

**AGA KHAN UNIVERSITY EXAMINATION BOARD**

**HIGHER SECONDARY SCHOOL CERTIFICATE**

**CLASS XII EXAMINATION**

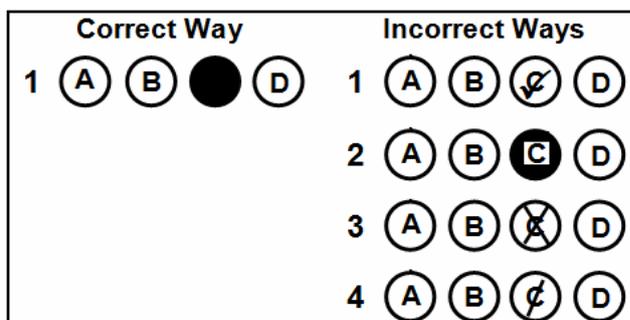
**MAY 2012**

**Biology Paper I**

**Time allowed: 40 minutes Marks 30**

**INSTRUCTIONS**

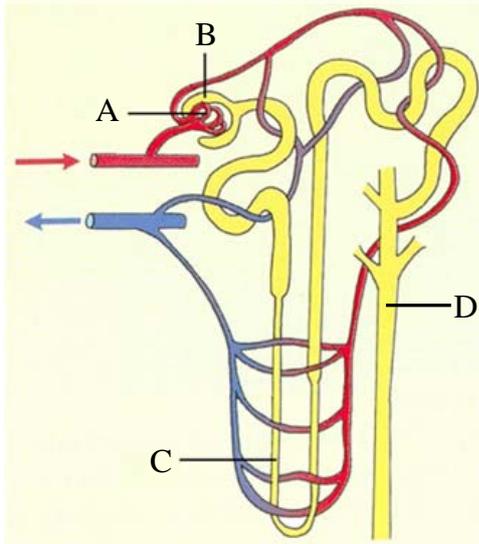
1. Read each question carefully.
2. Answer the questions on the separate answer sheet provided. DO NOT write your answers on the question paper.
3. There are 100 answer numbers on the answer sheet. Use answer numbers 1 to 30 only.
4. In each question there are four choices A, B, C, D. Choose ONE. On the answer grid black out the circle for your choice with a pencil as shown below.



Candidate's Signature

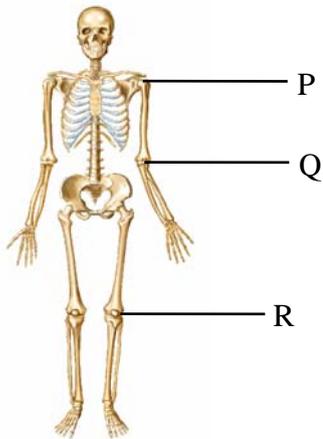
5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.

1. Which statement best describes the function of a nephron?
  - A. Filters waste products from the blood
  - B. Removes carbon dioxide from the blood
  - C. Collects urine from the blood
  - D. Removes waste products directly from the cells in the blood
2. On which of the following parts of a nephron does antidiuretic hormone (ADH) act?



3. One of the functions of the human endoskeleton is to
  - A. transmit impulses.
  - B. produce blood cells.
  - C. produce lactic acid.
  - D. store nitrogenous wastes.

4. Three joints have been labelled on the diagram of a human skeleton. Which of the following correctly identifies these joints?



	<b>P</b>	<b>Q</b>	<b>R</b>
A	Hinge joint	Ball and socket joint	Hinge joint
B	Hinge joint	Ball and socket joint	Ball and socket joint
C	Ball and socket joint	Hinge joint	Hinge joint
D	Ball and socket joint	Hinge joint	Ball and socket joint

5. Meissner's corpuscles occur in
- brain.
  - nerve cells.
  - skin.
  - tongue.
6. Alpha cells in the pancreas secrete a hormone called
- insulin.
  - glucagon.
  - oxytocin.
  - prolactin.
7. Which of the following correctly pairs the type of nervous system with its associated function?

