, Oxygen and Carbon dioxide.
  - Nitrogen, methane and water vapour
  - Methane, hydrogen sulphide and carbon dioxide.
  - Hydrogen, Nitrogen, Carbon dioxide.

33. A polarity change that occurs along a nerve fibre as a wave of depolarization is called:
- Resting Potential.
  - Action Potential.
  - Hyperpolarisation.
  - Polarisation.

34. Select the pair of statements that correctly differentiate mitosis from meiosis.

	Mitosis	Meiosis
A	Is the basis for sexual reproduction which produces gametes.	Is the basis for growth and asexual reproduction.
B	Involves double divisions.	Involves single division
C	Homologous chromosome do not pair up to form bivalents.	Homologous chromosomes pair up to form bivalents.
D	Involves Crossing over.	Crossing over is not involved.

35. The alimentary canal in mammals is suspended from the dorsal wall of the abdomen by:
- Lumen.
  - Serosa.
  - Mesenteries.
  - Submucosa.
- 
36. An initial fixed volume of culture medium and microorganisms is processed in a fermenter with no addition, then the products are harvested. This is a description of:
- Continuous culture.
  - Batch culture.
  - Fed batch.
  - Open culture.
- 
37. Involuntary breathing is controlled by:
- the bronchioles.
  - the pulmonary arterioles.
  - the alveolar-capillary network.
  - the neurons, located in the medulla and pons.
- 
38. It is the pathway of aerobic respiration that results in the greatest amount of ATP production.
- Electron Transport System (ETS).
  - The Krebs cycle.
  - Pyruvate to acetyl coenzyme A.
  - Glycolysis.



39. Identify the pair that is correctly matched to differentiate between analogous and homologous structures.

	Analogous structures	Homologous structures
A	Organs which are similar in origin and dissimilar in function.	Organs which are dissimilar in origin and similar in function.
B	Organs which are dissimilar in origin and similar in function.	Organs which are similar in origin and dissimilar in function.
C	Supports divergent evolution.	Supports convergent evolution.
D	The wings of birds and the forelimbs of humans.	The wings of birds and the wings of insects.

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40. The DNA-Protein complex in the nucleus is called:

A. Histones.  
B. Nucleolus.  
C. Chromatin.  
D. Nucleosome.

41. In a population of birds, the frequencies of genotypes for allele H and h differed significantly from the frequencies expected according to the Hardy-Weinberg principle. Which reason could be used to explain this deviation?

A. There was no migration into or out of the population.  
B. There was no mutation at the H and h gene Locus.  
C. There was no random mating with respect to H and h.  
D. Natural selection did not favour either H or h at the expense of the other allele.

For questions 42 to 50 there are two statements. Read through the statements and then choose:

- A if both statements are true and the second explains the first.  
B if both statements are true but the second does not explain the first  
C if the first statement is true and the second is false  
D if the first statement is false and the second is true.

	First Statement	Second Statement
42.	Carbon fixation refers to the incorporation of carbon into inorganic compounds by living organisms.	During photosynthesis carbon dioxide fixation is catalysed by an enzyme called ribulose-1,5-biphosphate carboxylase/ oxygenase (RUBISCO).
43.	Megaspore mother cells are diploid and megaspores are haploid.	The megaspore mother cells divide by meiotic division to produce four spores..
44.	There are two types of photosystems present in the thylakoids membranes of plant cells.	Photosynthesis occurs by absorbing wavelength longer than 700nm.
45.	Plasmids are double-stranded chromosomal DNA not found on main DNA molecule..	All eukaryotic chromosomes possess plasmids.
46.	Chronic respiratory disorders may be caused by pollen grains.	Mature pollen grains contain the generative and tube nuclei.
47.	The release of oxytocin is essential for child birth after the complete development of the foetus.	Progesterone increases the sensitivity of uterine wall to oxytocine.
48.	Squamous epithelium is made of a single thin layer of flattened cells with irregular boundaries.	Squamous epithelium covers the inner surface of the renal capsules, aveoli and blood capillary walls.
49.	A person heterozygous for sickle-cell trait produces both normal ( $Hb^A$ ) and abnormal Haemoglobin ( $Hb^S$ ).	The normal allele is dominant over the allele for sickle cell.
50.	Interferons help eliminate viral infections.	Interferons released by infected cells, reach the nearby uninfected cells and make them resistant to viral infection.

**STOP**

**GO BACK AND CHECK YOUR WORK**