

AGA KHAN UNIVERSITY EXAMINATION BOARD

SECONDARY SCHOOL CERTIFICATE

CLASS X

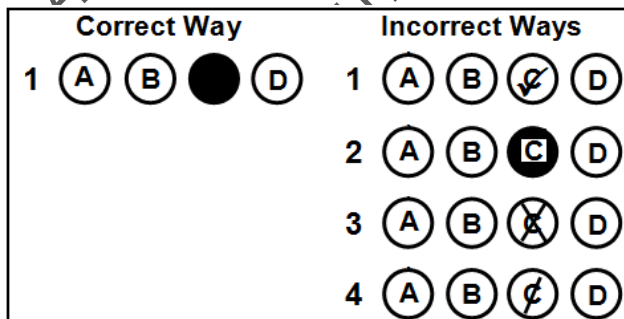
ANNUAL EXAMINATIONS 2022

General Science

Time: 1 hour 40 minutes Marks: 50

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 50 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

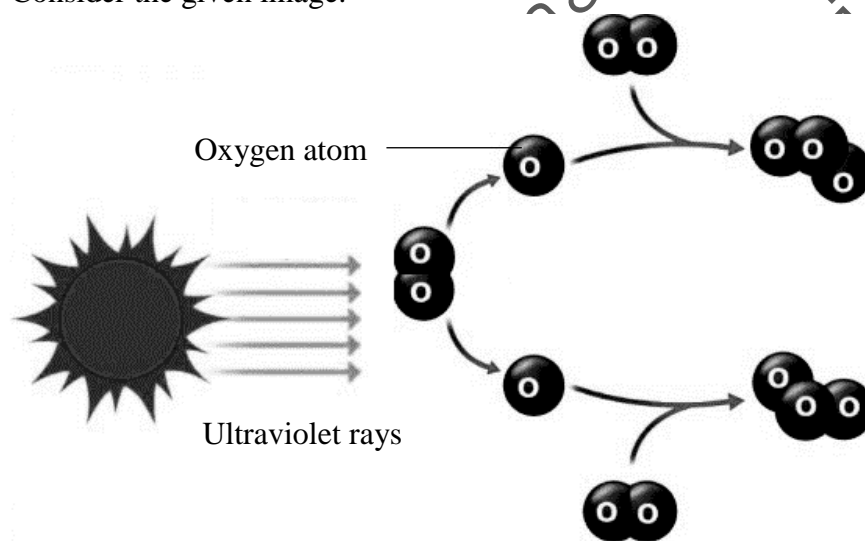
5. If you want to change your answer, ERASE the first answer completely with a rubber, before blacking out a new circle.
6. DO NOT write anything in the answer grid. The computer only records what is in the circles.
7. The marks obtained on the 50 MCQs will be equated to the total marks of 75 for the theory examination results.

1. In a hilly area, the government is planning to plant more trees. The environmental issue that can be MAINLY resolved by this act is
 - A. acid rain.
 - B. water logging.
 - C. desertification.
 - D. ozone depletion.
2. In different chemical industries, nitrogen gas is used as a blanketing agent in tanks which store explosive chemicals.

(Note: Blanketing is the process of filling the empty space of a liquid storage tank with an inert gas, most likely nitrogen.)

The property of nitrogen due to which it is used as a blanketing agent is that it is

- A. odourless.
 - B. colourless.
 - C. non-reactive.
 - D. highly flammable.
3. Consider the given image.



This image shows the process of the formation of

- A. acid rain.
 - B. oxygen gas.
 - C. ozone layer.
 - D. a greenhouse gas.
4. The human activity that will NOT cause water pollution is
 - A. dumping of garbage underground.
 - B. growing of vegetables in home garden.
 - C. throwing of the dead leaves into a drainage.
 - D. washing away of excessive fertilisers through irrigation.

5. Which of the following legislative water laws sets the standards of permissible pollutants into the surface water and ensures the suitability of water for fishing and swimming?
- A. The Water Act 1989
 - B. The Clean Water Act 1972
 - C. The Water Industry Act 1991
 - D. The Federal Water Pollution Control Act of 1948

6. Instead of being engaged in outdoor games, Fazal, a 9-year-old boy, is habitual of playing games on mobile phone for hours.

