

**SECOND MID TERM TEST - 2019****X Standard**Reg No. 

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**Time : 1.30 hrs****SCIENCE****Marks : 50****Section - I****Choose the best option :****[10x1=10]**

1. Infrasonic are sound waves with a frequency below \_\_\_\_\_  
a) 20 Hz      b) 12 Hz      c) 100 Hz      d) 16 Hz
2. The Sound waves are reflected from an obstacle into the same medium from which they were incident. Which of the following Changes.  
a) Speed      b) Frequency      c) Wavelength      d) None of these
3. The energy released in a nuclear fission process is about \_\_\_\_\_  
a) 150 Mev      b) 200 Mev      c) 20 Mev      d) 300 Mev
4. A reaction between carbon and oxygen is represented by  $C + O_2 \rightarrow CO_2 + Heat$ . in which of the type (S) the above reaction can be classified?  
i) Combination reaction      ii) Combustion reaction  
iii) Decomposition reaction      iv) Irreversible reaction  
a) i and ii      b) i and iv      c) i,ii, and iii      d) iii and iv
5. Which of the following are used as Anaesthetics?  
a) Carboxylic acids      b) Ethers      c) Esters      d) Aldehydes
6. TFM in soaps represents \_\_\_\_\_ Content is soap.  
a) Mineral      b) Vitamin      c) fatty acid      d) Carbohydrate
7. The term Ethnobotany was coined by \_\_\_\_\_  
a) Khorana      b) J.W. Harsberger      c) Ronald Ross      d) Hugo de vries
8. A Protein rich Wheat Variety is \_\_\_\_\_  
a) Golden Wheat      b) Atlas 36      c) Atlas 66      d) Triticale
9. Blood Cancer is Called \_\_\_\_\_  
a) Leukaemia      b) Malignant      c) Oncogenic      d) Sarcoma
10. Desirable level for blood cholesterol should be less than \_\_\_\_\_  
a) 120 mg/dl      b) 200 mg/dl      c) 350 mg/dl      d) 250 mg/dl

**Section - II****Answer the following Small Questions (any Seven)****[Qn. No 11 is Compulsory]****[7x2=14]**

11. What will be the frequency sound having 0.20m as its wavelength when it travels with a speed of  $331\text{ ms}^{-1}$ ?
12. Define - Doppler Effect.
13. If the  $\text{P}^{\text{H}}$  of a Solution is 4.5 what is its  $\text{P}^{\text{OH}}$ ?

14. Differentiate reversible and irrversible reactions:
15. Classify the following compounds based on the pattern of carbon chain and give their structural formula.
  - i) Propane
  - ii) Benzene
  - iii) Cyclobutane
  - iv) Furan
16. How is ethanoic acid prepared from ethanol? Give the chemical education?
17. Why is Archaeopteryx considered to be a connecting link?
18. a. Name the types of Stem Cells  
b. How are the Stem Cells useful in regenerative Process.
19. Define - Genetic Engineering
20. What are the Various routes by which transmission of human Immuno deficiency Virus takes place?

### Section - III

#### Answer the following Questions (Answer Three) Q.N 21 is Compulsory

[3x4=12]

21. A Source Producing a Sound of frequency 500 HZ is moving towards a listener with a velocity of  $30 \text{ ms}^{-1}$ . The speed of the sound is  $330 \text{ ms}^{-1}$ . What will be the frequency heard by listener?
22. a) What do you understand by the term ultrasonic vibrations?  
b) State two uses of ultrasonic vibrations.
23.  $_{88}\text{Ra}^{226}$  experiences three  $\beta$ -decay. Find the number of neutrons in the daughter element.
24. Give the balanced Chemical education of the following reactions.
  - i) Neutralization of NaOH With ethanoic acid
  - ii) Evolution of Carbon di Oxide by the action of ethanoic acid with  $\text{NaHCO}_3$
  - iii) Oxidation of ethanol by acidified Potassium dichromate
  - iv) Combustion of ethanol
25. Biofortification may help in removing hidden hunger. How?
26. What are the effects of hybrid vigour in animals.

### Section - IV

#### Answer the following Questions :

[2x7=14]

27. What is a nuclear reactor? Explain its essential parts with their functions.  
(or)  
Explain the types of double displacement reactions with examples.
28. How does fossilization occur in Plants?  
(or)  
Changes in lifestyle is a risk factor for occurrence of cardiovascular diseases. Can it be modified? If yes, Suggest measures for prevention?



