

A.P. SET CODE
A

MT - W

2017 __ __ 1100 - MT - W - SCIENCE & TECHNOLOGY (72) - II - SET - A (E)

Time : 2 Hours

Preliminary Model Answer Paper

Max. Marks : 40

A.1.	(A) Answer the following sub-questions :	
(1)	Fill in the blanks and rewrite the complete statements : Liver is the largest gland in the body.	1
(2)	Find the odd man out : Vas deferens : It is a male reproductive organ whereas others are female reproductive organs.	1
(3)	State whether the following statements are true or false and if false, write the correct statement : False - Aquatic animals breathe at a faster rate than the terrestrial animals.	1
(4)	Complete the analogy : rr : Homozygous :: Rr : Heterozygous.	1
(5)	Name the following : Magnesium and Manganese.	1
A.1.	(B) Rewrite the following statements by selecting the correct options :	
(1)	H ₂	1
(2)	In Hydra the type of reproduction is Budding.	1
(3)	A solution of Al ₂ (SO ₄) ₃ in water is not clear. It is due to hydrolysis of Al₂(SO₄)₃ in water.	1
(4)	Fermentation is a type of anaerobic respiration.	1
(5)	Acetic acid is pale yellow in colour.	1

A.2. Answer the following subquestions : (any five)

(1)

Voluntary movements	Involuntary movements
(i) Movements which are under our control are called voluntary movements. (ii) Voluntary move-ments require thinking. (iii) Voluntary move-ments are controlled by cerebrum. (iv) e.g Moving a table, kicking a ball, walking, clapping hands etc.	(i) Movements which are not under our control are called involuntary move-ments. (ii) Involuntary move-ments do not require thinking. (iii) Involuntary move-ments are controlled by midbrain and hindbrain. (iv) e.g. Blood flow, breathing, sneezing etc.

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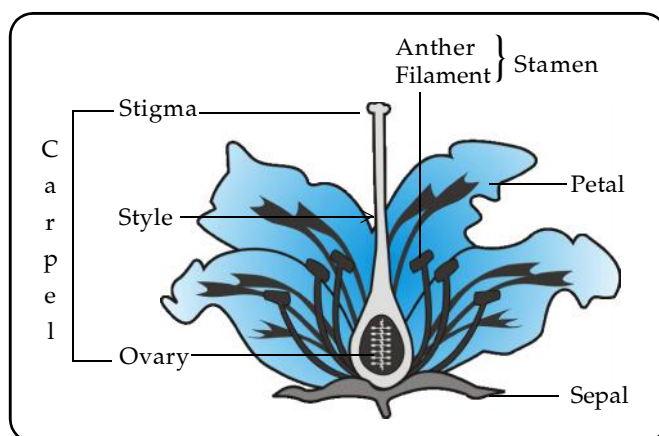
(2)

Connecting links :

- (i) Organisms referred to as 'connecting links' are those which are structurally intermediate between two different groups.
- (ii) Connecting links can be found among organisms that are still living.
- (iii) e.g.:
 - (a) 'Peripatus' has segmental nephridia, thin cuticle and parapodia - like appendages as in Annelida. At the same time it has trachea and open circulation as in Arthropoda.
 - (b) The duck-billed platypus lays eggs like reptiles and has hair and mammary glands like mammals.
 - (c) Lung fish, though a fish, breathes air through its lungs.
 - (iv) These organisms point strongly to the fact that mammals have evolved from reptiles and amphibia from fishes.

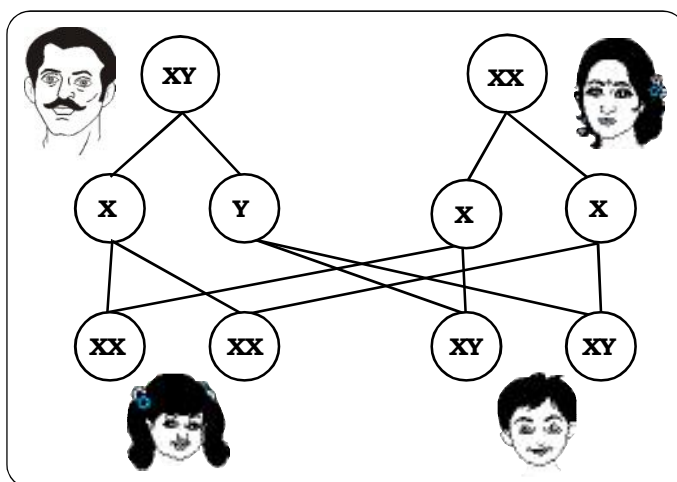
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(3)

Longitudinal section of flower :

