

This Question Paper contains 4 Printed Pages]

056(E)
(MARCH, 2003)

Time : 3.00 Hours]

[Maximum Marks : 100

- Q.1. (A)** Answer in brief as directed. 4
- (1) State the function of soluble RNA.
 - (2) Explain the importance : Volatile hormone.
 - (3) Explain the word : Dehydration and Hydrolysis.
 - (4) Degeneration of gonads prior to puberty results in
- (B)** Give appropriate answers of the following questions. 8
- (1) Hormones of Adrenal cortex.
 - (2) Explain : Nucleoside.
 - (3) Write a note on : Coenzymes.
 - (4) Biological importance of elements as structural component of Hyaline cartilage and for excitation of nerves and muscles.
- (C)** Answer the following questions. **(ANY TWO)** 8
- (1) Describe the formation of different molecules of Peptide with equations.
 - (2) Biological importance of Bio-catalyst.
 - (3) Draw only chart of Kreb's Cycle and Oxidative Phosphorylation.
- Q.2. (A)** Answer in brief as directed. 4
- (1) What is Hypophysis cell? Give its function.
 - (2) State the location and function : Motor cells.
 - (3) What is Velamen tissue?
 - (4) State the location and function : Germ pores.

[2]

(B) Give appropriate answers of the following questions. 8

- (1) Living mechanical tissue. (Diagram is necessary)
- (2) Describe experiment to demonstrate Transpiration with diagram.
- (3) Pollination by non-living agents.
- (4) Write a note on : Conducting tissue system in Maize root. (Diagram is not necessary)

(C) Describe : **(ANY TWO)** 8

- (1) First phase of the process takes place in the Grana of Chloroplast. (Chart is necessary)
- (2) Plant adaptations in Ginger, Carissa, Fern and Passion flower. (Diagram is necessary)
- (3) Structure of Non-Endospermic seed. (Diagram is necessary).

Q.3. (A) Answer in brief as directed. 6

- (1) Define : Recapitulation theory.
- (2) How is Jelly formed?
- (3) State the location and function : Basal granules.
- (4) Define : Portal Vein
- (5) State the characteristics of Respiratory surface.
- (6) State the functions of Endo-skeleton.

(B) Answer the following questions. 6

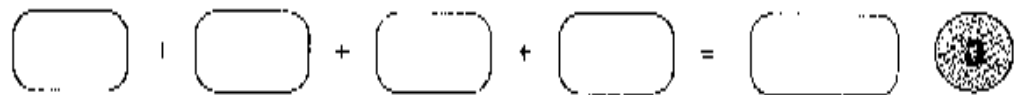
- (1) Cardiac muscular tissue with figure.
- (2) Write a note on : Exchange of O_2 and CO_2 at respiratory surface.
- (3) Describe Sacral vertebrae with diagram.

[3]

- (C) Describe : (ANY TWO) 8
- (1) Histological structure of Liver.
(Diagram is necessary)
 - (2) Describe the Excretory system of Frog. (Diagram is necessary)
 - (3) Cranium (Diagram is necessary)
- Q.4. (A) Answer in brief as directed : 4
- (1) Explain - Translocation .
 - (2) What is Phytohaemagglutinin? State its function.
 - (3) Explain Cri-du-chat syndrome.
 - (4) What is called Sex-linked genes?
- (B) Write a note on : Genetic codes. 3
- (C) Describe : (ANY TWO) 8
- (1) Experiments of Bateson and Punnet. .
 - (2) Origin of Chromosomal abnormalities (Chart is necessary)
 - (3) Maternal effect in *Mirabilis Galapa*.
- (D) Draw only a labelled diagram : (ANY ONE) 5
- (1) Reflex Arc.
 - (2) Internal structure of different Gonads.
- Q.5. (A) Answer in brief as directed : 6
- (1) What is ARC?
 - (2) Explain : Agglutination

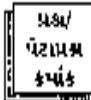
[4]

- (3) Effects of D.D.T. on health.
 - (4) What is Blood transfusion?
 - (5) Name the bacteria which decompose protein from excretory materials and dead bodies.
 - (6) Write composition of Biogas.
- (B) Give appropriate answers as directed. 8
- (1) Addict and his identity.
 - (2) Conservation of Wild Life and give only names of several important projects.
 - (3) Chemotherapy.
 - (4) In Kidney transplantation, the Kidney of a sib is preferred. (Give scientific reason)
- (C) Give appropriate answers. (ANY TWO) 6
- (1) Hybridoma technic-describe (Diagram necessary).
 - (2) Write a note on : Fuel crisis.
 - (3) Give information about symptoms, transmission and diagnosis of Hepatitis.
-



Q1(A)

- (1) During protein synthesis, each soluble RNA combines with specific amino acid and brings it on ribosomes. These amino acids get sequentially arranged as per genetic code on m-RNA and join with peptide bond. This is how primary protein molecule is synthesized.
- (2) Ethylene is a volatile hormone, which is required to be sprayed, when the leaves of a plant have fallen and prior to the process of reaping.
- (3) The process of removal of H_2O (water molecule) from the compound is called dehydration, while process of adding H_2O is called hydrolysis.
- (4) Degeneration of gonads prior to puberty results into atretation.



of sexuality and noticeable changes occur in secondary sexual characters & sexual development.

(B)

07.

→ Hormones of Adrenal Cortex are of steroid category and hence are called corticosteroids.

Some of the functions of these hormones are:

- Regulation of water & salt balance
- Regulation of protein, carbohydrate & lipid metabolism
- Supplementation of certain actions of steroids & reproductive glands.

Some of corticosteroids are:

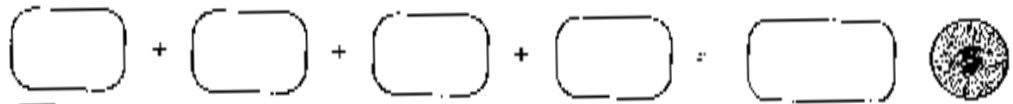
(i) Aldosterone:

It influences the rate of reabsorption of water & minerals at the rate of nephron tubules.

(ii) Corticosterone & Hydrocortisone:



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They help in protein & lipid metabolism through the metabolic cycle of carbohydrate.

→ ACTH regulates secretion of corticosterone & hydrocortisone, but not aldosterone.

→ Lack of corticosteroids causes loss of large amount of water & sodium & hence results into feeling of thirst & blood glucose level is not properly maintained.

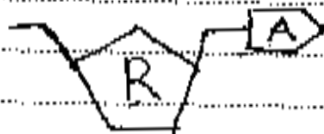
→ Excess of corticosteroids results into retention of sodium & water & hence blood pressure increases.

② Nucleoside :

It is a compound formed by linkage of purine or pyrimidine type of bases with pentose sugar.

Ribonucleoside :

It is formed by linkage of ribose sugar & nitrogen base.



A = Adenine

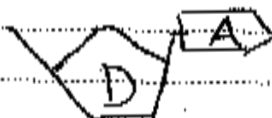
It is also called riboside.



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(ii) Deoxyribonucleoside:

It is formed by linkage of deoxyribose sugar with Nitrogen base.



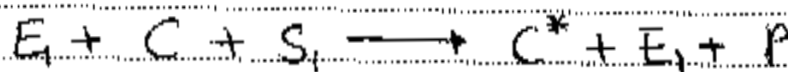
A = Adenine

It is also called deoxyriboside.

