SHRI VIDHYABHARATHI MATRIC.HR.SEC.SCHOOL

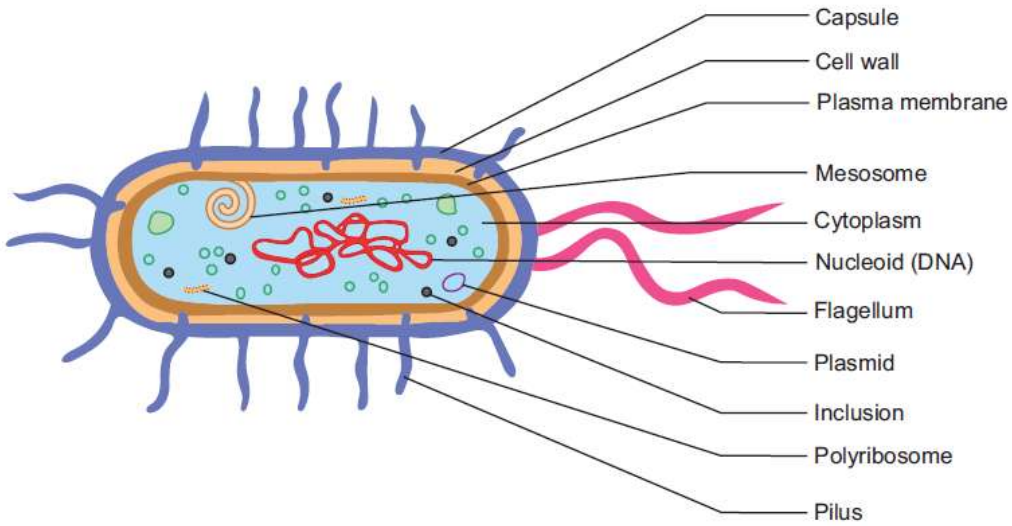
SAKKARAMPALAYAM , AGARAM (PO) ELACHIPALAYAM
TIRUCHENGODE(TK), NAMAKKAL (DT) PIN-637202
Cell : 99655-31727, 94432-31727

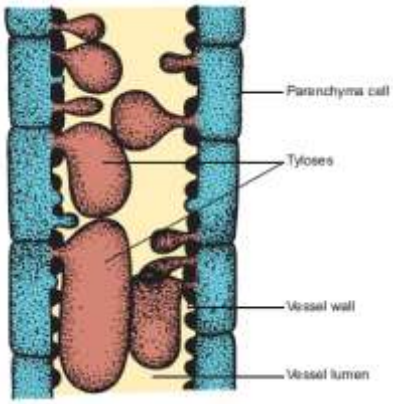
COMMON HALF YEARLY EXAMINATION - DECEMBER - 2019

TENTATIVE ANSWER KEY

STD: XI **DATE: 23.12.2019**

SUBJECT: BIO-BOTANY **MARKS : 35**

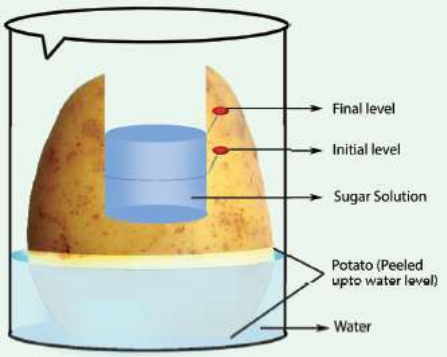
Q. NO		MARKS
	SECTION -I	**8x1=8**
1.	a) Mycobacterium	1
2.	c) Avicennia, Rhizophora	1
3.	b) 1-c, 2-a, 3-d, 4-b	1
4.	c) Megnesium	1
5.	d) 15%	1
6.	c) Calcium	1
7.	c) Chlorophyll 'c'	1
8.	b) Soyabean	1
	SECTION -B **II. ANSWER ANY FOUR QUESTIONS FROM THE FOLLOWING**	**4X2=8**
9.	**Ultra structure of Bacteria: (Pg:No.15)**  	2
10.	**Phylloclade : (Pg:No. 73)** ❖ This is a green, flattened cylindrical or angled stem or branch of unlimited growth, consisting of a series of nodes and internodes at long or short intervals. ❖ Phylloclade is characteristic adaptation of xerophytes where the leaves often fall off early and modified into spines or scales to reduce transpiration.	2

