

CSSC 2019-2020

SCIENCE-086

ANSWER KEY

SET 1

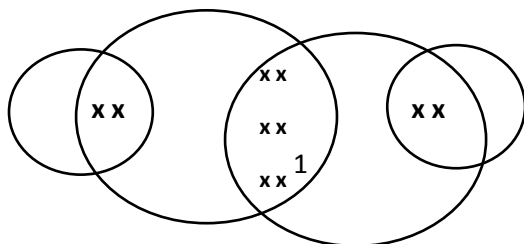
1. Option D- Burns with a 'pop' sound. 1
2. Option C- I and II 1
3. a) A black surface absorbs more heat as compared to white or a reflecting surface under identical conditions. 1
- b) In A.C generator if the slip rings are converted into split rings. 1
- c) Kamuthi solar power plant 1/2
648mw. 1/2
- d) used in space satellites, calculators etc. (any two) 1
- 4 a. Student X is extremely tall, student Y is extremely short and student Z is (1X4)
Showing normal height for the age.
- b. Growth hormone
- c. Pituitary gland
- d. student X Giants (giantism) and student Y dwarfs (dwarfism)
5. (a) ciliary muscles or (d) all of the above 1
6. (c) $R_3 > R_2 > R_1$ 1
7. option(d) workdone
Current X time 1
8. Pynes(or) recycle
- 9.Option D- Calcium hydroxide 1
- 10.Heating sulphide ore in excess of air. 1
- 11.Catenation and tetravalency. 1
- 12.Option C- III & IV 1
Or
Option B- Lead and tin
- 13.Option I 1
14. Option III

SECTION B

15. The reaction in which exchange of ions takes place between the two reactants. 1
- ii) $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \longrightarrow \text{BaSO}_4 \text{ (ppt.)} + 2\text{NaCl}$ 1
- iii) BaSO_4 is the precipitate formed. 1

16.a) Ethyne is an unsaturated compound, which on heating with air, undergoes incomplete combustion and does not produce high temperature for the purpose of welding. Hence it is heated with oxygen where complete combustion takes place and high temperature for welding. 1

b)



c) C_nH_{2n-2}

1

(or)

- a) When an iron nail is dropped in Copper sulphate solution, Copper gets deposited on the iron nail and it changes to brownish in colour. As iron is more reactive, it displaces copper from copper sulphate and the solution changes its colour to sea green (from blue) 1
- b) It is a single displacement reaction. 1
- c) $CuSO_4 + Fe \longrightarrow FeSO_4 + Cu$ 1

17.a) They have lustre and are malleable in nature. So they are used to make jewellery. 1

b) Na, K, Li are highly reactive and when exposed to air, they catch fire. To prevent from accidental fires, they are stored under oil. 1

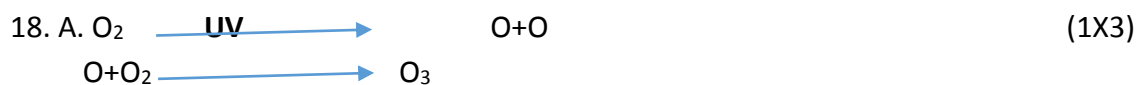
c) The direct reduction of carbonate and sulphide ores to obtain metals is usually not possible. The carbonate and sulphide ores are first converted into metal oxides because it is much easier to reduce metal oxides to obtain metals. 1

18 a. diagram text book pg. 259 fig 15.4 (1X3)

b. (i) the flow of energy is unidirectional. The energy that is captured by autotrophs does not revert to the solar input and the energy which passes to the herbivores does not come back to autotrophs. As it moves progressively through the various trophic levels, it is no longer available to the previous level.

(ii) Energy available at each trophic level gets diminished progressively due to loss of energy at each level.

OR



B. Ozone shields the surface of the earth from ultra violet radiations of the sun. This radiation is highly damaging to organisms. For example, it is known to cause skin cancer in human beings.

C. In 1987 UNEP succeeded in forging an agreement to freeze CFC production at 1986 levels. It is now mandatory for all manufacturing companies to make CFC free refrigerators throughout the world.

19. A. The following events occur during photosynthesis

- | | |
|---|---|
| (i) Absorption of light energy by chlorophyll. | ½ |
| (ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen. | 1 |
| (iii) Reduction of carbon di oxide to carbohydrates. | ½ |

B. desert plants take up carbon di oxide at night and prepare an intermediate which is acted upon by the energy absorbed by the chlorophyll during day.

1

20. Draw schematically Mono hybrid cross. 1 1/2

Phenotypic ratio F1 generation 100% yellow seeds. 1/2

Phenotypic ratio F2 generation 3:1 Yellow: green 1/2

Genotypic ratio for F2 generation 1:2:1` (YY:Yy:yy) 1/2

21. Any appropriate activity explaining hydrotropism. 3

22. (a) $i = r = 0$ 1

(b) Laws of refraction (refer book) pg. No. 174 1

(c) Refracted ray in medium I deviates less than that of medium II.

Hence, medium I is denser.