(3) Coenzymes

→ when the cof. cocatalysts are organic compounds, they are called Coenzymes.
eg. NAD, FAD, NADP, etc.

→ the mechanism of coenzyme action is as below:



Here, E_1 = enzyme

P = Product

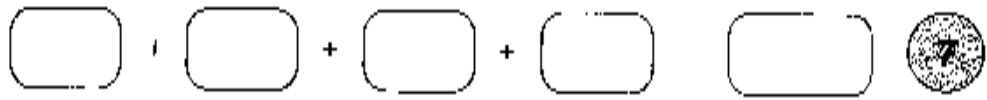
S_1 = substrate

→ Here, C is used in which it gets reduced to C^* .

→ Here, FAD, NAD take part in



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oxidation-reduction reactions & gets reduced first

eg: $FAD + \text{Succinic acid} \xrightarrow{\text{Succinic dehydrogenase}} \text{Succinic, Fumaric acid} + FADH_2$

4) Sulphur:

→ Plants take up sulphur from soil as sulphate ions.

→ It is structural component of amino acids.

→ Cysteine & Methionine are sulphur containing amino acids.

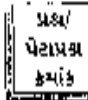
It is structural component of vitamins like biotin & thiamine.

→ It is structural component of hormones like insulin & long chain polypeptides.

→ It is also found in ligaments, bonematter & as a component of Hyaline cartilage.

Calcium

→ It is structural architecture of



plant cell wall

→ It also determines permeability of plant cell membrane

→ It converts organic toxins into non-toxins

→ Deficiency of calcium impairs growth in plants & animals.

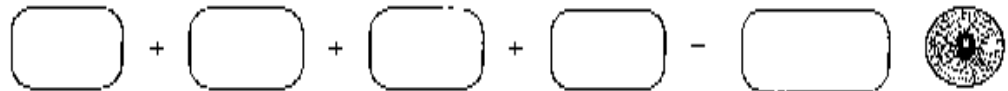
→ 99% of calcium is present in bones & teeth.

→ It helps in coagulation of blood, maintenance of pH, development of bones and excitation of nerves & ~~int~~ muscles



(2) Bio-catalyst's Importance:

→ Energy exchanging processes like photosynthesis & respiration takes place in presence of enzymes in which photic energy is converted into chemical and then kinetic energy.



- Acetyl choline is diffusing hormone imp. for conduction of nerve impulses but harmful to heart. Hence enzyme acetyl choline esterase associated with nervous system breakdown this hormone.
- Ascariis & other round worm reside in our digestive tract & secrete antienzymes against pepsin & trypsin & hence cannot be digested by them. But enzyme fission present in figs nullifies effect of these antienzymes and hence in order to kill these worms a person should eat figs.
- Herbivores consume cellulose containing food and it is digested by enzyme cellulase secreted by symbiotic bacteria residing in their digestive tract.
- They are useful in ripening of fruits.
- RBC & plasma contains carbonic anhydrase which helps in rapid transport of CO_2 .
- $$\text{H}_2\text{O} + \text{CO}_2 \xrightarrow[\text{anhydrase}]{\text{Carbonic}} \text{H}_2\text{CO}_3$$
- They help in coagulation of blood.

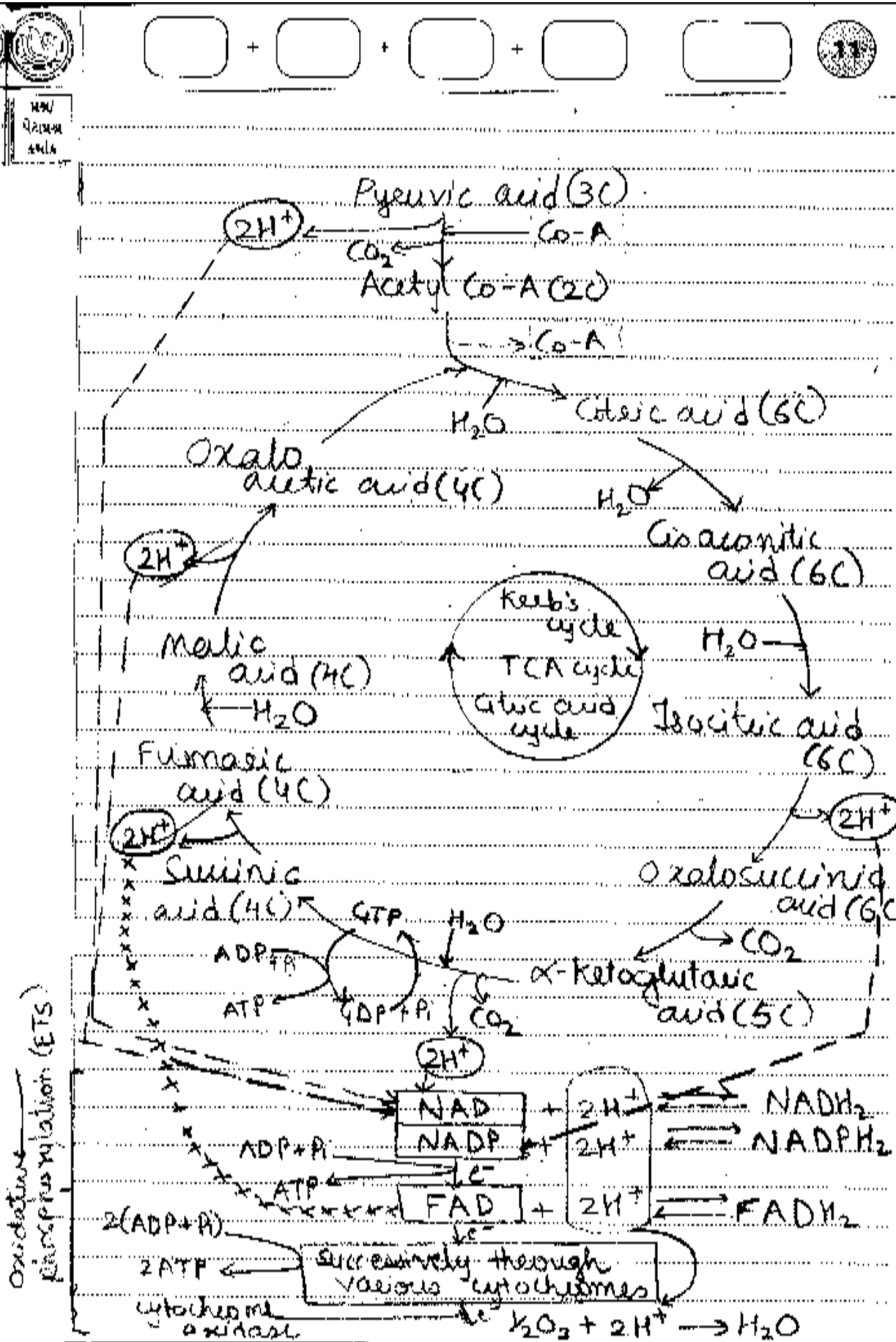


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→ Organisms consume complex nutritive substances which are digested by digestive enzymes & converted into simple, soluble & diffusible form.

→ Enzymes have therapeutic values, pepsin can be taken as injections or orally by patients, certain ulcers can be cured by trypsin therapy.

→ In anaerobic organisms, conversion of pyruvic acid into ethanol or lactic acid occurs by enzymes. Fermentation is anaerobic process taking place in presence of enzymes.





