# STATE LEVEL SSLC PREPARATORY EXAMINATION,

# FEBRUARY- 2020

**SUBJECT : SCIENCE** **CODE : 83E**

**I.**

1. ( B ) . combination reaction
2. ( D ) . chemotropism
3. ( A ) . the distance between optical centre and principal focus
4. ( B ). $_{7}N^{14}$ and $_{4}Be^{9}$
5. ( D ) .medium A
6. ( A ) . wing of a bird and forelimb of a horse – Homologous organs
7. (C ) . -CHO
8. ( C ) . any one of the chromosome of Q gamete

**II.**

9. Plane mirror do not cover a larger area and always produces an image equall to the size of the object.

10. Ripening of fruit – ethylene, wilting of leaves – abscisic acid

11. $2HgS + 3O_2 \longrightarrow 2HgO + 2SO_2$
    $2Hgo \longrightarrow 2Hg + O_2$

12. Splitting of white light into its constituent colours is called dispersion of light.

13. The properties of the elements are periodic function of their atomic number.

14. In the test tube A slightly yellow colour or orange colour appears. This is because the enzyme salivary amylase present in the saliva converts starch

into simple sugars. iodine react with sugar to form slightly yellow colour or orange colour

15. The given compound is saturated carbon compound because it has single bond between carbon atoms

16. P=-2.0 D

It is a concave lens

P=1/f

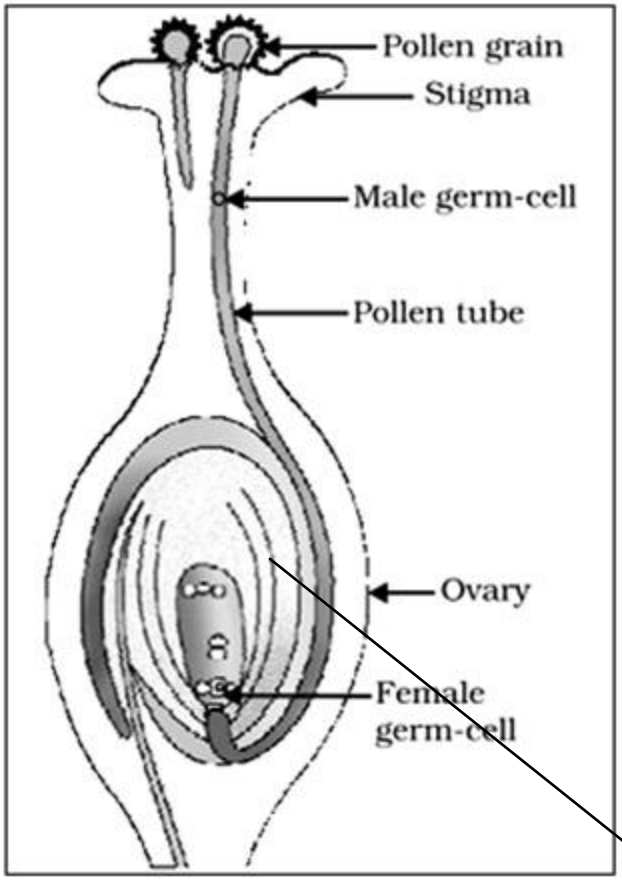
f=1/P

f=1/-2

f=-0.5 m

**III.**

17.




Here the fertilization occours

18. f= 50cm

u=-75 cm

v= ?

m=?

1/f=1/v-1/u

1/50=1/v -1/-75

1/50=1/v+1/75

1/v=1/50-1/75

1/v=1/150

v=150 cm

m=v/u

m=150/-75

m=-2

19. If a substance gains oxygen during a reaction is called oxidation reaction.

i) In the reaction aluminium is oxidized.

ii) In the reaction iron oxide is reduced.

iii) In the reaction aluminium is reducing agent.

**OR**

The reaction in which a single reactant breaks into two or more simpler products is called decomposition reaction.

When ferrous sulphate crystals are heated ferrous sulphate decompose into iron oxide,sulphur dioxide and sulphur trioxide.