If Fazal continues this habit, then he will be at high risk of developing

- A. flu.
 - B. ulcer.
 - C. obesity.
 - D. diarrhoea.
7. Which of the following outcomes of urbanisation does NOT directly affect the ecological balance?
- A. Migration
 - B. Deforestation
 - C. Cultural diversity
 - D. Heavy constructions
8. Being an ethical citizen, the step that can conserve endangered species is to
- A. rehabilitate wildlife sanctuaries.
 - B. lead a campaign for killing stray animals.
 - C. use pesticides and herbicides excessively.
 - D. provide awareness about the importance of wildlife.
9. Given are some of the major consequences of a natural phenomenon.

- Ground rupture
- Landslides
- Tsunamis

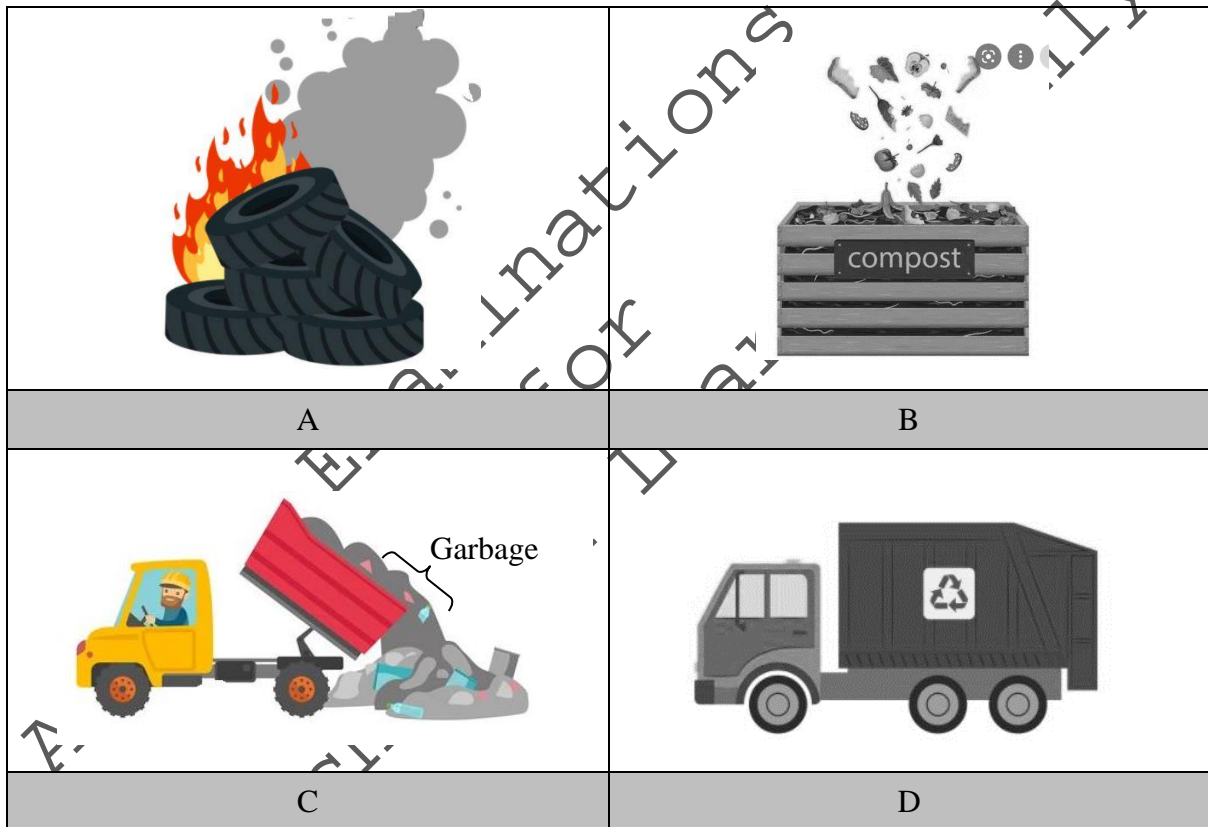
These consequences are MAINLY caused by

- A. storm.
- B. earthquake.
- C. urbanisation.
- D. desertification.

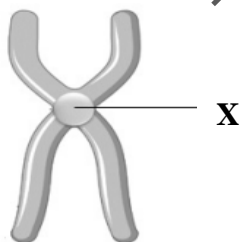
10. The students of a medical college were called for assistance at a hospital. They became seriously affected by an outbreak of diarrhoea after drinking contaminated water at the hospital.