	❖ The phylloclade takes over all the functions of leaves, particularly photosynthesis. The phylloclade is also called as **cladophyll.** ❖ Example: *Opuntia, Phyllocactus, Muehlenbergia* (flattened phylloclade)	
11.	**Difference between Racemose and Cymose (Pg:No. 89)** **Racemose** / **Cymose** Main axis of unlimited growth / Main axis of limited growth. Flowers arranged in an acropetal succession / Flowers arranged in a basipetal succession Opening of flowers is centripetal / Opening of flowers is centrifugal Usually the oldest flower at the base of the inflorescence axis. / Usually the oldest flower at the top of the inflorescence axis	2
12.	**Properties of Enzyme : (Pg:No. 232)** ❖ All are globular proteins. ❖ They act as catalysts and effective even in small quantity. ❖ They remain unchanged at the end of the reaction. ❖ They are highly specific. ❖ They have an active site where the reaction takes place. ❖ Enzymes lower activation energy of the reaction they catalyse.	2
13.	**Tyloses : (Pg:No. 46)** In many dicot plants, the lumen of the xylem vessels is blocked by many balloon-like ingrowths from the neighbouring parenchymatous cells. These balloon-like structures are called **tyloses**.  	2
14.	**Bolting: (Pg:No. 174)** Rosette plants (genetic dwarfism) plants exhibit excessive internodal growth when they are treated with gibberellins. This sudden elongation of stem followed by flowering is called bolting **Richmond Long Effect (Pg:No. 176)** Application of cytokinin delays the process of aging by nutrient mobilization. It is known as Richmond Lang effect.	1 1

<table>
<tr><td></td><td>Section - C
III. Answer any 3 questions:(Question No. 19 is Compulsory)</td><td>3x3=9</td></tr>
<tr><td>15.</td><td>Features of Monera (Pg:No. 13)
Cell type: Prokaryotic
Level of organization: Unicellular
Cell wall: It is made up of Peptidoglycan and Mucopeptides
Nutrition: Autotrophic (Phototrophic, Chemoautotrophic);
Heterotrophic (parasitic and saprophytic)
Motility: Motile or non-motile
Organisms: Archaebacteria, Eubacteria, Cyanobacteria, Actinomycetes and Mycoplasma</td><td>(Any three)
3</td></tr>
<tr><td>16.</td><td>Plastids: (Pg:No. 187)
<table><tr><th>Chromoplasts</th><th>Leucoplasts</th></tr><tr><td>(Coloured Plastids)</td><td>(Colourless Plastids store food materials)</td></tr><tr><td>Chloroplast
Occurs in green algae and higher plants Pigments chlorophyll a and b</td><td>Amyloplast – stores – starch</td></tr><tr><td>Phaeoplast
Brown algae and dinoflagellates
Pigment fucoxanthin</td><td>Elaioplast – store – lipids (oils)
Seed of monocot and dicots.</td></tr><tr><td>Rhodoplast
Red algae Pigment Phycoerythrin</td><td>Aleuroplast (or) Proteoplast
store – Protein</td></tr></table></td><td>3</td></tr>
<tr><td>17.</td><td>Significance of Mitotic cell division: (Pg:No. 209)
❖ Genetic stability – daughter cells are genetically identical to parent cells.
❖ Growth – as multicellular organisms grow, the number of cells making up their tissue increases. The new cells must be identical to the existing ones.
❖ Repair of tissues - damaged cells must be replaced by identical new cells by mitosis.
❖ Asexual reproduction – asexual reproduction results in offspring that are identical to the parent. Example Yeast and Amoeba.
❖ In flowering plants, structure such as bulbs, corms, tubers, rhizomes and runners are produced by mitotic division. When they separate from the parent, they form a new individual.
The production of large numbers of offsprings in a short period of time, is possible only by mitosis. In genetic engineering and biotechnology, tissues are grown by mitosis (i.e. in tissue culture).
❖ Regeneration – Arms of star fish</td><td>(Any three)
3</td></tr>
</table>

18. **Potato Osmoscope Experiment (Pg:No. 67)** — 2

- ❖ Take a peeled potato tuber and make a cavity inside with the help of a knife.
- ❖ Fill the cavity with concentrated sugar solution and mark the initial level.
- ❖ Place this setup in a beaker of pure water.
- ❖ After 10 minutes observe the sugar solution level is rises and coloured.
- ❖ This proves the entry of water into the sugar solution through the potato tissue which serve as the selectively permeable membrane