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(4)	<p>(i) Hormones are secreted by endocrine glands or ductless glands.</p> <p>(ii) These glands do not have any duct to store or transport their secretions.</p> <p>(iii) Thus, on production these hormones are directly released into the blood stream.</p> <p>(iv) Due to this, the hormones reach everywhere in the body, though the gland secreting them is located in a particular place.</p>	2
(5)	<p>Measures to conserve water:</p> <p>(i) Close the taps whenever they are not in use. The leaking taps should be fixed to avoid wastage of water.</p> <p>(ii) Rain water harvesting and recycling of used water.</p> <p>(iii) Use of bucket instead of shower during bath.</p>	2
(6)	<p>Organs which are fundamentally unlike but similar in function are termed as analogous organs. e.g.:</p> <p>(i) Tail fin of a lobster and flukes of a whale.</p> <p>(ii) Wings of fly and wings of a bird.</p> <p>(iii) Eyes of arthropods and vertebrates.</p>	2
Q.3.	Answer the following subquestions : (any five)	
(1)	<p>When a copper coin is dipped in silver nitrate solution, the solution becomes blue and shining while silver metal is deposited on the copper coin. In this reaction, copper displaces silver forming copper nitrate and silver metal.</p> $\text{Cu}_{(s)} + 2\text{AgNO}_{3(aq)} \rightarrow \text{Cu}(\text{NO}_3)_{2(aq)} + 2\text{Ag}_{(s)}$ <p style="text-align: center;">Copper Silver nitrate Copper nitrate Silver</p> <p>The type of reaction is displacement reaction.</p>	3
(2)	<p>(i) Sex determination in human beings is genetical.</p> <p>(ii) One pair of chromosomes decides the sex of the individual. This pair is referred to as sex-chromosome.</p> <p>(iii) In human beings, there are 46 chromosomes or 23 pairs out of which 22 are autosomes and 1 pair is sex chromosomes.</p> <p>(iv) In human males two dissimilar chromosomes are present, longer 'X' and shorter 'Y'.</p> <p>(v) In human females two similar longer 'X' chromosomes are present.</p> <p>(vi) The chance for the child being a male or female is 50 percent.</p> <p>(vii) All children inherit 'X' chromosome from their mother.</p> <p>(viii) Thus the sex of the offspring is determined by the chromosome that they inherit from their father. If it is 'X' then the offspring will be a daughter and if 'Y' then it will be a son.</p>	3



- (3) **Reflex action :**
- (i) Any sudden change in response to some happening in the environment, is called as reflex action.
 - (ii) We react to such a situation without thinking about it or without feeling in control of our reactions.
 - (iii) Example : When we touch a vessel containing very hot tea, immediately the hand is withdrawn.
 - (iv) In this case, the nerves that detect pain are connected to the nerves that bring about the action of the muscle, hence the action is completed quickly.
 - (v) Nerves from all over the body meeting in a bundle in such a connection is called as the spinal cord.
 - (vi) Hence reflex arcs are formed in the spinal cord, although the messages reach the brain.
- (4)
- (i) Reduce, reuse and recycle is the three 'R mantra'. This is an effective way to eliminate waste and conserve resources.
 - (iii) Reduce means using fewer resources in the first place.
 - (iv) Reuse means instead of throwing things away, try to find ways to use them again.
 - (v) Recycle means the items are put through a process that makes it possible to create new products out of the materials from the old ones.
 - (vi) Reducing, reusing and recycling cut the amount of energy used to produce new items and amount of pollution generated as a result. It also conserves valuable natural resources that would otherwise be used to produce new items from raw materials.

3

3

(5)	<p>The extraction of copper involves 2 steps :</p> <p>Eg. : Copper which is found as Cu_2S in nature can be obtained from its ore by just heating in excess of air (roasting).</p> $2\text{Cu}_2\text{S} + 3\text{O}_2 \xrightarrow{\Delta} 2\text{Cu}_2\text{O} + 2\text{SO}_2 \uparrow$ <p>When a good amount of copper sulphide has been converted to copper oxide, the supply of air is stopped. In the absence of air, copper oxide formed above reacts with remaining copper sulphide to form copper metal and sulphur dioxide.</p> $2\text{Cu}_2\text{O} + \text{Cu}_2\text{S} \xrightarrow{\Delta} 6\text{Cu} + \text{SO}_2 \uparrow$	3
(6)	<p>Multiple fission :</p> <p>(i) During unfavourable condition, the amoeba withdraws its pseudopodia, becomes almost round and secretes a hard covering called cyst.</p> <p>(ii) Inside the cyst, the nucleus divides into many nuclei by repeated division, followed by the division of cytoplasm.</p> <p>(iii) As a result, many daughter cells are formed.</p> <p>(iv) The cyst bursts to release the daughter cells during favourable condition.</p> <div data-bbox="375 1093 1056 1400" style="text-align: center;"> <p style="display: flex; justify-content: space-around; margin-top: 5px;"> Cyst formation Multiple fission Release of daughter cells during favourable conditions </p> </div>	3
Q.4.	<p>Answer the following subquestion : (any one)</p> <p>(1) (a) Anaerobic reaction $\text{CO}_2 + \text{Ethanol} + 2 \text{ATP}$.</p> <p>(b) Reaction in human muscles Lactic acid.</p> <p>(c) Aerobic respiration $\text{CO}_2 + \text{H}_2\text{O}$.</p> <p>(d) Reaction in plant cell Starch.</p> <p>(e) Reaction in Liver Glycogen.</p> <p>(2) Homologous series : A group of organic compounds containing same functional group, which can be represented by the same general formula and which more or less shows similar trends in their properties is known as</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>5</p>

Homologous series. Some important characteristics of homologous series are -

- (i) The general formula of all compounds in the series is the same.
- (ii) They have the same functional group.
- (iii) Physical properties like melting point, boiling point, density, generally show a gradual change with increase of molecular formula in the series.
- (iv) On the other hand, chemical properties of the member shows close resemblance because of the presence of the same functional group in them.
- (v) Consecutive members of the series differ from one another by $-\text{CH}_2-$ group which is known as the methylene group and their molecular weight differs by 14 units.

Example : The alkane family is a homologous series and characterized by the general formula : $\text{C}_n\text{H}_{2n+2}$

Methane - CH_4	- these differ by - CH_2
Ethane - C_2H_6	group
Ethane - C_2H_6	- these differ by - CH_2
Propane - C_3H_8	group
Butane - C_4H_{10}	- these differ by - CH_2
Pentane - C_5H_{12}	group