Section I

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I. Choose the best answer

1. 20 Hz
2. None of these
3. 200 Mev
4. ii, iii, iv
5. Ethers
6. Fatty acid
7. J.W Harshberger
8. Atlas 66
9. Leukaemia
10. 200 mg/dl

II Section - II

ii. Frequency sound =  $\nu$   
 $\lambda = 0.20 \text{ m}$

Speed of sound  $v = \frac{c}{\lambda}$   
 $v = \frac{331}{0.20} = 1655 \text{ Hz}$

PREPARED BY : P.NIRMALA M.Sc.,B.Ed.M.Phil.  
K.KANCHANA B.Sc.,B.Ed.12. Doppler effect

Whenever there is a relative motion between a source and a listener, the frequency of sound heard by the listener is different from the original frequency of sound emitted by the source. This is known as "Doppler effect".

13.  $P^H = 4.5$

$P^{OH} = ?$

$$\boxed{P^{OH} + P^H = 14}$$

$$P^{OH} = 14 - 4.5$$

$$\boxed{P^{OH} = 9.5}$$

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## 14 Reversible Reaction

## Irreversible reaction

\* It can be reversed under suitable conditions

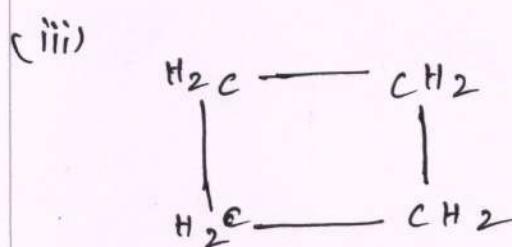
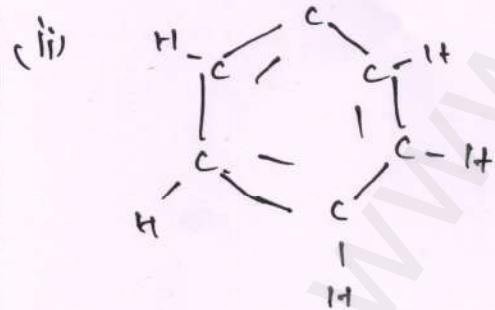
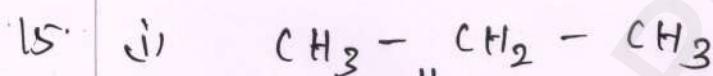
\* It cannot be reversed

\* It attains equilibrium

\* Equilibrium is not attained

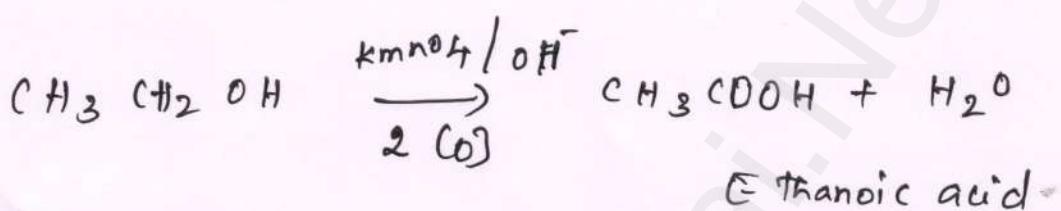
\* It is relatively slow

It is fast



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Q6 Ethanoic acid is prepared by the oxidation of ethanol in the presence of alkaline  $\text{KMnO}_4$  con acidified potassium di chromate



Q7 (i) Archaeopteryx is the oldest known fossil bird

(ii) It is considered to be a connecting link between reptiles and birds.

It had wings with feathers, like a bird. It had long tail, clawed digits and conical teeth, like a reptile.

Q8. (a) Embryonic stem cells, somatic stem cells

(b) Some times cells, tissues and organs in the body may be permanently damaged or lost due to genetic conditions (or)

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disease or injury.

(iii) In such situations stem cells are used for the treatment of diseases which is called Stem cell Therapy.

(iv) In treating neurodegenerative disorders like Parkinson's disease and Alzheimer's disease neuronal stem cells can be used to replace the damaged or lost neurons.

19. Genetic engineering is used manipulation and transfer of genes from one organism into another to create a new DNA called as recombinant DNA (rDNA).

20. (i) Sexual contact with infected person  
(ii) Use of contaminated needles or Syringes.



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- (iii) By transfusion of contaminated / infected blood or blood products
- (iv) From infected mother to her child through Placenta.

