

COMMON SECOND MID-TERM TEST - 2022

R

Standard X
SCIENCE

Reg.No.

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Marks : 75

Time : 3.00 hrs

Part - I

12 x 1 = 12

I. Choose the correct answer:

1. When a sound wave travels through air, the air particles
 - a) vibrate along the direction of the wave motion
 - b) vibrate but not in any fixed direction
 - c) vibrate perpendicular to the direction of the wave motion
 - d) do not vibrate
2. Velocity of sound in the atmosphere of a planet is 500 ms^{-1} . The minimum distance between the sources of sound and the obstacle to hear the echo, should be
 - a) 17m
 - b) 20m
 - c) 25m
 - d) 50m
3. Unit of radioactivity is _____
 - a) roentgen
 - b) curie
 - c) becquerel
 - d) all the above
4. Which of the following is/are correct?
 - i. Chain reaction takes place in a nuclear reactor and an atomic bomb.
 - ii. The chain reaction in a nuclear reactor is controlled
 - iii. The chain reaction in a nuclear reactor is not controlled
 - iv. No chain reaction takes place in an atom bomb
 - a) (i) only correct
 - b) (i) & (ii) are correct
 - c) (iv) only correct
 - d) (iii) & (iv) are correct
5. Photolysis is a decomposition reaction caused by _____.
 - a) heat
 - b) electricity
 - c) light
 - d) mechanical energy
6. Powdered CaCO_3 reacts more rapidly than flaky CaCO_3 , because of _____.
 - a) large surface area
 - b) high pressure
 - c) high concentration
 - d) high temperature
7. Rectified spirit is an aqueous solution which contains about _____ of ethanol.
 - a) 95.5%
 - b) 75.5%
 - c) 55.5%
 - d) 45.5%
8. TFM in soaps represents _____ content in soap.
 - a) mineral
 - b) vitamin
 - c) fatty acid
 - d) carbohydrates
9. The 'use and disuse theory' was proposed by
 - a) Charles Darwin
 - b) Ernst Haeckel
 - c) Jean Baptiste Lamarck
 - d) Gregor Mendel
10. The term Ethnobotany was coined by
 - a) Khorana
 - b) J.W.Harsberger
 - c) Ronald Ross
 - d) Hugo de Vries
11. We can cut the DNA with the help of
 - a) scissors
 - b) restriction endonucleases
 - c) knife
 - d) RNAase
12. DNA fingerprinting is based on the principle of identifying _____ sequences of DNA.
 - a) single stranded
 - b) mutated
 - c) polymorphic
 - d) repetitive

Part - II

II. Answer any 7 questions. (Q.No.22 is compulsory)

7 x 2 = 14

13. True or false:- (If false give the reason)
Waves created by Earth Quake are Infrasonic.

14. Match the following :

- | | |
|---------------------------------------|-------------|
| a. BARC | - Kalpakkam |
| b. India's first atomic power station | - Apsara |
| c. IGCAR | - Mumbai |
| d. First nuclear reactor in India | - Tarapur |

15. Use the analogy to fill in the blank

1. Spontaneous process : Natural Radioactivity, Induced process : _____
2. Nuclear Fusion : Extreme temperature, Nuclear Fission: _____

(2)

- 6 Differentiate reversible and irreversible reactions.
 7 Differentiate soaps and detergents. *define 1 word*
 8 The degenerated wing of a kiwi is an acquired character. Why is it an acquired character?
 9 Why is Archaeopteryx considered to be a connecting link?

10 Match the following :

- | | |
|--------------|------------------|
| A. Sonalika | Phaseolus mungo; |
| B. IR 8 | Sugarcane |
| C. Saccharum | Semi-dwarf wheat |
| D. Mung No.1 | Semi-dwarf Rice |

11 Define genetic engineering.

12 A sound wave has a frequency of 200 Hz and a speed of 400 ms^{-1} in a medium. Find the wavelength of the sound wave.

Part - III

III. Answer any 7 questions. (Q.No.32 is compulsory)

7 × 4 = 28

23. What are the factors that affect the speed of sound in gases?
 24. a) Arrange in descending order, on the basis of their penetration power
 1. Alpha rays, 2. Beta rays, 3. Gamma rays, 4. Cosmic rays
 b) Arrange the following in the chronological order of discovery
 1. Nuclear reactor, 2. Radioactivity, 3. Artificial radioactivity, 4. Discovery of radium
 25. a) Write any three features of natural and artificial radioactivity.
 b) Give any two uses of radio isotopes in the field of agriculture.
 26. Explain the types of double displacement reactions with examples.
 27. Match the following

Column A

Column B

- | | | |
|----------------------|---|--|
| A. Atavism | - | Caudal vertebrae and vermiform appendix |
| B. Vestigial organs | - | A wing of a bat and Organs a wing of an insect |
| C. Analogous organs | - | A forelimb of a cat and a bat's wing |
| D. Homologous organs | - | Rudimentary tail and thick hair on the body |

28. How can you determine the age of the fossils?
 29. How does fossilization occur in plants?
 30. State whether true or false. If false, write the correct statement
 1. Raphano brassica is a man-made tetraploid produced by colchicine treatment.
 2. The process of producing an organism with more than two sets of chromosome is called mutation.
 31. 'P' is a gene required for the synthesis of Vitamin A. It is integrated with genome of 'Q' to produce genetically modified plant 'R'
 i) What is P, Q and R?
 ii) State the importance of 'R' in India.
 32. An organic compound 'A' is widely used as a preservative and has the molecular formula $\text{C}_2\text{H}_4\text{O}_2$. This compound reacts with ethanol to form a sweet smelling compound 'B'.
 i) Identify the compound 'A'.
 ii) Write the chemical equation for its reaction with ethanol to form compound 'B'.
 iii) Name the process.

Part - IV

3 × 7 = 21

IV. Answer all the questions.

33. a) What is an echo?
 i) State two conditions necessary for hearing an echo.
 ii) What are the medical applications of echo?
 iii) How can you calculate the speed of sound using echo? (OR)
 b) Compare the properties of alpha, beta and gamma radiations.
 34. a) i) How does pH play an important role in everyday life?
 ii) What is a chemical equilibrium? What are its characteristics? (OR)
 b) i) What is called homologous series? Give any three of its characteristics?
 ii) How is ethanol manufactured from Sugarcane?
 35. a) i) Natural selection is a driving force for evolution - How?
 ii) How do you differentiate homologous organs from analogous organs? (OR)
 b) With a neat labelled diagram explain the techniques involved in gene cloning.