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Q2(A)

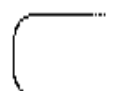
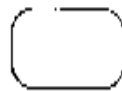
(1) The terminal cell of the suspensor which is closely associated beneath the octant is called hypophysis cell.

During embryo development, it divides repeatedly & these cells give rise to epiblem, periblem & calyptrae & root cap regions of radicle.

(2) Motor cells are found in group of 3-5 cells on the upper epidermis of maize leaf & ~~are~~ supported by slightly curved and unicellular trichomes on lateral sides.

These cells lose water in dry atmosphere & causes the curling of leaf margin & thereby regulates the rate of transpiration.

(3) The spongy tissue, whose cells are prismatic, thick walled, radially arranged and having 4-6 layered epidermis is called velamen tissue.



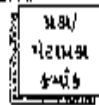
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(4) Certain slit like pores appear in the exine which are called germ pores through which the pollen tube emerges during germination of pollen grains.

(B)

(a) Collenchyma:

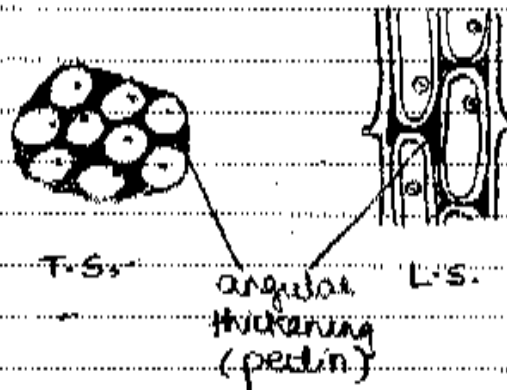
- It is made of living cells having cell primary cell wall made up of cellulose.
- Their inner walls show thickenings of pectin, a carbohydrate.
- These thickenings are more prominent in the angular walls which are in contact with other cells.
- It confers elasticity & flexibility to the esp. plant organs & hence found in tender stem, petiole, etc.
- It is found beneath epidermis & hence forms epi hypodermis.
- It does not arrest the growth of organs in which they are present,



because it gives flexibility & elasticity & hence protect them.

→ Hence, it is called living mechanical tissue.

→ It is never found in the underground organs.



(2)

→ The CaCl_2 filter paper dipped in CaCl_2 solⁿ becomes dark blue when dried.

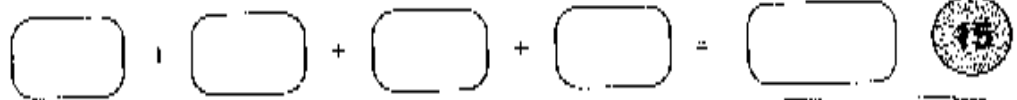
→ when such papers come in contact with water or water vapour it becomes pink.

→ Now, two such papers are kept on two surfaces of a leaf of a potted plant, as shown in figure.

→ Then glass covers are put on



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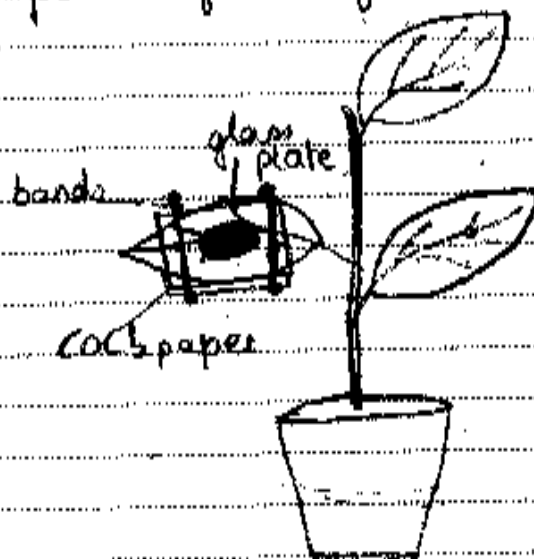


them and tied with clips or bands.

→ After sometime, it is seen that CO_2 paper on lower surface of leaf has become pink rapidly than that of upper side.

→ This indicates that rate of transpiration from lower surface of leaf is faster than that from upper surface.

→ Thus, no. of stomata on lower surface is more than on upper surface of leaf.



(3) Wind pollination:

→ Several plants like coconut palm, date-palm, maize, several species of

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grass show wind-pollination

- Such plants are unisexual
- they lack showiness, odour & nectar & are not coloured
- Pollen grains are small, round, light in weight & produced in large no.
- they do not absorb moisture easily & hence do not become heavy
- This is suitable for wind pollination. Eg: Pinus.

Water pollination

#

- It occurs on surface or inside the water.
- In Vallisneria plant, it occurs on surface of water
- Male flowers get detach from plant and float on surface
- Female flowers have long & slender peduncles.



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- Female flowers reach the surface when slender peduncle becomes straight & elongated.
- At this male flowers surround female flowers & anthers burst & sticky pollen grains stick to stigma of pistil.
- Then female flowers goes back into the water when peduncle contracts



some air spaces which lend mechanical support. These air spaces are not found in underground roots.

→ Endodermis is innermost layer of cortex. It is single layered, parenchymatous. The radial walls & inner walls are show caspian thickenings of suberin & lignin. Some of the individual cells do not possess such thickenings, called passage cells. They transmit water & dissolved minerals from cortex to the

(4) → Conducting tissue of maize root possesses 20 xylem bundles and equal no. of phloem bundles.

→ they are arranged alternately.

→ Hence, the arrangement is radial & polyarch.

→ The protoxylem is towards outside, having narrow lumen & metaxylem outside.



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with larger lumen.

→ this sequence of development of xylem is exact

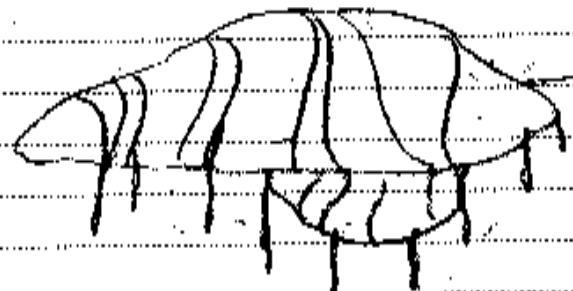
(C)

(2) Ginger:

- In ginger, the stem grows dorsoventrally flattened & shows nodes, internodes, & similar to that of normal stem.

- Several adventitious buds arise from the surface of stem.

- this type of stem is called rhizome.

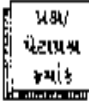


ginger

Cassia:

- Cassia is a plant with dichotomous branching.

- the apical buds develop into sharply pointed, woody & bifid thorn.



Carissa



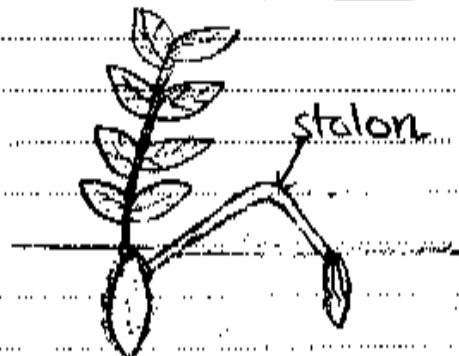
Fern:

- In fern, there is a vertical underground stem called rhizome.

- Many compound leaves arise from it.

- The axillary branch arising from the lowermost node, arises up and bend downward like an arch & produces new plant when comes in contact with ground.