	<b>Type of Nervous System</b>	<b>Associated Function</b>
A	Parasympathetic system	Constricts pupil
B	Sympathetic system	Increases digestive rate
C	Parasympathetic system	Inhibits salivation
D	Sympathetic system	Slows down heart rate

8. Given below is a list of symptoms made by a doctor after examining a patient suffering from a nervous disorder.

- Muscle tremors
- Poor balance
- Limited ability to vary facial expressions
- Flexed posture

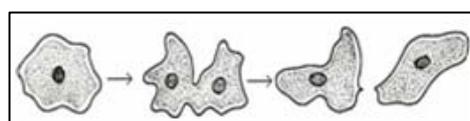
Which of the following disorders the patient is suffering from?

- A. Parkinson's disease
- B. Sciatica
- C. Alzheimer's disease
- D. Epilepsy

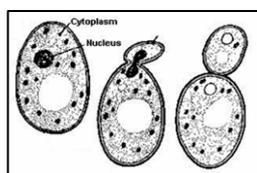
9. An angiospermic leaf cell has 120 chromosomes, its endosperm will have

- A. 120 chromosomes.
- B. 180 chromosomes.
- C. 240 chromosomes.
- D. 360 chromosomes.

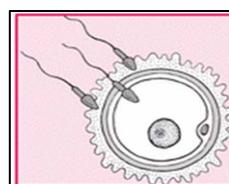
10. The diagram shows different types of reproduction.



I



II



III

Sexual reproduction is represented by

- A. I only.
- B. II only.
- C. III only.
- D. II and III only.

11. A difference between oestrous and menstrual cycles is that

- A. non-mammalian vertebrates have oestrous cycle whereas mammals have menstrual cycle.
- B. the endometrial lining is shed in menstrual but reabsorbed in oestrous.
- C. oestrous cycle occurs more frequently than menstrual cycle.
- D. oestrous cycle is not controlled by hormones.

12. Which of the following correctly describes 'growing point' in plants?
- It is observed in lower plants where entire plant body is capable of growing.
  - It is observed in higher plants where entire plant body is capable of growing.
  - It is observed in lower plants where growth is limited to certain regions of plants.
  - It is observed in higher plants where growth is limited to certain regions of plants.

13. Following are some events of a phase of growth in plants.

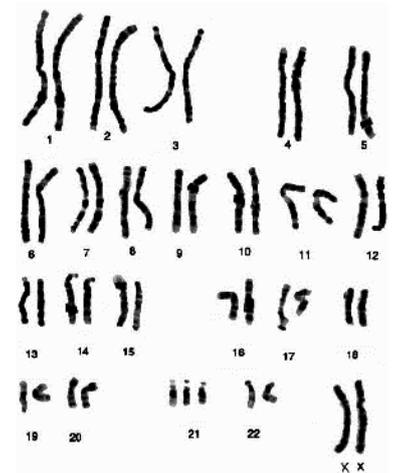
- The walls of cells become thicker.
- The walls of tissues become pitted.
- New structural features develop.

The above events belong to the phase of

- cell division.
  - elongation.
  - maturation.
  - differentiation.
14. A pregnant woman is exposed to a mutagen that prevents differentiation of cells of the foetus. Which of the following will be prevented in the development of the foetus?
- Implantation
  - Fertilization
  - Organogenesis
  - Cleavage

15. The information in the given karyotype indicates that the individual is a

- male with Tay-Sachs disease.
- female with Sickle-cell anaemia.
- male with Klinefelter's syndrome.
- female with Down's syndrome.



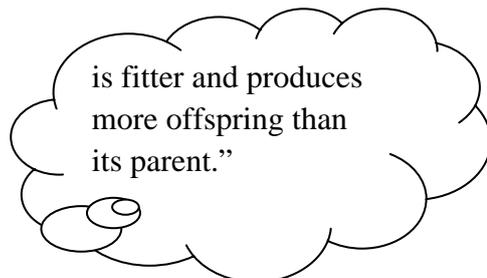
16. Which of the following is the end product of translation?
- An amino acid
  - Polypeptide
  - mRNA
  - DNA