$FeSO_4$ ----------> $Fe_2O_3 + SO_2 + SO_3$

20. Gastric juice contains hydrochloric acid creates an acidic medium. The food coming from the stomach is acidic and has to be made alkaline. Bile juice creates alkaline medium for the pancreatic enzymes to act. Bile salts break down large globules into smaller globules increasing the efficiency of enzyme action.

Hence the action of gastric juice and bile juice are complimentary to each other for efficient digestion in human beings.

**OR**

Organism B is autotroph and organism A is heterotroph.

Organism B is an autotroph prepares its own food and store the food in the form of starch.

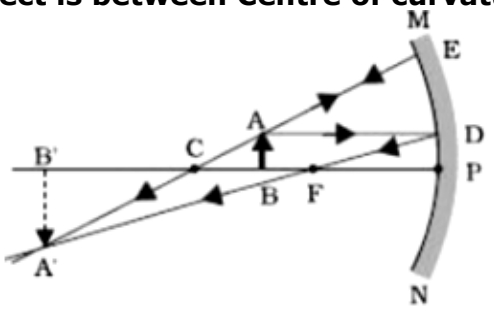
Organism A an heterotroph store the digested food in the form of glycogen

21. K, Na, Al, S

As the effective nuclear charge acting on the valance shell electrons increases across a period the tendency to lose electrons will decrease. Down the group the effective nuclear charge acting on the valance shell electrons decreases the tendency to lose electrons will increases.

Hence across the period electronegativity increases. Down the group electronegativity decreases

**22. When the object is between Centre of curvature and principal Focus:**




- Image is formed beyond C.
- It is enlarged, real and inverted

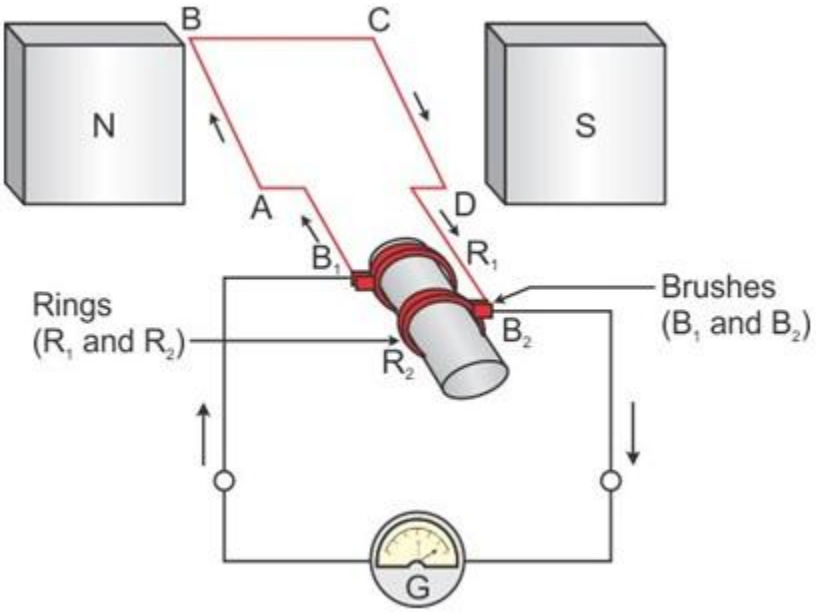
23. i) I turn off the taps during brushing teeth

ii)empty glass bottle is used to grow small plants and to keep water for birds

iii) I refuse the plastic bag or reuse the plastic bag

iv) recycle the plastic bucket

24.




## IV.

25.

| Natural eco system | Artificial ecosystem |
|---|---|
| Forest, lake | Crop field, aquarium |