The factor at the hospital that has MAINLY become the reason of sickness among students is the

- A. shortage of medical staff.
 - B. poorly maintained parking area.
 - C. spread of infectious diseases from patients.
 - D. inefficient solid waste management system.
11. Which of the following waste management techniques MAINLY causes the spread of pathogenic microorganisms?



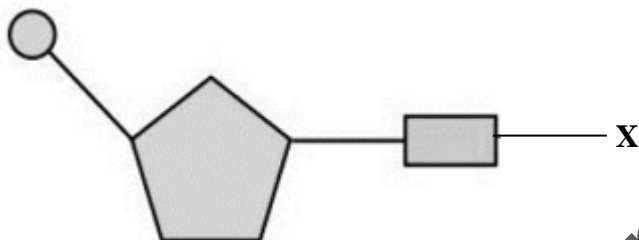
12. In the given diagram of a chromosome, the labelled part **X** is identified as



- A. gene.
- B. histone.
- C. chromatid.
- D. centromere.

13. Which of the following physiological conditions develops due to the frequent blood transfusion in thalassemia patients?
- A. Decreased rate of breathing
 - B. Excessive quantity of iron in their body
 - C. Excessive breakdown of glucose in the cells
 - D. Decreased number of white blood cells in the blood

14. In the given structure of a nucleotide, the part labelled as X represents a



- A. ribose sugar.
 - B. hydrogen bond.
 - C. phosphate group.
 - D. nitrogenous base.
15. One word for the complete set of genetic information about an organism is
- A. gene.
 - B. RNA.
 - C. DNA.
 - D. genome.
16. Given are the MAIN steps of genetic engineering.

- I. The insertion of an isolated donor DNA fragment into a vector genome
- II. The isolation of DNA fragments from a donor organism
- III. The growth of a recombinant vector in an appropriate host

The CORRECT sequence for the execution of these steps is

- A. I, III and II.
 - B. II, I and III.
 - C. III, II and I.
 - D. I, II and III.
17. The role of phosphorous in a DNA strand is to
- A. link two nucleotides.
 - B. join two complementary strands together.
 - C. hold nitrogenous base on the ribose sugar.
 - D. add hydrogen bonds between nitrogenous bases.

18. A child gets 47 number of chromosomes from his/ her parents.

The genetic disease(s) that the child may suffer from is /are

- A. thalassemia only.
- B. Down's syndrome only.
- C. thalassemia and sickle cell anaemia.
- D. sickle cell anaemia and Down's syndrome.

19. An ethical issue that can be resulted by GMOs (Genetically Modified Organisms) is

- A. the synthesis of hormones by bacteria.
- B. threats to the natural identity of species.
- C. the cloning of desired genes for gene therapy.
- D. an increase in the genetic diversity of simple plants.

20. The model for the central dogma of gene expression that shows the flow of information in a human cell is

- A. protein → mRNA → DNA.
- B. DNA → mRNA → protein.
- C. protein → DNA → mRNA.
- D. DNA → protein → mRNA.

21. Biotechnology has played a vital role in enhancing the agricultural yield by

- A. developing disease-free crops.
- B. improving the irrigation system.
- C. improving the literacy in farmers.
- D. developing mechanised agriculture.

22. The outcome of excessive use of pesticides that DIRECTLY affects the human health is the

- A. development of pest-resistant crops.
- B. increase in algal blooms in the pond ecosystem.
- C. accumulation of pesticide residues in the edible foods.
- D. removal of disease-causing microbes from the ecosystem.

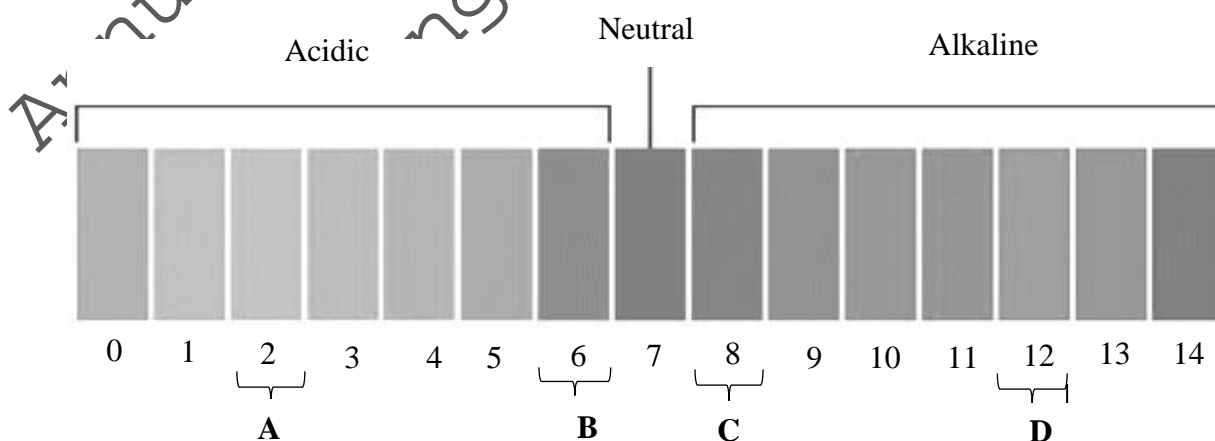
23. Biotechnologists can modify the genetic material of different organisms because all organisms