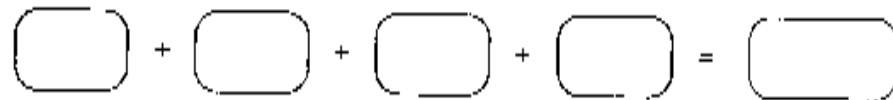
- Such a slender branch is called stolon.



fern

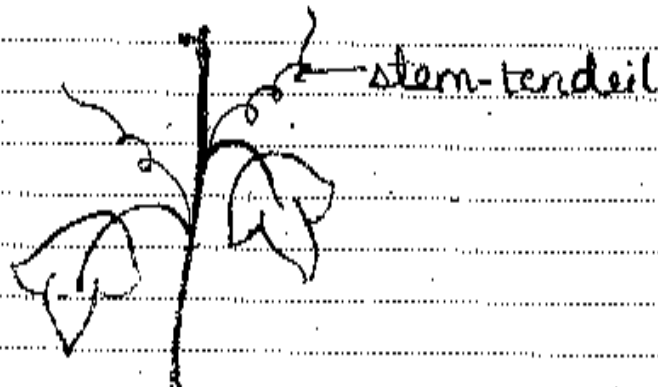


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Passion flower.

- In passion flower, the stem being tender & weak, the axillary buds develop into long, spirally coiled & sensitive tendrils which twine around the support & thereby helps the plant in climbing.



passion flower

- Thus, it is an example of stem-tendril climber.

(3) Bean seed:

→ Bean seed is a flat, kidney shaped having a notch on one side.

→ There is a long white scar along the notch in which there is hilum.

→ There is a small pore called micropyle near hilum through



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which it imbibes water
when soaked in water or moist soil

→ When bean seed soaked in water for sufficiently long time, and ~~it is then~~ pressed gently the embryo comes out breaking through the seed coat.

(i) Seed coat:

→ There are two seed coats that enclose & protect embryo.

→ The outer is testa which is thick, leathery & relatively strong while inner is tegmen which is thin.

→ Testa & tegmen are more or less united.

(ii) Embryo:

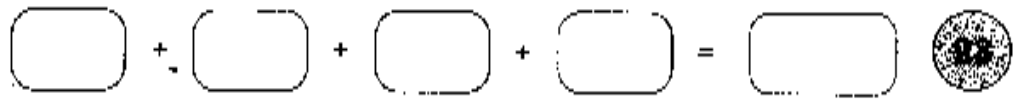
It is juvenile form of seed & encloses embryo axis, which is divided into:

Cotyledons:

→ There are two cotyledons in



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bean seed.

- They store food & hence become fleshy. The stored food is in form of starch grains & protein.
- They are connected with each other along longitudinal axis.
- Since the cotyledons completely enclose the nutritive endosperm during germination, the endosperm loses its identity as independent organ & hence seed becomes non-endospermic or exalbuminous. & cotyledons are called these leaves.

Radicle:

It is small rod-shaped part of seed which emerges first through micropyle, during germination and give rise to primary root.

Plumule:

It is the first apical bud whose growing point is covered by underdeveloped delicate leaves.

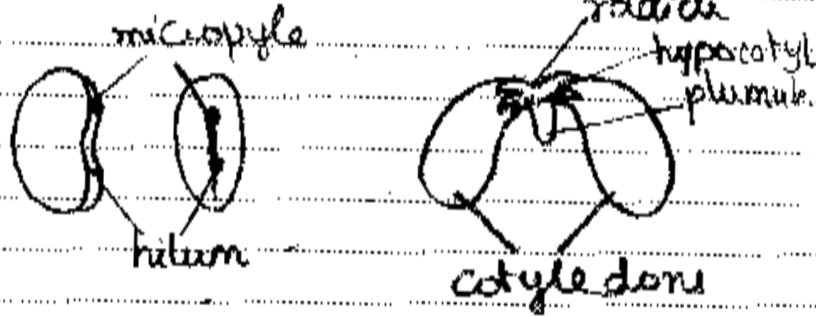
or

It is connected to radicle through hypocotyl & they give rise to



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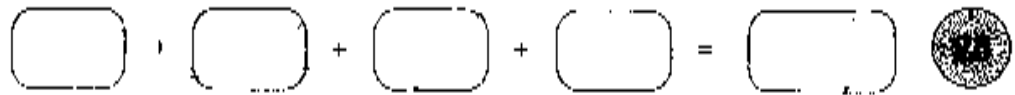
shoot system during
germination:



Bean seed

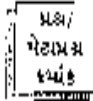


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Q3(A)

- (1) Recapitulation theory states that tadpole resembles to fish in many ways:
 It takes up dissolved oxygen through internal gills, it has blood circulatory system similar to fish lateral sense organ lateral line organ, internal ears, finned tail for swimming and internal gills covered by operculum & having spiracle as opening.
 Thus, this indicates that frog & other amphibians must be the descendants of fish.
- (2) The egg is covered by viscous albumin which absorbs water & forms jelly.
- (3) Basal granules are located in cytoplasm of the ciliated cells & from these granules - cilia - cilia - cilia which produces continuous uterine current.
- (4) The vein, instead of entering per-venacava, enters organs and capillaries in the organ is called Portal vein. It has capillaries at both ends.



- (5) The respiratory surface must be moist, slimy, living thin, directly exposed to environment, and highly vascularized.
- (6) Endoskeleton protects the internal organs of the body, in the case, when skin or exoskeleton is damaged.

(B)

→ Cardiac muscular tissue is special type of tissue found in walls of heart.

→ It is involuntary in nature.

→ The contraction & relaxation of this tissue occurs rhythmically & hence never gets fatigued.

→ Cells show A & I bands.

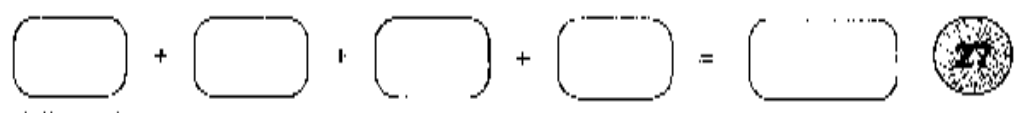
→ Sarcolemma is indistinct.

→ Cytoplasm is ~~emb~~

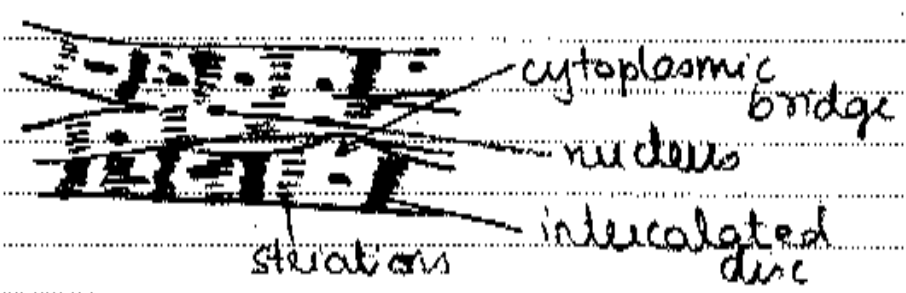
→ Nucleus is embedded in the cytoplasm.