Forest and lakes are naturaly made where as crop field and aquarium are man made

**OR**

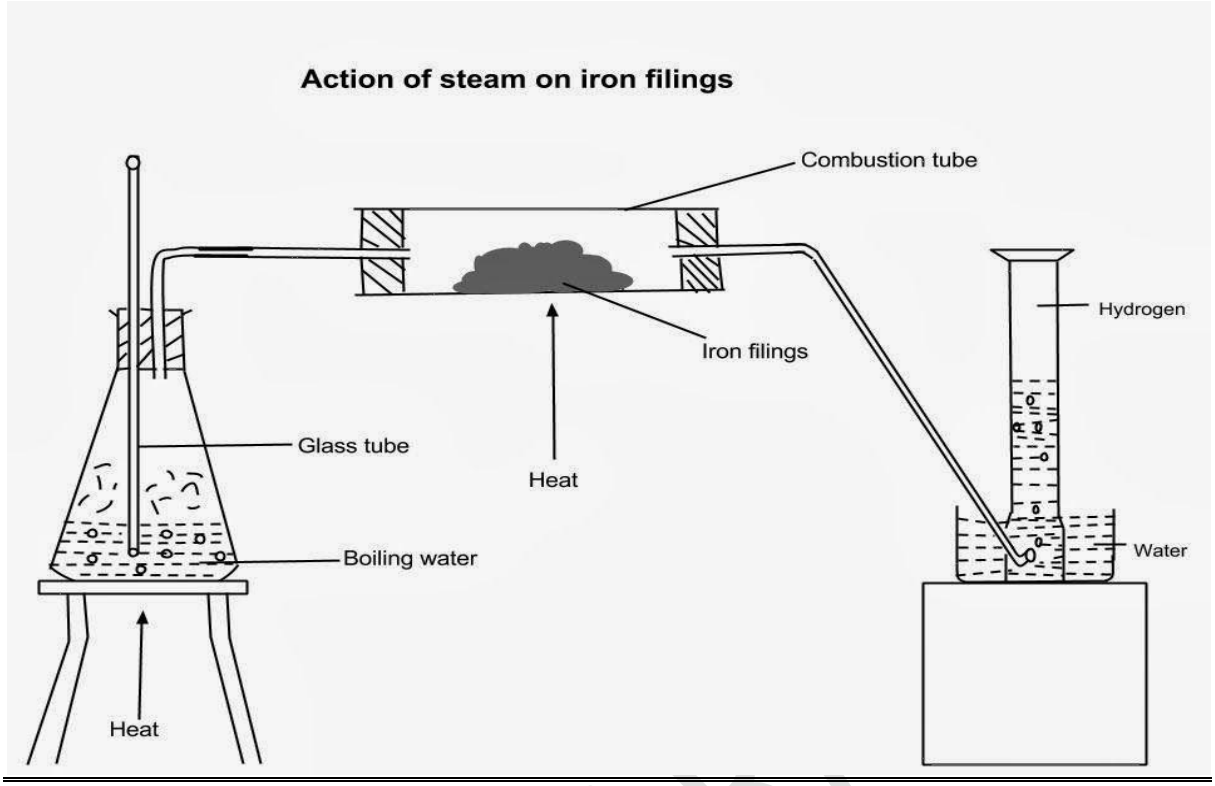
Non-bio-degradable wastes causes

1. Land, water, air pollution,
2. Biomagnifications,
3. Remain as permanent residues,
4. Harm various members of ecosystem.

The changed lifestyle increased this problem

1. We are using plastic for many purp[ses
2. We are using fertilizers and pesticides in large quantity
3. We are burning various materials which are releasing non-bio-degradable wastes
4. Use of ferfumes and aerosols

26.




27. R=20Ω

$R_1$= 10+ x

R2=25+75

R2= 100

20=R1 + R2

20=1/10+x + 1/100

X= 15 Ω

V=IR

I=V/R

I=6/15

I=0.4A

**OR**

R=5 Ω

l=1m

A= a sq units

⇨ R= ƒl/A

5=ƒ1/a

ƒ=5a

Now

l=4m

A=5a

R= ?

R=ƒl/A

$R = \frac{5a \times 4}{5a}$

R=4 Ω

28. **Ovary**: the female germ cells or eggs are produced in the ovaries. They also produce the harmone estrogen

**Oviduct:** where the sperm encounter the egg.

**Uterus:** the embryo is implanted in the lining of the uterus. Where the embryo grow and develop organs to become foetus.

