

ARIYALUR DISTRICT

Register Number :

010301

SECOND MID TERM EXAMINATION - 2024**SCIENCE**

Marks : 50

Time : 1.30 hr

Std: **10****I. Choose the correct answer****8x1= 8**

1) If a sound wave travels with a frequency of 1.25×10^4 Hz at 344 ms^{-1} , the wavelength will be

- a) 27.52 m b) 275.2 m c) 0.02752 m d) 2.752 m

2) The energy released in a nuclear fission process is about

- a) 20 MeV b) 2000 MeV c) 200 MeV d) 2 MeV

3) Which of the following is not an "element + element \rightarrow Compound" type reaction?

- a) $\text{C}_{(s)} + \text{O}_{2(g)} \rightarrow \text{CO}_{2(g)}$ b) $2\text{K}_{(s)} + \text{Br}_{2(l)} \rightarrow 2\text{KBr}_{(s)}$
 c) $2\text{CO}_{(g)} + \text{O}_{2(g)} \rightarrow 2\text{CO}_{2(g)}$ d) $4\text{Fe}_{(s)} + 3\text{O}_{2(g)} \rightarrow 2\text{Fe}_2\text{O}_{3(s)}$

4) Rectified spirit is an aqueous solution which contains about of ethanol

- a) 95.5 % b) 75.5 % c) 55.5 % d) 45.5 %

5) The 'use and disuse theory' was proposed by

- a) Charles Darwin b) Ernst Haeckel c) Jean Baptiste Lamarck d) Gregor Mendel

6) We can cut the DNA with the help of

- a) scissors b) restriction endonucleases c) knife d) RNAase

7) In a hexaploid wheat ($2n=6x=42$) the haploid (n) and the basic (x) number of chromosomes respectively are

- a) $n = 7$ and $x = 21$ b) $n = 21$ and $x = 21$
 c) $n = 7$ and $x = 7$ d) $n = 21$ and $x = 7$

8) Cancer of the epithelial cells is called

- a) Leukemia b) Sarcoma c) Carcinoma d) Lipoma

II. Answer any six questions. Question No.15 compulsory**6 x 2 = 12**

9) Match the following

- | | | |
|--------------------|---|--------------------------|
| a) Soddy Fajan | - | Natural radioactivity |
| b) Irene Curie | - | Displacement law |
| c) Henry Bequerel | - | Mass energy equivalence |
| d) Albert Einstein | - | Artificial Radioactivity |

10) Differentiate reversible and irreversible reactions.

11) Name the simplest ketone and give its structural formula

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- 12) Define Ethnobotany and write its importance
- 13) State the applications of DNA fingerprinting technique.
- 14) What are the various routes by which transmission of human deficiency virus (HIV) takes place?
- 15) A strong sound signal is sent from a ship towards the bottom of the sea. It is received back after 1s. What is the depth of sea given that the speed of sound in water 1450 m s^{-1} ?

III. Answer any four questions. Question No.15 compulsory

4x4=16

- 16) a) Mention two cases in which there is no Doppler effect in sound?
b) Explain why, the ceilings of concert halls are curved.
- 17) Write the features of natural and artificial radioactivity.
- 18) Differentiate soaps and detergents
- 19) How do you differentiate homologous organs from analogous organs?
- 20) Discuss the importance of biotechnology in the field of medicine.
- 21) Suggest measure to overcome the problems of an alcoholic
- 22) What would be the p^H of an aqueous solution of sulphuric acid which is $5 \times 10^{-5} \text{ mol litre}^{-1}$ in concentration?

IV. Answer all the questions

2x7=14

- 23) a) i) What is an echo? What are the medical applications of echo?
ii) Compare the properties of alpha, beta and gamma radiations. (OR)
- b) i) Why ordinary soap is not suitable for using with hard water?
ii) The molecular formula of an alcohol is $C_4H_{10}O$. The locant number of its $-OH$ group is 2.
1. Draw its structural formula
 2. Give its IUPAC name
 3. Is it saturated or unsaturated?
- 24) a) i) Name the types of stem cells.
ii) With a neat labeled diagram explain the techniques involved in gene cloning. (OR)
- b) i) What precautions can be taken for preventing heart diseases?
ii) What is metastasis?
