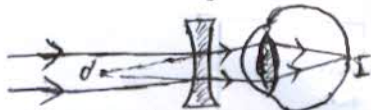


1. virtual image 1
3. More amount of Kinetic energy is formed by the ~~conversion~~ <sup>conversion</sup> of higher potential energy and this Kinetic energy in the form of moving water can produce more electrical power. 1+1
9. The imaginary lines representing magnetic field around a magnet are known as magnetic field lines 1
- (i) If two lines intersect, it means that force is acting in two directions at that point, i.e. there are two directions of the magnetic field at the point of intersection which is not possible 1
- (ii) The direction of field lines outside a magnet is from north pole to south pole while it is from south to north inside the magnet and thus forms closed curves 1
10. Diagram 1  
 factors (Any two) 1
11. Given,  $h = +7.0 \text{ cm}$ ,  $u = -27 \text{ cm}$ ,  $f = -18 \text{ cm}$
- using,  $\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$  or  $\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$  or  $\frac{1}{v} = -\frac{1}{18} + \frac{1}{27} = -\frac{1}{54}$  1
- $\therefore v = -54 \text{ cm}$
- So, the screen must be placed at a distance of 54 cm in front of the concave mirror 1/2
- Now,  $\frac{h_I}{h_o} = -\frac{v}{u}$  or  $h_I = -\frac{v}{u} \times h_o$  or  $h_I = \frac{54}{-27} \times 7$  or  $h_I = -14 \text{ cm}$  1
- Since,  $h_I$  is negative, so image is real and inverted 1/2
16. (a) Myopia or short-sightedness 1
- (b)  2
- (c) concave lens of suitable focal length 1
- (d) (i) Due to elongation of the eye ball (ii) due to excessive curvature of cornea 1
17. Let  $R$  = resistance of each bulb
- For series circuit,  $R_s = R + R + R = 3R$  1/2
- Power consumption of each bulb in series combination,
- $$P_{\frac{1}{3}} = I^2 \times R_s$$
- $$\text{or, } P_{\frac{1}{3}} = \left(\frac{V}{3R}\right)^2 \times 3R$$
- $$\text{or, } P_{\frac{1}{3}} = \frac{V^2}{3R}$$
- 1

For Parallel circuit,

voltage across each bulb =  $V$

∴ power consumption of each bulb in parallel combination,

$$P_2 = \frac{V^2}{R}$$

Now,  $\frac{P_2}{P_1} = \frac{V^2/R}{V^2/3R} = 3$

or,  $P_2 = 3P_1$

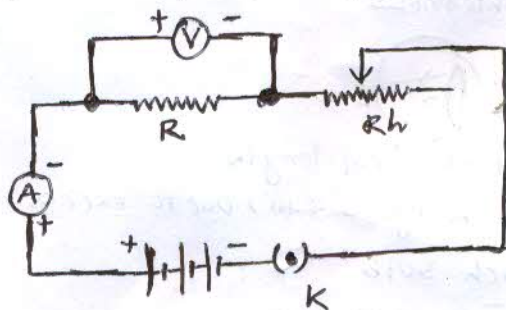
Thus, each bulb in parallel combination glows 3 times brighter to that of each bulb in series combination.

(ii) When one bulb get fused in both the circuit, then in series combination, circuit get broken and current stops flowing whereas in parallel combination, same voltage continue to act on the remaining voltage and hence other bulb continue to glow with same brightness.

22. When key is inserted, the magnetic field is produced due to the current in the coil. The emf is produced in the second coil due to change in magnetic lines of forces passing through the second coil.

When key is removed, again the magnetic lines of force will decrease and the direction of induced current will be reversed so that the galvanometer will show deflection in opposite direction