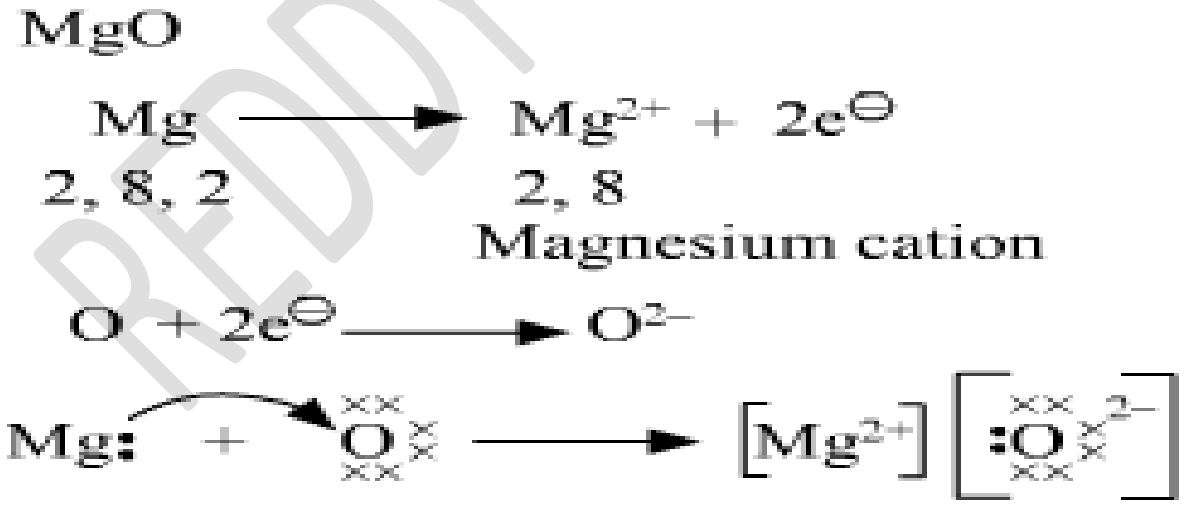
The essential materials are supplied for development of foetus with the help of special tissue called placenta.

29 Atomic number of B-12- Mg

Atomic number of M-17 – Cl

$Mg + Cl_2$ ----------> $MgCl_2$

Ionic bond is formed when a metal reacts with a non metal to form a salt.




30. When a person can't see the distant objects clearly is called as short sightedness or myopia.

This is due to

i)excessive curvature of the eye lens

ii)elongation of the eye ball.

Concave lens is used to correct this defect

Concave lens diverges the light rays coming from the object and bring the image back on to the retina.

31. a) Thyroid gland secrets thyroxin hormone. Thyroxin regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth.

b) pancreas secrets insulin directly into the blood which helps to maintain the sugar level in the blood.

**OR**

In the animals information is carried out by nervous system with the help of electrical impulses.

Plants use electrical-chemical means to convey the information from cell to cell. Plant cells change shape by changing the amount of water in them, resulting In swelling or shrinking and therefore changing the shapes. This is how plants respond to the stimuli

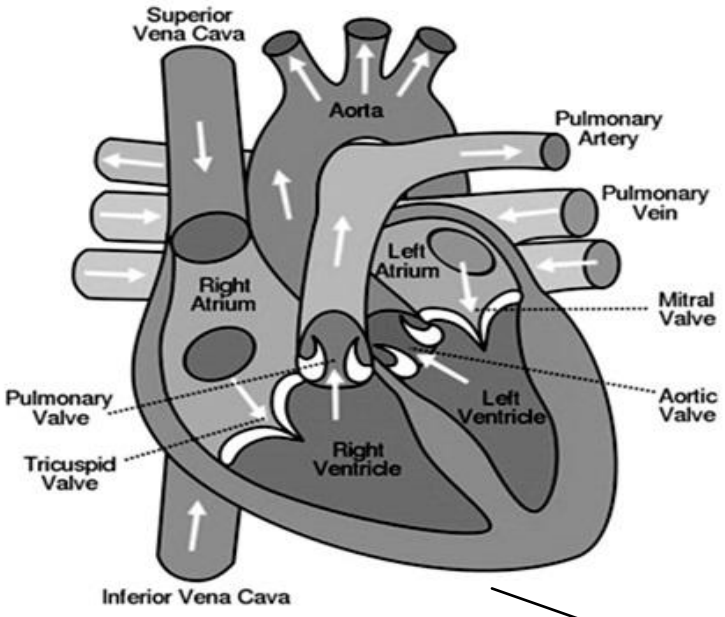
32. A slurry of cow-dung and water is made in the mixing tank from where it is fed into the digester. Digester is a sealed chamber in which there is no oxygen. Anaerobic micro-organisms that do not require oxygen decompose the cow dung slurry. The gases such as methane, hydrogen, carbon dioxide and hydrogen sulphide are generated after the completion of the decomposition. The bio gas is stored in the gas tank above the digester from which it is drawn through the pipe.