- A. can easily reproduce.
- B. contain similar cell organelles.
- C. require oxygen for their survival.
- D. contain the same basic genetic material.

24. The type of cells that is affected in sickle cell anaemia is

- A. stem cells.
- B. liver cells.
- C. red blood cells.
- D. white blood cells.

25. The MOST suitable disposal method for plastic wrappings is to
- A. bury them in land.
 - B. burn them in an open place.
 - C. dispose them into sewage lines.
 - D. discard them in a dedicated bin for recycling.
26. All of the following are the examples of household hazardous wastes EXCEPT
- A. bleach.
 - B. pesticides.
 - C. peels of fruits.
 - D. oil of motor engine.
27. Pieces of apples and potatoes become brown after being exposed to air for almost 15 to 20 minutes. This indicates the occurrence of a chemical change.
- The characteristic due to which the process is categorised as a chemical change is that it
- A. is an irreversible reaction.
 - B. changes the odour of substances.
 - C. alters the state of potatoes and apples.
 - D. changes the texture of potatoes and apples.
28. The photographic films that contain silver halide crystals are MOST sensitive to
- A. air.
 - B. light.
 - C. water.
 - D. touch.
29. In the given image of pH scale, vinegar lies at the pH



30. In Pakistan, all of the following are the reasons for open masses of wastes in urban areas EXCEPT
- A. waste management demands a high budget.
 - B. street sweeping is restricted to certain areas.
 - C. number of waste collecting bins are limited.
 - D. most of the solid waste is consumed by scavengers.

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31. The chemical treatment of hair in which strongly basic chemicals are used is the

- A. bleaching of hair.
- B. temporary hair dyeing.
- C. permanent hair dyeing.
- D. permanent straightening of hair.

32. All of the following are the examples of a chemical reaction EXCEPT

- A. frying a half-fry egg in a pan.
- B. tanning of skin in the sunlight.
- C. heating of an iron rod at high temperature.
- D. tarnishing of silver jewellery in an open environment.

33. The pH value of milk is 6.5 and that of grapefruit juice is 2.

Based on their pH values, milk and grapefruit juice can be classified as

	Milk	Grapefruit Juice
A	slightly acidic	slightly basic
B	strongly basic	slightly acidic
C	slightly acidic	strongly acidic
D	strongly basic	slightly basic

34. The pH value of an ideal shampoo is 3.6 for the hair and 5.5 for the scalp.

Based on their pH values, an ideal shampoo is

- A. basic for both hair and scalp.
- B. acidic for both hair and scalp.
- C. basic for hair and acidic for scalp.
- D. acidic for hair and basic for scalp.

35. The expression, $-\log_{10} c$, where c is the hydrogen ion concentration in mol/dm^3 , is for calculating

- A. weight.
- B. volume.
- C. pH value.
- D. concentration.

36. The given table shows the complete mineral analysis of a product.

Typical Values Per Litres	
Calcium	40 mg
Magnesium	14 mg
Potassium	3 mg
Sodium	6 mg
Bicarbonates	166 mg
Chloride	11 mg

On the basis of the mineral analysis, the product identified is MOST likely a

- A. water bottle.
 B. perfume vial.
 C. beauty cream.
 D. chocolate brownie.
37. During food processing, the chemical that is used to delay spoilage through bacterial growth is identified as
- A. yeast.
 B. preservatives.
 C. distilled water.
 D. artificial sweeteners.
38. X-rays are used to detect the following conditions EXCEPT
- A. fractured bones.
 B. dental problems.
 C. abnormal growth in breasts.
 D. malfunctioning of the heart.
39. A man-made object that is projected to the space for communication is called a/ an
- A. rocket.
 B. satellite.
 C. aeroplane.
 D. spaceship.
40. The MAJOR role(s) that the leather industry play(s) in the economy of Pakistan is/ are to
- I. provide employment.
 II. improve the ecosystem.
 III. increase the foreign exchange by export.
- A. I only.
 B. II only.
 C. I and III.
 D. II and III.