17. Which of the following is NOT a code for any amino acid?
- A. UAA, UAG and UUG
  - B. UAG, UCG and UGA
  - C. UUC, UAG and UGA
  - D. UAA, UAG and UGA
18. During which stage of Prophase I of meiosis does the formation of chiasmata take place?
- A. Diplotene
  - B. Leptotene
  - C. Pachytene
  - D. Zygotene
19. Which genotype does NOT occur amongst the children of a mother with A and father with B blood group?
- A.  $I^A I^A$
  - B.  $I^A I^B$
  - C.  $I^A i$
  - D.  $ii$
20. Which of the following is an example of polygenic inheritance in human beings?
- A. Colour blindness
  - B. Phenylketonuria
  - C. Tongue rolling
  - D. Skin colour
21. The template used to make DNA in reverse transcription is
- A. DNA.
  - B. mRNA.
  - C. a plasmid.
  - D. a restriction fragment.
22. To protect a farm animal from a plant toxin, a gene for resistance to the toxin was transferred to the farm animal.
- Which term best describes this process?
- A. Cloning
  - B. Artificial pollination
  - C. Genetic engineering
  - D. Artificial insemination

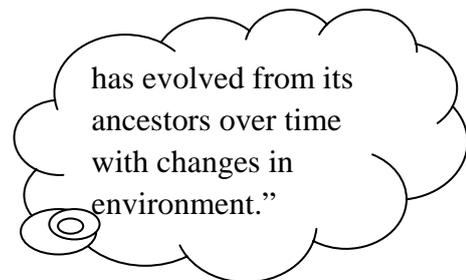
23. The children suffering from Severe Combined Immunodeficiency Syndrome (SCID) lack an enzyme ADA which is responsible for the
- A. coagulation of blood.
  - B. identification of antigen.
  - C. synthesis of red blood cells.
  - D. development of T and B cells.
24. What finding from the study of comparative embryology supports the theory of evolution?
- A. Embryos are easily fossilised.
  - B. Embryos of fish and mammals look very similar.
  - C. The dominant chromosomes are passed on to embryos.
  - D. Mutation in gametes is common and this leads to different embryos.
25. A gene pool consists of
- A. all the gametes in a population.
  - B. all the alleles exposed to natural selection.
  - C. the total of all alleles present in a population.
  - D. the entire genome of a reproducing individual.
26. Students in a biology class aimed to describe Darwin's theory of evolution. Each of them beginning his/her answer with:

"The progeny of every organism....."

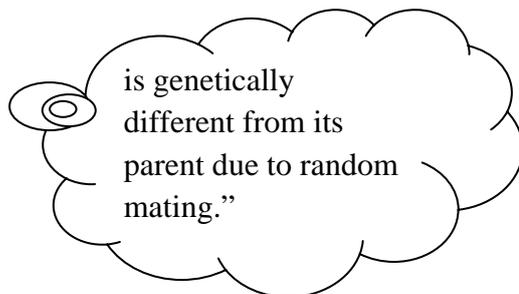
Which student correctly described the theory?



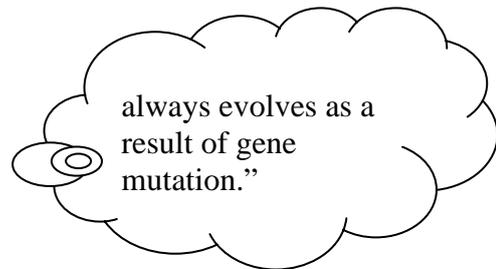
A



B



C



D

PLEASE TURN OVER THE PAGE

27. Organisms responsible for recycling of minerals within an ecosystem are called
- A. producers.
  - B. decomposers.
  - C. primary consumers.
  - D. secondary consumers.
28. Which of the following is true about climax in a community?
- A. Energy losses decrease from lower to higher trophic levels.
  - B. Seasonal population changes are not observed.
  - C. Primary producers belong to a single species.
  - D. Growth of mosses and lichens is inhibited.
29. A species of bacteria, *Pseudomonas*, resides in the soil where it is responsible for the conversion of  $\text{NO}_3$  to  $\text{NO}_2$ . What is this process termed as?
- A. Nitrogen fixation
  - B. Ammonification
  - C. Denitrification
  - D. Nitrification
30. Eutrophication of lakes resulting in killing of fishes is mainly due to non-availability of
- A. food.
  - B. light.
  - C. oxygen.
  - D. essential minerals.