**OR**

Now a days use of solar cells are encouraged because,

1. they do not causes pollution and it is a clean fuel
2. they can be set up in remote areas
3. they have no moving parts, require little maintenance and work quite satisfactorily without the use of focusing device.
4. They are useful in radio, TV relay stations
5. It is a renewable and inexhaustible source of energy.

33.




septum : the wall that separates oxygenated and de-oxygenated blood

**V.**

34. a). The energy supplied to the circuit by the source in time t is p x t. that is VIt. This energy gets dissipated in the resistor as heat. Thus for steady current I, the amount of heat H produced in time t is

$H=VIt$

$H=I^2Rt$

**OR**

The heat produced in a resistor is directly proportional to the resistance, time for which the current flows through the resistor and square of the current.

$H=VIt$

$H=I^2Rt$

b) H=200J

t=1sec

R=8Ω

V=?

P=?

W=p x t

200=p x 1

P= 200 w

$P=V^2/R$

$V^2$=p x R

=200 x 8

=1600

V=40 v

35. The compound X is sodium bicarbonate ( $NaHCO_3$ )

Sodium bicarbonate is a major component of antacids because it neutralizes the excess hydrochloric acid present in the stomach.

Sodium carbonate can be obtained by heating sodium bicarbonate.

Recrystallisation of sodium carbonate gives washing soda.

$Na_2CO_3 + 10H_2O$ ----------> $Na_2CO_3.10H_2O$

**OR**

i) When dil.Hcl reacts with zinc hydrogen gas is liberated

Zn + dil.2HCl----------→ $Zncl_2 + H_2$

The gas liberated in the above reaction is passed through the soap solution. The bubbles are formed in the soap solution. Take a burning candle near a gas filled bubble. We observe the burning of hydrogen gas with a pop sound.

ii) When dil.Hcl reacts with zinc carbonate carbon dioxide gas is liberated

$ZnCO_3$ + dil.2HCl----------→ $Zncl_2 + H_2O + CO_2$

The gas liberated in the above reaction is passed through the lime water, lime water turns to milky due to the formation insoluble white precipitate of calcium carbonate .

36. a) Reasons for overloading are

1. When a live wire and neutral wire come into direct contact.
2. When a faulty appliance is connected in the circuit
3. When too many appliances are connected to a single socket.

Earth wire is necessary for the appliances with metallic body,

1. which provides a low resistance conducting path for the current.
2. It ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of earth.

3.The user may not get severe electric shock.

b) a strong magnetic field produced inside a solenoid can be used to magnetise a piece of magnetic material like soft iron placed inside the coil

**OR**

electromagnets are made by wounding large number of turns of the conducting wire in a current carrying coilon soft iron core.

The poles of the electromagnet can be tested with the help of magnetic compass

37. a)The tools that have been used for tracing evolutionary relationship of humans are

1.time dating

2.excavating

3.study of fossils

4. determining DNA sequence

b) Genes are responcible for control the charectorstics of tallness of a plant Tt in which T is dominant gene, t is recessive gene.

| gametes | T | t |
|---|---|---|
| T | TT | Tt |
| t | Tt | tt |

Phenotypic ratio 3:1

Among three are tall and one is dwarf

## VI.

38. When methane burns in air or oxygen to give carbon dioxide, water with the release of heat and light.

$CH_4 + O_2$ ----------> $CO_2 + H_2O$ + heat and light

Methane undergoes substitution reaction

In presence of sunlight, chlorine is added to methane. Chlorine replace hydrogen atoms one by one

$CH_4 + Cl_2$ ----------> $CH_3Cl + HCl$

Methane do not under go addition reaction because it is saturated hydrocarbon, the valency is fulfilled. Hence no more hydrogen or other atoms can be added