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41. One of the applications of laser is
- A. navigation of ships.
 - B. reading of bar codes.
 - C. forecasting of weather.
 - D. transmission of telephone signals.
42. To monitor the growth of an unborn baby in the mother's womb, the technique that is commonly used is
- (Note: ECG = electrocardiogram CT-Scan = computerised tomography scan)
- A. ECG.
 - B. CT-scan.
 - C. ultrasound.
 - D. angiography.
43. One of the properties of beta-particles is that they
- A. do not have mass.
 - B. are negatively charged.
 - C. are heavier than alpha particles.
 - D. have the greatest penetrating power.
44. Laser is also known as non-material knife because of its use in
- A. medicine and surgery.
 - B. astrology and communication.
 - C. computer devices, especially mouse.
 - D. robotics, especially calculating distance.
45. All of the following are the applications of radar EXCEPT
- A. navigation of aircrafts.
 - B. surveillance of ground.
 - C. cutting of precious stones.
 - D. warning vehicles about the possible collisions.
46. A geo-stationary satellite has the same period of rotation as that of the
- A. Mars.
 - B. Earth.
 - C. Moon.
 - D. Jupiter.

47. On the basis of the given elements' atomic numbers, the radioactive element is

	Element	Atomic Number
A	bromine	35
B	tungsten	74
C	mercury	80
D	uranium	92

48. Observe the given warning sign.



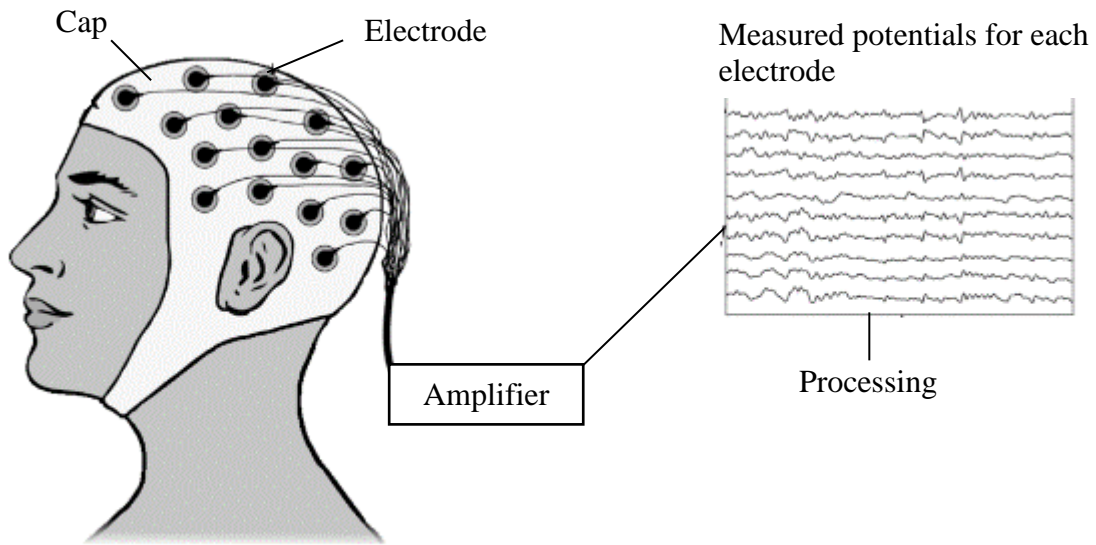
This warning sign can be found in areas where

- A. hydropower is generated.
- B. agricultural wastes are recycled.
- C. radioactive materials are handled.
- D. biodegradable wastes are disposed.

49. Development of which of the following sectors will help textile industry to flourish?

- A. Mining
- B. Poultry
- C. Forestry
- D. Agriculture

50. The given medical diagnostic technique is identified as



- A. electrocardiogram (ECG).
- B. electroencephalogram (EEG).
- C. magnetic resonance imaging (MRI).
- D. computerised tomography scan (CT-Scan).

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