Section III

21. When the source is moving towards the stationary listener, the expression for apparent frequency is,

$$n' = \left( \frac{v}{\sqrt{1 - v_s^2}} \right) n$$

$$n' = \left( \frac{330}{330 - 30} \right) \times 500$$

$$\boxed{n' = 550 \text{ Hz}}$$

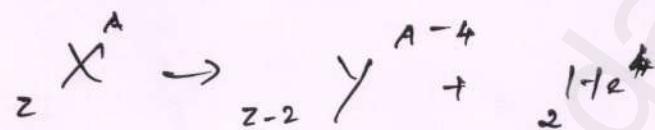
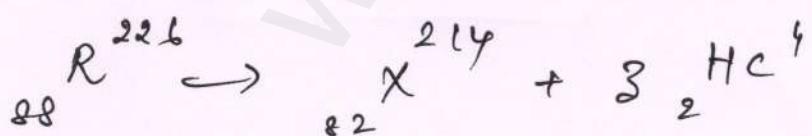
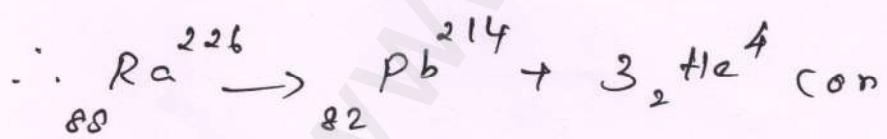
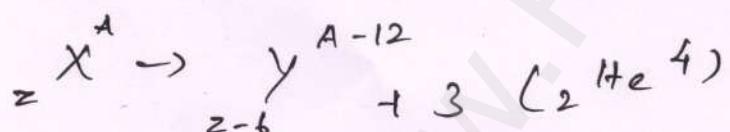
22. These are sound vibration with a frequency greater than  $20 \text{ kHz}$ . Human ear cannot detect these vibration (waves) but certain

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creatures like mosquito, bats can detect these waves.

- (b) \* To kill micro organisms
- \* To find direction and range of submarines.

23

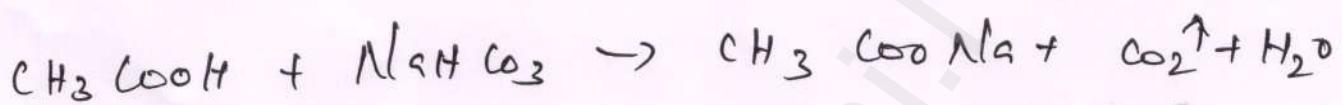
Soln: $\alpha$  - decay $\beta$   $\alpha$  - decay

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24. (i) Ethanoic acid reacts with Sodium hydroxide to form Sodium ethanoate and water

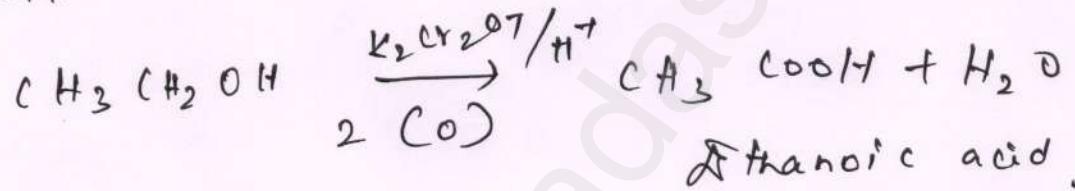


(ii) Ethanoic acid reacts with  $\text{NaHCO}_3$  and liberates  $\text{CO}_2$  with brisk effervescence



(iii) Ethanol is oxidized to ethanoic acid

with alkaline  $\text{KMnO}_4$  can acidified  $\text{K}_2\text{Cr}_2\text{O}_7$



(iv) Ethanol is highly inflammable liquid

It burns with oxygen to form  $\text{CO}_2$  and  $\text{H}_2\text{O}$



25 \* Hidden hunger is a chronic lack of vitamins and minerals that often has no visible warning signs. People who suffer

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from it may not even be aware of it.

\* This can lead to severe consequences Hidden hunger may lead to mental impairment, poor health and productivity can even death.

### Bio fortification

It is the scientific process of developing crop plants enriched with high levels of desirable nutrients like vitamins, proteins and minerals - some examples of crop varieties developed as a result of biofortified are given below

- (i) Protina, Shakti and Ratna are lysine rich maize hybrids
- (ii) Atlas 86, a protein rich wheat variety
- (iii) Iron rich fortified rice variety
- (iv) Vitamin A enriched Carrots, Pumpkin and Spinach.