23. a) Solenoid - page 229 ½

Drawing field lines (refer book) (page 229) 1

b) n - no. of turns per unit length, I current 1

c) When a soft iron core is placed inside the coil ½

24.a) Rainbow formation ½

Two conditions (refer book) page no. 194 ½

b) Refraction, dispersion, total internal reflection 1

c) Diagram refer page 194 1

(or)

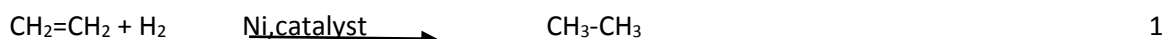
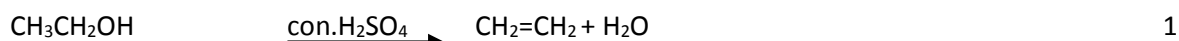
a) Myopia ½

b) Two causes (refer book page no. 189) ½

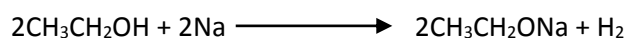
c) Diagram for defective eye and correction (Pg. No.189)

25. P - Ethanol Q- Ethene R – Ethane

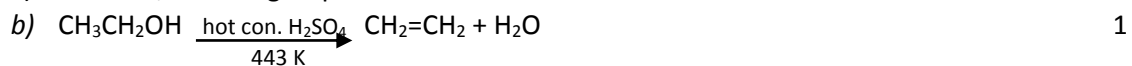
1 + 1 + 1 = 3



(OR)



a) Ethanol, Alcohol group 2



c) Dehydration of ethanol 1

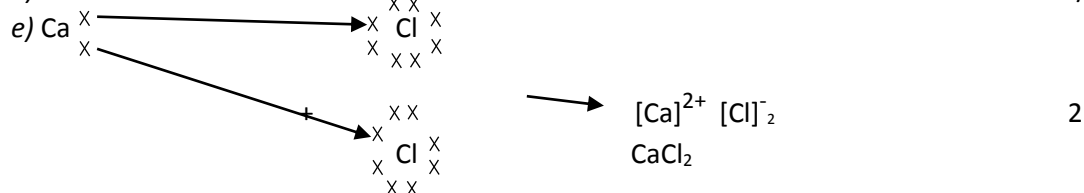
d) Dehydrating agent 1

26.a) X is placed in 17th group and 3rd period in the modern periodic table. Y is placed in 2nd group and 4th period in periodic table. 1

b) X is a non-metal. Y is a metal. 1

c) Basic oxide. 1/2

d) Ionic bond. 1/2



27. (i) Glomerulus (1x5)

(ii) Branch of renal artery

(iii) Tubular part of nephron

(iv) urea, uric acid and water

(v) The amount of water reabsorbed depends on

(a) How much excess water is there in the body.

(b) How much of dissolved waste there is to be excreted.

28. (i) diagram pg no:131 fig 8.4 3

Hydra uses regenerative cells for reproduction in the process of budding. In hydra a bud develops as an outgrowth due to repeated cell division at one specific site. These buds develop into tiny individuals and when fully mature, detach from the parent body and become new independent individual.

(ii) The consistency of DNA copying during reproduction is important for the maintenance of body design features that allow the organism to use that particular niche. 1

(iii) In sexual reproduction, organisms have special lineage of cells, in specialized organs in which only half the number of chromosomes and half the amount of DNA as compared to the non-reproductive body cells. This is achieved by a process of cell division called meiosis. Thus when these germ cells from two individuals combine during sexual reproduction to form a new individual it results in re-establishment of the number of chromosomes and the DNA content in the new generation. 1

Or

Syphilis, gonorrhoea-bacterial disease, HIV-AIDS, Warts-viral disease 1+ 1

Barrier method, chemical method, surgical method, instrumental method (any three methods with explanation) 3

29) a) Writing Joules law ½

Statement and mathematical expression 1

b) given max power $P = 18 \text{ W}$

max current in 2 ohm resistor

$$P = I^2 R \quad (\text{or}) \quad I^2 = P / R$$

$$I^2 = 18/2 = 9A$$

$$I = 3A$$

1

Resistors 2Ω and 2Ω are in parallel combination, so the current 3A will be distributed equally $I_1 = I_2 = 1.5A$ ½

c) (i) tungsten ½

high melting point , high resistivity 1

ii)electric cables – less resistance.

Filament of tungsten – high resistance ½

Since $H = I^2 R t$, the heat produced in electric cables will be lesser than in a filament.

30. a) (i)concave mirror ½

(ii)convex mirror ½

b) Ray diagram I

concave mirror --- object at infinity 1

Ray diagram II (Pg.No.166 & 167)

Convex mirror --- object between infinity and pole 1

c) $u = -18\text{cm}$ $v = 4\text{cm}$ $f = ?$

$$f = = 5.14\text{cm} \quad \frac{1}{2}$$

as f is + convex mirror ½

virtual, erect ½

$$m = v/u = 4 / 18 = 2/9 = 0.22 \text{ cm} \quad \frac{1}{2}$$

(OR)

a) (i) Bet F_1 and $2F_1$ ½

(ii) Bet O and F_1	$\frac{1}{2}$
b) Ray diagrams	
object between F_1 and $2F_1$	1
object between O and F_1	1
refer page no. 180	
c) $u = -10\text{cm}$ $v = 20\text{cm}$	
substituting $f = 6.67\text{cm}$. + sign convex	1
$m = \frac{h_i}{h_o} = \frac{v}{u}$	
$\frac{h_i}{2.5} = \frac{20}{-10} = -5\text{cm}$	
$h_i \times -10 = 2.5 \times 20$	
$h_i = -5\text{cm}$	1
It is converging.	