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- Sarcoplasm shows distinct myofibrils
- They are inseparable muscles.
- They form a continuous reticulate structure due to cytoplasmic bridges connecting adjacent fibres at definite places.
- They also possess thick intercalated discs at regular intervals.
- This tissue is made of many nuclei.
- A single nucleus is found betⁿ two consecutive intercalated discs.
- It is innervated by vagus nerve & autonomous nervous system.



Cardiac muscular tissue

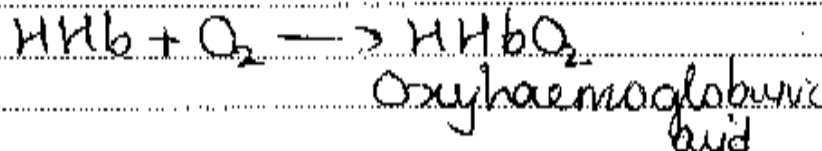


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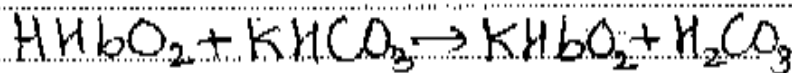


(2) At respiratory surface

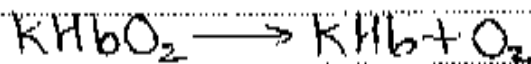
→ O_2 taken up by blood, does not flow in gaseous form but join with Hb of RBC, to give:



→ There is $KHCO_3$ in RBC, which is alkaline



→ Thus, O_2 is transported from tissue cells at respiratory surface by $KHbO_2$. It then splits into:



→ Thus KHb remains in venous blood & O_2 enters into tissue cells & take part in cellular respiration

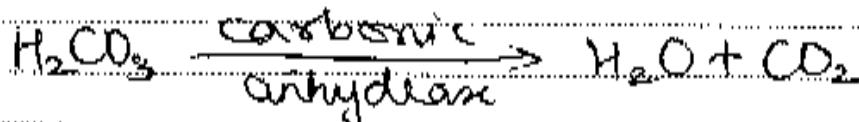
→ while, H_2CO_3 dissociates in presence of carbonic anhydrase



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in RBC to give:



→ This CO_2 is finally discharged through respiratory surface.

②) → the 9th vertebrae, being the only vertebrae of sacral section, is called sacral vertebrae.

→ It has one convexity anteriorly & 2 convexities posteriorly.

→ There being no concavity, it is called acrobous vertebrae.

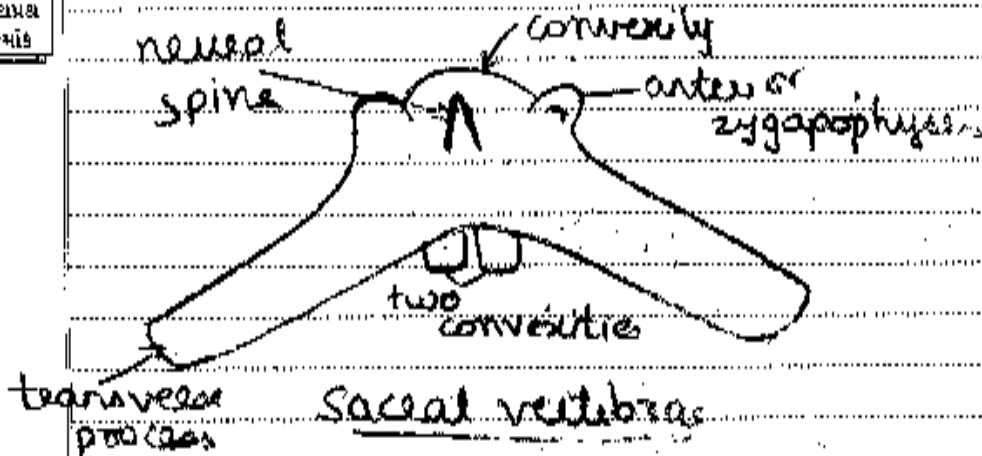
→ Its transverse processes are strong & stout and posteriolaterally & obliquely upward.

→ The neural spine is directed antero-dorsally.

→ It has a pair of anterior zygapophyses while posterior zygapophyses are absent.



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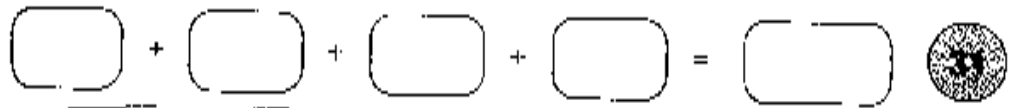
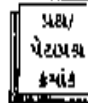
(1)

→ Liver is a trilobbed gland, made up of 3 lobes.

→ Lobules are secretory units of liver. They are branching & anastomosing.

→ The interlobular space, bile ducts, bile capillaries, blood capillaries, gives the glo interior of gland a reticulate appearance & hence it is called reticulate gland.

→ The lobules are made up of large polyhedral hepatic cells, containing distinct large

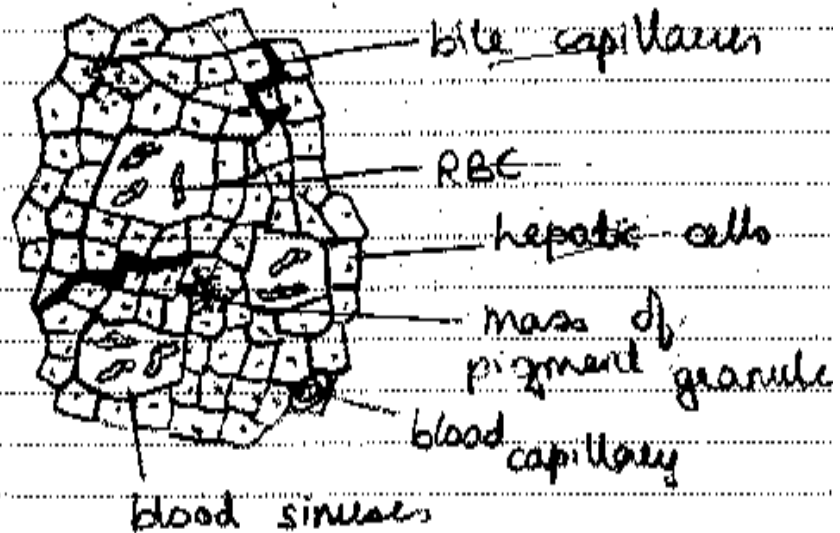


nucleus. Moreover, pro glycogen, protein granules, very few fat globules & black or dark brown coloured pigment granules are present.

- Travelling through the hepatic cell masses are the bile capillaries. They are long, branched, thin & devoid of walls.
- Bile capillaries unite to form hepatic ductules which then unite to form large hepatic duct which opens into gall bladder. Some of the hepatic ductules directly open into cystic duct.
- The lumen of bile duct & capillary duct is lined by cuboidal epithelial cells.
- In histological section also, liver shows hepatic portal vein & hepatic arteries cut transversely, longitudinally or obliquely.
- There are several blood sinuses having large no. of erythrocytes in it.