### 26. Objectives of Animal Breeding.

Heterosis on Hybrid Vigour : The superiority

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of the hybrid obtained by cross breeding is called as heterosis or hybrid vigour.

Effects of hybrid vigour in animal breeding

- \* Increased Production of milk by cattle
- \* Increased Production of egg by Poultry
- \* High quality of meat is produced.
- \* Increased growth rate in domesticated animals

Cross breed of fowls:

white Leghorn X Plymouth Rock

Hybrid fowl - Yield more eggs

Cross breed of cows:

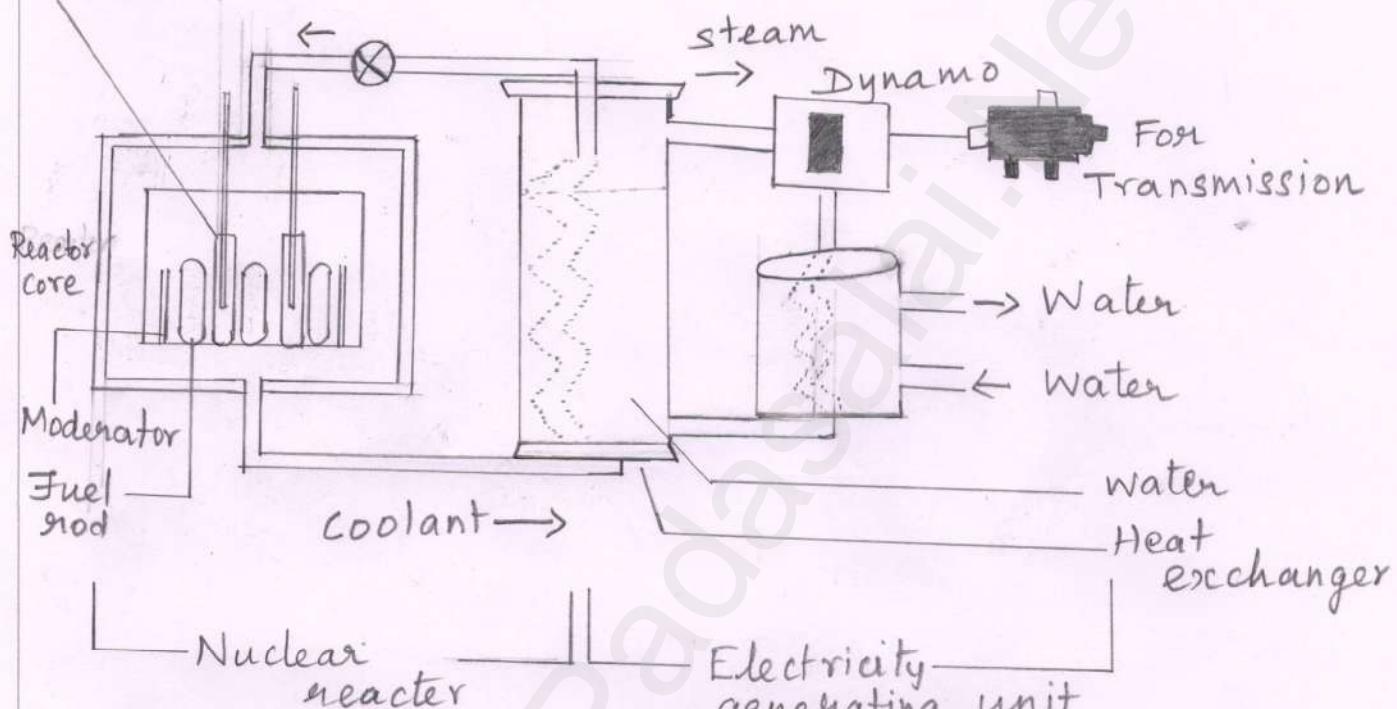
Developed by mating the bulls of exotic breeds and cows of indigenous breed. Brown Swiss X Sahiwal

Karen Swiss - Yield 2-3 times more milk than indigenous cows.

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## Section - IV

### 27. Nuclear reactor control rod



A Nuclear reactor is a device in which the nuclear fission reaction takes place in a self-sustained and controlled manner to produce electricity.

The essential components of a nuclear reactor are . (i) fuel, (ii) moderator (iii) control rod (iv) coolant & protection wall

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Fuel: A fissile material is used as fuel

The commonly used fuel material is uranium.

Moderator: A moderator is used to slow down the high energy neutrons to get slow gamma neutrons. Graphite and heavy water are the commonly used moderators.