SET II

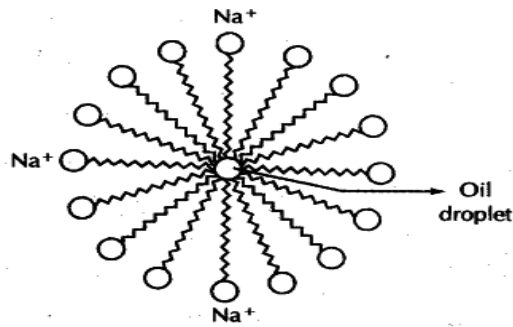
1. (a) hydrogen	1
2. (d) burns with a pop sound	1
8. (or) (ii) It acts as breeding ground for mosquitoes	1
9. Option B- Mercury	1
10. Heating Carbonate ore in limited supply of air.	1
15. a) A reaction in which both oxidation and reduction takes place is called a redox reaction.	1
b) 1. Substance oxidised is C	$\frac{1}{2}$
2. Substance reduced is ZnO	$\frac{1}{2}$
3. Oxidizing agent is ZnO	$\frac{1}{2}$
4. Reducing agent is C	$\frac{1}{2}$
19. same as 21 in set1	
21. same as 19 in set 1	
22.a) electric motor	$\frac{1}{2}$
b) diagram of electric motor page 232	1
c) A current carrying conductor placed in a magnetic field experiences a force	1
rule – Fleming’s left hand rule	$\frac{1}{2}$
23. same as 22 in set 1	
27. (i) Kidney	1
(ii) Urinary Bladder	1
(iii) Urea, Uric Acid, Water	1
(iv) Any two points (pg.no 112)	2

29 a) Ohm's law	½
Statement and mathematical expression	1
b) i) 10Ω and 20Ω are in series , $10 + 20 = 30\Omega$ 5Ω and 25Ω are in series, $5 + 25 = 30\Omega$ 30Ω and 30Ω are in parallel, $1/30 + 1/30 = 2/30, R_p = 15\Omega$	½
ii) Finding current , $I = V/R_p = 12/15 = 0.8\text{ A}$	1
iii) current through 10Ω resistor	
total current = 0.8 A , $V = 12\text{V}$	
current through 10Ω , $I = V/R = 12/30 = 0.4\text{ A}$	½
As they have 30Ω , current distributes equally ,so the current through $10\Omega = 0.4\text{ A}$	½
c) two points refer page 215	1

ALL THE OTHER ANSWERS AND QUESTIONS ARE SAME AS SET 1

SET III

1. Option C – 16	1
8. (OR) (ii) khejri trees	1
10. as 11 in set 1	
11. as 10 in set 1	
15. as 17 in set 1	
17. as 15 in set 1	
19. as 20 in set 1	
20. as 19 in set 1	
23. a) electric generator	½
b) Diagram refer page no. 236	1
c) Principle – electromagnetic induction	½
rule – statement of Fleming's right hand rule (refer pg. no. 235)	1
26. a. Soaps are sodium or potassium salts of long chain carboxylic acids.	½
Detergents are sodium salts of sulphonic acids or ammonium salts with chloride or bromide ions.	½
Soaps are less effective in hard water.	½
Detergents are effective in both hard and soft water.	½
b. Soap molecule has a hydrophilic part (water soluble) and a hydrophobic part (oil soluble). Most of the dirt is oily in nature. The ionic end of soap dissolves in water while the carbon end of the soap will attach the dirt. Soap molecules thus form structures called micelles. The hydrocarbon chain is towards the dirt and ionic end faces outside. This forms an emulsion in water. The micelles help in removing dirt from fabric.	2
	½



- c) Detergents are generally non-biodegradable, cause water pollution. Hence their excessive use is discouraged. 1/2
- 27.(i) Ureter 1
(ii) Urethra 1
(iii) Explanation (pg.no:111) 3
29. a) Definition of resistance 1/2
Naming and definition of unit 1/2
b) i) if the length is doubled, R also becomes doubled 1/2
ii) if the radius is doubled, area $(2r)^2$ becomes 4 times
then resistance becomes 1/4 1/2
c) i) total resistance in arm CE $(2+4)\Omega=6\Omega$ 1/2
ii) CE and AB are parallel effective resistance $R = 3\Omega$
total current $I = 1A$ 1
iii) Resistance of CE and AB is same = 6Ω
So current in each arm $I = 0.5 A$ 1/2
d) two points refer page no. 215 1

ALL THE OTHER ANSWERS AND QUESTIONS ARE SAME AS SET 1