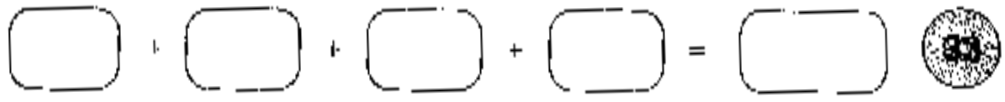
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Histology of Liver

(2)

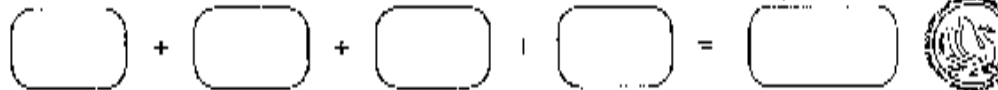
- A pair of kidneys forms a chief excretory organ of frog.
- Each kidney is dorso-ventrally flattened, oblong & dark-red in colour.
- Its outer surface is simple & slightly convex while inner surface is with several notches.
- There is yellow streak-like adrenal gland on mid-ventral surface of each kidney.
- They are located in subvertebral lymph sinuses. &



- So only their ventral surface is covered by peritoneum.
- The ventral surface of kidney possess large no. of funnel shaped nephrostomes, which are wide externally & narrow internally.
- The accessory organs include a pair of testes, cloaca, dorsal aperture & urinary bladder.
- Testes arise from anterior side of kidney, run along its anterior margin & emerge posteriorly & opens into dorsal wall of cloaca.
- Cloaca is hindmost organ in which testes, urinary bladder & in female oviducts too open.
- Urinary bladder is thinwalled bilobbed sac-like structure in which urine is stored for expulsion & opens into ventral wall of cloaca.
- The dorsal aorta running betⁿ. two kidneys receive 5-7 pairs of renal arteries.
- Similarly, 5-7 pairs of renal veins

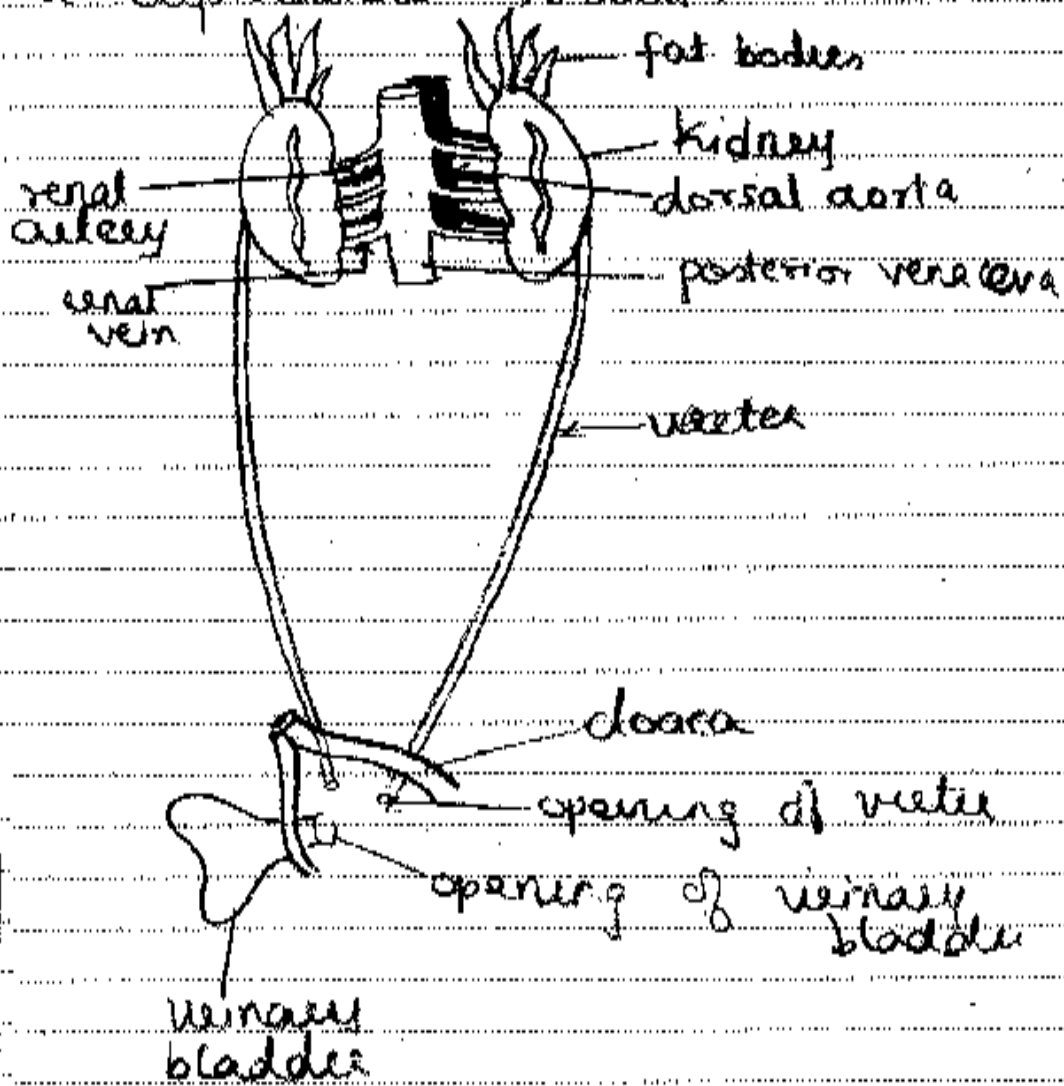


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QUESTIONS
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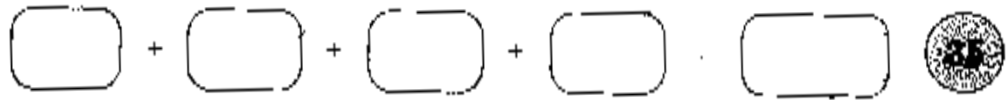
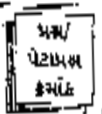


unite to form posterior vena cava which runs anteriorly bet^h. the kidneys.

→ the renal portal vein also opens into kidney from its outer margin & capillarises therein



Excretory organs of frog

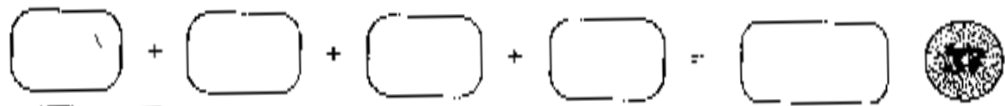


Q4(A)

- (1) The newly synthesized mRNA gets separated from DNA & passes from nucleus to cytoplasm and gets arranged itself on ribosomes. This process is called Translocation (r-RNA plays imp. role in this process)
- (2) Phytohaemagglutinin is an extract from the core of bean *Phaseolus* (Pisum) and it initiates the cell division of white blood cells when added to the medium.
- (3) → Due to deletion of small segment of short arm of chromosome no. 5, Cri-du-Chat syndrome occurs.
 → In this disorder, cry of child resembles to cry of cat
 → The child has small head circumference and men/ poor mental development
- (4) The genes linked with sex-chromosomes are called sex-linked genes.

Genetic codes :

- there are four nitrogen bases found in DNA i.e. A, T, G, C
- There are 20 diff. amino acids
- Thus, if single codes are used then only 4 genetic codes become available
- If duplex is used then total 16 codes can be available and if triplet codons are used then 64 amino acids can be coded and hence 20 amino acids can have diff. codons.
- Major amino acids codes for more than one genetic code such codes are called degeneracy degenerate codons.
- These degenerate codons do not overlap each other and hence one code codes only one amino acid.
- In this way, methionine & tryptophan has only one codon, three for leucine, leucine & arginine



while six for iso-leucine.