23. circuit diagram (for verification of ohm's law) —





**MARKING SCHEME (CHEMISTRY)**

2. Name of the alcohol – Propanol [1]  
Structural formula
4. Silver jewellery tarnishes in air due to the formation of black silver sulphide (Ag<sub>2</sub>S) on its surface due to attack by H<sub>2</sub>S gas present in the air. [1]  
Chemical reaction involved-
- $$2\text{Ag(s)} + \text{H}_2\text{S} \rightarrow \text{Ag}_2\text{S(s)} + \text{H}_2\text{(g)} \quad [1]$$
- (Black)
6. Zinc metal reacts with dilute solution of strong acids to give H<sub>2</sub> gas.  
Chemical reaction involved-
- $$\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2 \quad [1]$$
- Name of the gas evolved – H<sub>2</sub> gas [1]  
H<sub>2</sub> gas is tested by bringing a lighted candle when it burns with a popping sound. [1]
7. It's electronic configuration: K L M [1]  
2 8 2
- Reaction involved when it burns in the presence of air: [1]
- $$2\text{Mg} + \text{O}_2 \xrightarrow{\text{Heat}} 2\text{MgO}$$
- Electron dot structure for the formation of its oxide. [1]
8. Isomers – Definition [1]  
Structures of the isomers of pentane – n-pentane, iso-pentane, neo-pentane. [2]
18. a) \*Tetravalency [1]  
\*Property of catenation [1]  
b) Compound X- Ethanol (C<sub>2</sub>H<sub>5</sub>OH) [1]  
Compound Y- Ethanoic Acid (CH<sub>3</sub>COOH)  
Chemical reaction involved:
- $$\text{C}_2\text{H}_5\text{OH} + 2[\text{O}] \xrightarrow{\text{Acidified K}_2\text{Cr}_2\text{O}_7, \text{Heat}} \text{CH}_3\text{COOH} + \text{H}_2\text{O} \quad [1]$$
- c) Definition- Soap [1]  
Advantage of soap over synthetic detergent – it is biodegradable in nature. [1]  
Disadvantage of soap over synthetic detergent – has a poor cleansing ability in hard water. [1]
19. a) Balanced chemical equation: [1]
- $$\text{C}_2\text{H}_5\text{OH} \xrightarrow{\text{Conc. H}_2\text{SO}_4, 443\text{K}} \text{C}_2\text{H}_4 + \text{H}_2\text{O}$$
- Name of the main product – Ethene [1]  
Role of conc. H<sub>2</sub>SO<sub>4</sub> – Acts as a dehydrating agent.
- b) Products formed when ethane is burnt in air – Carbon dioxide and Water. [1]  
Balanced Chemical equation:
- $$\text{C}_2\text{H}_6 + \frac{7}{2}\text{O}_2 \xrightarrow{\text{Heat}} 2\text{CO}_2 + 3\text{H}_2\text{O} + \text{Heat \& Light} \quad [1]$$
- c) CH<sub>4</sub> + Cl<sub>2</sub>  $\xrightarrow{\text{sunlight}}$  CHCl<sub>3</sub> + HCl [1]
24. X- Sodium bicarbonate (NaHCO<sub>3</sub>)  
Y- Carbon dioxide (CO<sub>2</sub>)  
Z- Calcium hydroxide [Ca(OH)<sub>2</sub>]  
• When excess of CO<sub>2</sub> gas is passed through the solution of Ca(OH)<sub>2</sub>, then the milkiness disappears due to the formation of calcium bicarbonate [Ca(HCO<sub>3</sub>)<sub>2</sub>]. [2]
25. Br<sub>2</sub> Water Test: Reaction with Saturated hydrocarbons – No reaction. [2]  
Unsaturated hydrocarbons – Reddish brown colour of bromine is discharged ( it becomes colourless).

**MARKING SCHEME; Sub- Biology ;( PERIODIC TEST -3);Date -26<sup>th</sup>Dec 2017; MM.28**

**5Ans.** Placenta is a disc like structure embedded in the uterine wall.It contains villi on the embryo's side of the tissue.On the mother's side there are blood spaces ,which surround villi.

Functions of placenta:- i) It provides nutrition to the embryo from mother's blood. (ii) It also helps to remove waste substances of embryo through mother's blood. [1+1=2]

**12 Ans.** Attached ear lobes of an individual is an inherited trait and gaining of body weight ( 65 kg) is an acquired trait. As we know that the trait which is passed from parents to the offspring is called inherited trait and the trait which an individual obtains in his/her life time is called an acquired trait. Attached ear lobes of an individual present since birth and body weight he/she gains during life time. [1+2=3]

**13 Ans.** The process by which sex of a newborn individual is determined is called sex determination.

In human beings, there are 23 pairs of chromosomes,out of which 22 pairs are autosomes and one pair is sex chromosome.A male has one X chromosome and one Y chromosom, but a female has two X chromosomes. If an egg is fertilized by X chromosome containing sperm results in a zygote with ( 44 +XX) chromosomes and will be a girl child and if the egg fertilizes with Y chromosome carrying sperm,zygote with ( 44+ XY) chromosomes will be a male child.