Control rod: Control rods are used to control the number of neutrons in order to have sustained chain reaction. Mostly boron carb rods are used as control rods.

Coolant: A coolant is used to remove the heat produced in the reactor core to produce steam. This steam is used to run a turbine to produce electricity. Water, air and helium are some of the coolant materials.

Protection wall:

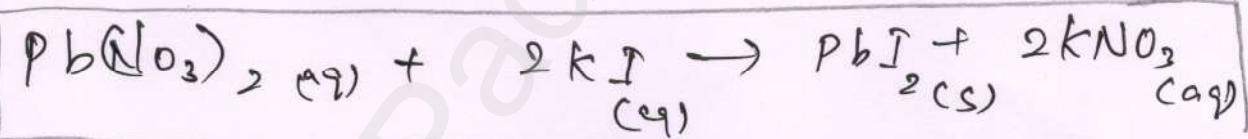
A thick concrete lead wall is built around the nuclear reactor in order to prevent the harmful radiation from escaping environment.

PREPARED BY : P.NIRMALA M.Sc., B.Ed.M.Phil.  
K.KANCHANA B.Sc., B.Ed.27) Double displacement reactions:-

There are 2 major classes of double displacement reactions

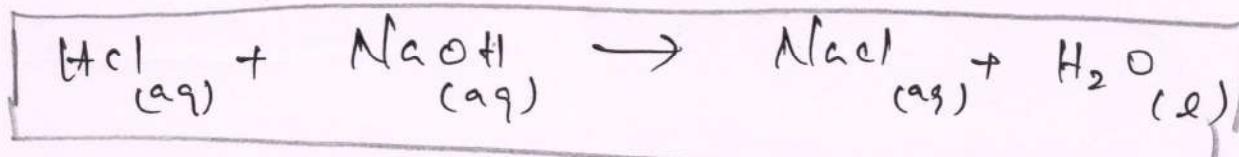
\* Precipitation and Neutralization Reactions

Precipitation reactions:- When aqueous solutions of two compounds are mixed, if they react to form an insoluble compound and a soluble compound, then it is called precipitation reaction.



\* Neutralization Reaction:- Acids

reacts with the base to form a salt and water. It is called neutralization reaction. as both acid and base neutralise each other.



Acid + Base  $\rightarrow$  Salt + water.

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28  
The process of formation of fossil in rocks is called fossilization.

Common methods of fossilization include:

- \* Petrification      \* Molds and cast
- \* Carbonization      \* Preservation
- \* Compression      \* Infiltration.

Petrification: Minerals like silica slowly penetrate in and replace the original organic tissue and forms a rock like fossil. This method of fossilization can preserve hard and soft parts. Most bones and wood fossils are petrified.

Mold and Cast:

- \* A replica of a plant or animal is preserved in sedimentary rocks.
- \* When the organism gets buried in sediment it is dissolved by underground water leaving a hollow depression called a mold.

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- \* It shows the original shape but does not reveal the internal structure.
- \* Minerals can sediment fill in the hollow depression and forms a cast.

### Preservation:-

- \* Original remains can be preserved in ice or amber.
- \* They protect the organisms from decay. The entire plant or animal is preserved.

### Compression:-

- \* When an organism dies -The hard parts of their bodies settle at the bottom of the sea bed and are covered by sediment.

- \* The process of sedimentation goes on continuously and fossils are formed.

### Infiltration:-

- \* The precipitation of minerals takes



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place which later on infiltrate the cell wall.

- \* The process is brought about by several mineral elements such as silica, Calcium carbonate and magnesium carbonate
- \* Hard parts are dissolved and replaced by these minerals

28) Cardiovascular diseases is associated with diseases of the heart and blood vessels.

The risk factors for coronary heart

diseases: Hypercholesterolemia and High blood pressure are the major causes.

If untreated it may cause severe damage to brain, kidney and eventually lead to stroke.

Causes: Diet rich in saturated fat and cholesterol heredity, Obesity increasing

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age, cigarette smoking, emotional stress, Sedentary life style, excessive alcohol consumption and physical inactivity are some causes.

Thus changes in life style are a important factor for the occurrence of heart diseases.

- (i) Eating healthy food rich in protein and Carbohydrates are avoiding junk food.
- (ii) Avoiding food items rich in cholesterol
- (iii) Avoid smoking, alcohol consumption
- (iv) Eating habit must be regular and food must not be compromised
- (v) Lot of fresh fruits and salads include in diet can help to healthy
- (vi) Regular medical test and Cholesterol level and related body function.