→ The termination codons UAG, UGA and UAA are also called NON-SENSE CODONS which take part in termination process of protein synthesis.

→ The genetic code is universal.

(C)

(12) → In order to explain the phenomenon of linkage, Bateson & Punnett (in 1906) carried out an expt. on sweet pea plant (*Loranthus odoratus*)

→ In this expt., purple flower with long pollen (PPLL) was crossed with red flower with round pollen (ppll)

P PPLL × ppll

↓

PpLl

F₁ Purple flower with long pollen

→ When F₁ individuals were self-crossed the results are obtained as follows:



| | Purple flower Long pollen | Purple flower round pollen | Red flower long pollen | Red flower round pollen |
|----------|------------------------------|-------------------------------|---------------------------|----------------------------|
| Expt | 11 | 1 | 1 | 3 |
| Expected | 9 | 3 | 3 | 1 |

→ The cross of F_1 individuals with recessive parent is called test cross

→ When F_1 individuals were test crossed, F_2 generation was obtained as follows instead of expected Mendelian ratio (1:1:1:1)

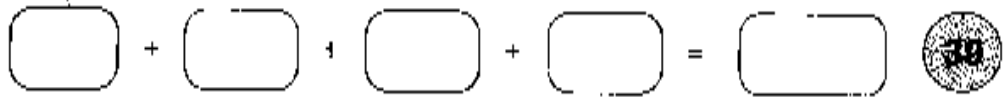
Test cross of F_1 $PpLl \times ppll$



| | Purple flower long pollen | Purple flower round pollen | Red flower long pollen | Red flower round pollen |
|----------|------------------------------|-------------------------------|---------------------------|----------------------------|
| Expt | 7 | 1 | 1 | 7 |
| Expected | 1 | 1 | 1 | 1 |

Conclusions:

→ The genes P and L must be on same chromosome and p & l must be on homologous chromosome



→ In heterozygous condition, the tendency of linked genes to remain together for dominant character on one parent on one chromosome & for recessive character on homologous chromosome, is called coupling.

It is called cis-arrangement.

→ In heterozygous condition, tendency of one dominant & other recessive gene on homologous chromosome is called Repulsion.

It is called trans-arrangement.

(3)

→ Carl Correns & his coworkers suggested the possibility of obtaining inheritance of plastids through cytoplasmic regulation.

→ Usually, plastids are inherited under gene regulation, but in several cases, cytoplasm plays an imp. role.

→ Carl Correns performed an expt. on 4 o'clock plant *Mimulus Catalpa*.

→ The diff. branches of this plant has three diff. types of leaves in accordance to the occurrence of



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plastids.

→ The branches were with completely green leaves, pale or white leaves and variegated leaves.

→ The phenotypic characters of the offsprings depends on the phenotype of the branch on which flowers are pollinated.

→ when a pollen of flower from branch with green, pale or variegated leaves is pollinated with carpel of the flower on branch with completely green leaves then:

P Carpel of flower on branch with completely green leaves × Pollen of flower on branch with green, pale or variegated leaves.

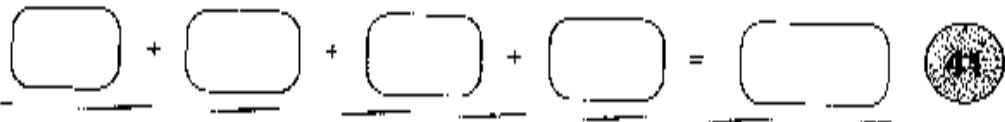


F₁ Offsprings with completely green leaves

→ Similarly, when pollen of flower with completely green leaves is pollinated with carpel of flower on green, pale or variegated branch, then:



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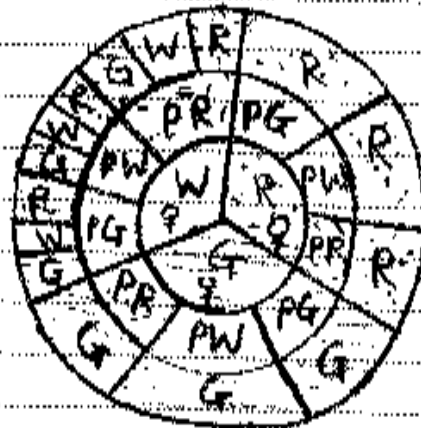
P Carpel of flower
on green, pale or
variegated leaves





Pollen of flower
with completely
green leaves



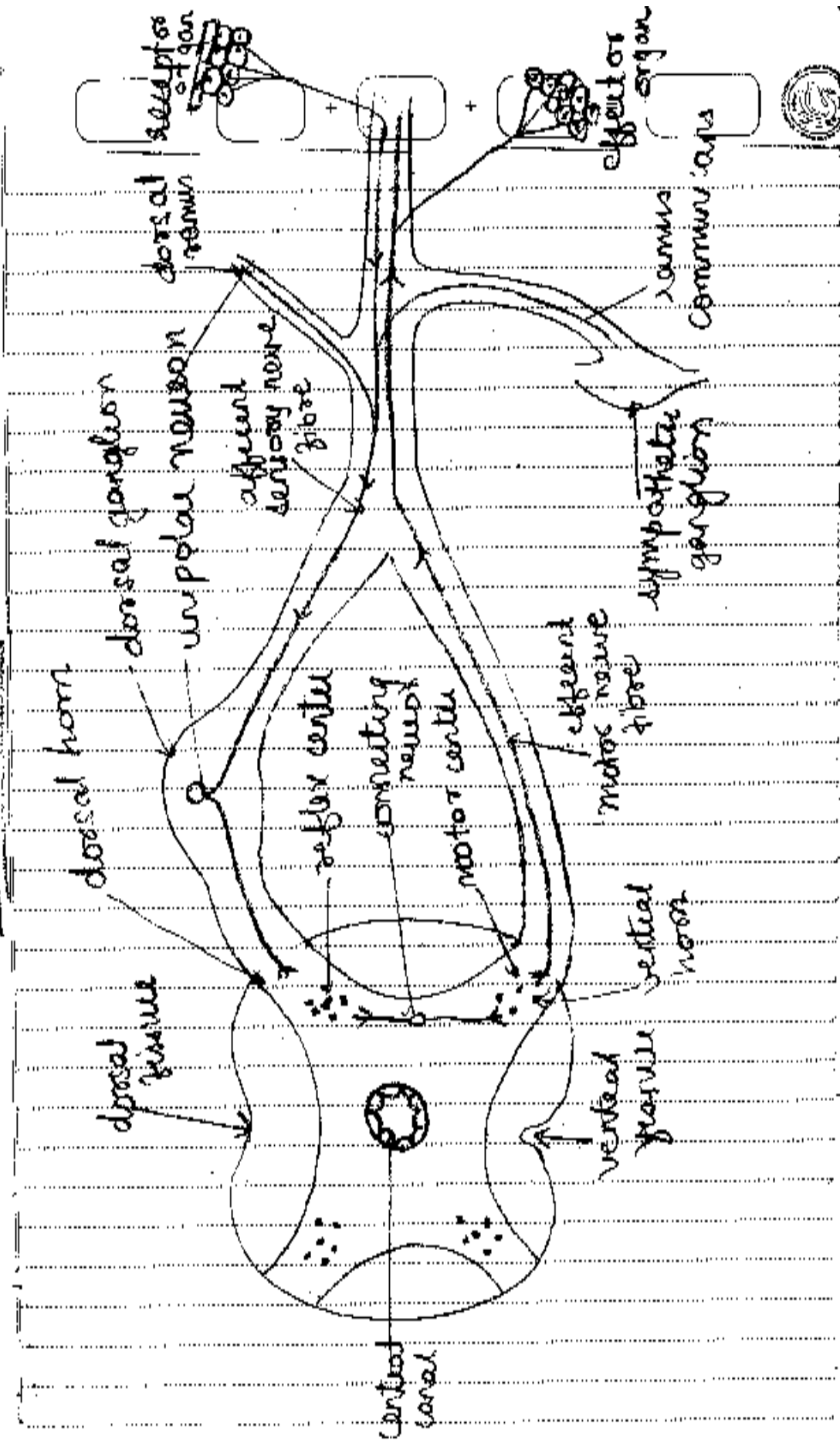
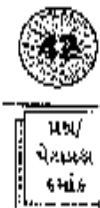
F1 Offsprings with green pale or
variegated leaves