<b>Parents</b>	Female (44+XX)		Male ( 44 +XY)
<b>Gametes</b>	(22 +X)      (22 +X)	X	(22 +X)      (22 +Y)
	[ ova]		[sperms]

	<b>22 +X</b>	<b>22 +Y</b>
<b>22 +X</b>	44 +XX (female child)	44 + XY (male child)
<b>22 +X</b>	44 +XX (Female child)	44+XY (male child)

( Fig - Sex determination in human beings)

[3]

**14 Ans.** Ecosystem- It is a self contained ecological system which consists of a distinct biotic community and the physical environment,both interacting and exchanging materials between them. It is a structural and functional unit of biosphere.

ifferences between natural and artificial ecosystem:-

Natural ecosystem- It is developed in nature without human support ,ex - desert, grassland, lake etc.

Artificial ecosystem - It is created and maintained by human beings. Ex- aquarium, garden etc.

[1+2=3]

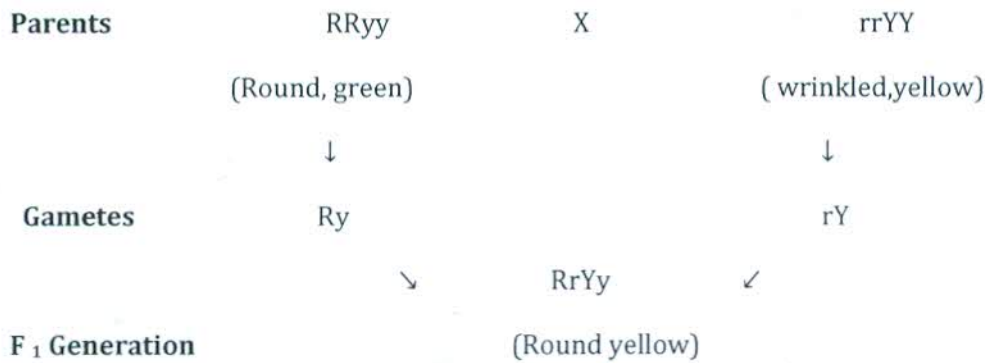
**15 Ans.** Biomagnification - The increase in concentration of a chemical per unit weight of the organisms with successive rise in trophic level is called biomagnifications. (page 1 of 2)



Reuse is the repeated use of an article till it gets broken or damaged. Reuse is better than recycling as recycling uses some amount of energy. / Or any relevant ans. [2+1=3]

**20 Ans.** Difference between Monohybrid and Dihybrid cross - Refer NCERT book pg no. 144

**Dihybrid cross :-**



**By self fertilization** ♀ ↓ ♂ →

Gametes	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

**Phenotypic Ratio in F<sub>2</sub> generation- 9:3:3:1**

( 9round yellow;3round green;3wrinkled yellow;1 wrinkled green)

**[2+3=5]**

**21a) Ans. Reflex action-** It is a nerve mediated ,autonomic ,involuntary and spontaneous response to a stimulus, acting on a specific receptor without consulting the will.

**Reflex arc** - The pathway taken by a stimulus to travel from receptor organ to effector organ is known as reflex arc. Its components are- Stimulus → Receptor organ → sensory neuron → CNS → motor neuron → effector organ → response

For fig- Refer NCERT book- pg no. 117 (fig 7.2)

**21b) Pituitary gland** is known as master gland because a number of its secretions control the functioning of other endocrine glands.

Pituitary gland secretes Growth hormone (GH), STH, MSH, Oxytocin etc.

**[ 3 +2=5]**

**26 Ans.** Given figure depicts the experimental set up, to show that light is necessary for photosynthesis.

A- Water in water bath; B- alcohol ; C - leaf which is to be tested for the presence of starch. (stored during photosynthesis) [

**27 Ans.** Given figure shows analogous organs, as they have different structures and origin, but perform common function. [2

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**(page 2 of 2)]**