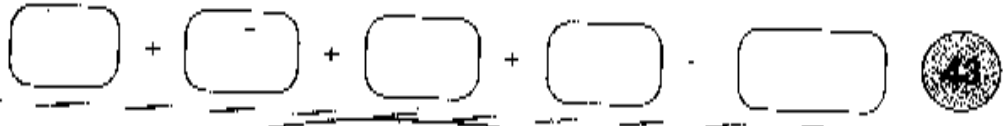
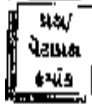
→ thus, above crosses show that,
phenotype of offsprings show
maternal effect, because ovum
contains more cytoplasm than
pollen



-  G Green
-  R Colourless
-  OW variegated
-  P pollen

Reflex Arc





Q5(A)

- (1) A few visible symptoms of AIDS eg: pain & fatigue for about 4 weeks, fever during this period of 4 weeks, diarrhoea accompanied with loss of blood, loss of weight, appetite, etc. are called ARC (AIDS related complex)
- (2) The antibody binds with antigen and converts it into insoluble form, it is called agglutination.
- (3) DDT is widely used insecticide & is known to cause harmful effects on health, especially nervous system and sex hormones.
 - Accumulation of organo-chlorinated hydrocarbons increases the chances of forming cancer, tumour & body malfunctions.
- (4) Blood transfusion is term used when a person suffering from blood loss during accident, haemorrhage in digestive tract, abortion or surgical operation is given blood.



(5) Pseudomonas decompose protein from excretory materials & dead bodies.

(6) Biogas compose of 50-70% methane, 30-40% carbon dioxide & some amount of hydrogen, nitrogen & hydrogen sulphide.

[(B)]

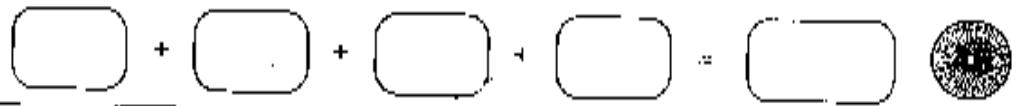
Ans A person who consumes drugs (continuously) regularly & its use use increases progressively & its absence causes or craving & side-effects on his mind & body is called addict.

Characteristics:

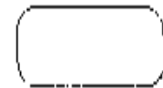
→ An addict tends to be loner & gradually dissociates from family.

→ He becomes secretive about his ~~add~~ activities.

→ He neglects his personality, falls back in studies, neglects grooming, about hair, nail, clothes, teeth, etc. & dissociates from his friends.



- His body waves, eyes remain blood shot & even for petty pilfering.
- Since the imp. of wildlife & envt has been understood, many laws have been published.
- Many laws are also made in our India, main amongst them is Wild life Conservation Act of 1972.
- Many areas have been declared as National Parks & Sanctuaries.
- In National Parks, wild life is allowed to live without human interference.
- In Sanctuaries, small interference which is necessary is allowed, which is similar to National Park.
- In 1989, there were 24 National Parks & 372 sanctuaries in India. Today, there is one Marine National Park in Gujarat out of 4 National Parks & 21 Sanctuaries.
- PROJECT TIGER, GIR LION PROJECT, CROCODILE FARMING PROJECT, MUSK DEER PROJECT & KASHMIRI STAG PROJECT are some imp. projects.



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37) Besides surgery & radiation therapy, certain anti-cancer drugs are used to treat cancer.

→ These drugs selectively act on cancer cells & inhibit cell growth & division.

→ They impart their destructive effect more on cancerous cells than on normal cells & hence called anti-cancer drugs.

→ Several others like anthracycline, doxorubicin & other antibodies are made use in chemotherapy.

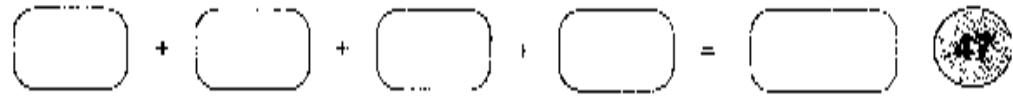
→ In addition, also certain hormones, antibodies & immunotherapy are used to treat cancer.

→ The kidney being transplanted, as it is a foreign organ, the immune system resists the transplanted kidney.

→ For this, some antirejectant drugs are available but are very expensive & difficult to procure for long time.



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→ Hence, a kidney of sib is used as the b/c genetic constitution of donor as well as recipient being same, there are hardly any chances of resistance.

(c) (a) Symptoms of Hepatitis A & B are more or less similar:

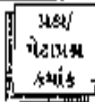
- yellowish appearance of skin
- Inflammation of liver
- Sclerotic coat of eyes due to rise in bilirubin
- & rise in temp.
- nausea, vomiting, fatigue, weakness
- Sometimes, ulcers and fissures are found in HB.

Transmission:

→ It is transmitted through contact with blood, urine, saliva & stool with of HB patient.

→ It is also transmitted through disposable syringe & injection needles.

→ ~~Using~~ Persons taking blood injections of blood products like fibrinogen & those undergoing treatment under dialysis.



→ If a blood from a person having history of suffering from HB in near past is taken, then recipient receives large no. of HBV through his blood.

Thus, blood transfusion is major route.

→ A developing embryo in pregnant mother may also be infected.

→ Use of narcotic drugs
Diagnosis:

→ If symptoms of hepatitis are observed, it can be ascertained that person has taken narcotic drugs or blood through blood transfusion.

→ estimation of bilirubin, SGPT (Serum Glutamic Pyruvic Transaminase) or antigen-antibody testing.

① Hybridoma technique

→ This is most modern technique of obtaining monoclonal antibodies.

Supplimentary / पुसपणी - 1

★ अदीदी व लललललु अरु कसु. ★



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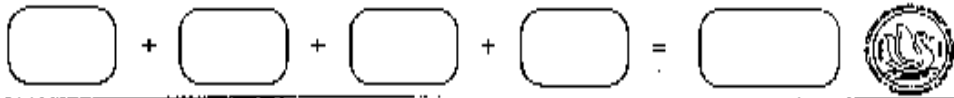
→ As shown in fig. part, antigen is injected in body of mice, after few days spleen of mice in which lymphocytes have produced antibody is taken.

→ These lymphocytes are then fused with carcinoma β -cells in presence of fusion

→ The cells so produced are called hybridoma cells.

They are capable of multiplication & producing a monoclonal antibodies.

P.T.O



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