1

19. **Differences between C_3 and C_4 plants : (Pg:No. 129)** — (Any three) 3

C_3 Plants	**C_4 Plants**
CO_2 fixation takes place in mesophyll cells only	CO_2 fixation takes place mesophyll and bundle sheath
CO_2 acceptor is RUBP only	PEP in mesophyll and RUBP in bundle sheath cells
First product is 3C- PGA	First product is 4C- OAA
Kranz anatomy is not present	Kranz anatomy is present
Granum is present in mesophyll cells	Granum present in mesophyll cells and absent in bundle sheath
Normal Chloroplast	Dimorphic chloroplast
Optimum temperature 20^0 to 25^0C	Optimum temperature 30^0 to 45^0C
Fixation of CO_2 at 50 ppm	Fixation of CO_2 even less than 10ppm
Less efficient due to higher photorespiration	More efficient due to less photorespiration
RUBP carboxylase enzyme used for fixation	PEP carboxylase and RUBP carboxylase used
18 ATPs used to synthesize one glucose	Consumes 30 ATPs to produce one glucose.
Efficient at low CO_2	Efficient at higher CO_2
Example: Paddy, Wheat, Potato	Example: Sugar cane, Maize, *Sorghum*, *Amaranthus* and so on

	SECTION -D **IV. Answer the following questions**	**2x5=10**
20.	**i) Three classes of Bryophytes: (Pg:No. 52)** ❖ **Hepaticopsida** (*Riccia, Marchantia, Porella, Riella*) ❖ **Anthocerotopsida** (*Anthoceros* and *Dendroceros*) ❖ **Bryopsida** (*Funaria, Polytrichum* and *Sphagnum*). **ii) Differences between Gymnosperms and Angiosperms: (Pg:No. 57-58)**	2 3

S.No	Gymnosperms	Angiosperms
1	Vessels are absent (except **Gnetales**)	Vessels are present
2	Phloem lacks	Companion cells are present
3	Ovules are naked	Ovules are enclosed within the ovary
4	Wind pollination only	Insects, wind, water, animals etc., act as pollinating agents
5	Double fertilization is absent	Double fertilization is present
6	Endosperm is haploid	Endosperm is triploid
7	Fruit formation is absent	Fruit formation is present
8	Flowers absent	Flowers present

(OR)

Clitoria ternatia (Pg:No. 148-150)

Habit: Climbers
Root: Tap root system
Stem: Aerial, herbaceous, twining or climbing
Leaf: unipinnate or simple pinnate
Inflorescence: Axillary solitary
Flower: Bracteate, bracteolate, bracteoles usually large, pedicellate, heterochlamydeous, complete, bisexual, pentamerous, zygomorphic and hypogynous.
Calyx: Sepals 5, synsepalous, green showing valvate aestivation. Odd sepal is anterior in position.
Corolla: Petals 5, white or blue apopetalous, irregular papilionaceous corolla showing, descendingly imbricate aestivation.
Androecium: Stamens 10, diadelphous (9)+1 nine stamens fused to form a bundle and the tenth stamen is free. Anthers are dithecous, basifixed, introse and dechiscing by longitudinal slits.
Gynoecium: Monocarpellary, unilocular, with many ovules on mariginal placentation, ovary superior, style simple and incurved with feathery stigma.
Fruit: Legume
Seed: Non-endospermous, reniform.
Floral formula: Br., Brl., %, ♀ $K_{(5)}$, C_5, $A_{(9)+1}$, $\underline{G}_1$

1

2

1

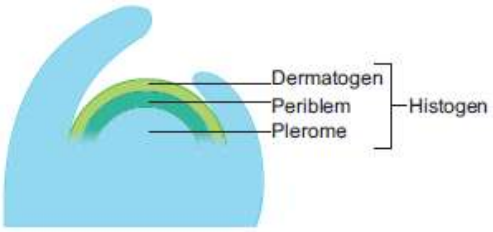
1

21

i) Histogen theory regarding shoot apical meristem: (Pg:No. 4) $2\frac{1}{2}$

Histogen theory is proposed by **Hanstein** (1868) and supported by **Strassburgur.** The shoot apex comprises three distinct zones.

1. **Dermatogen:** It is a outermost layer. It gives rise to epidermis.
2. **Periblem:** It is a middle layer. It gives rise to cortex.
3. **Plerome:** It is innermost layer. It gives rise to stele

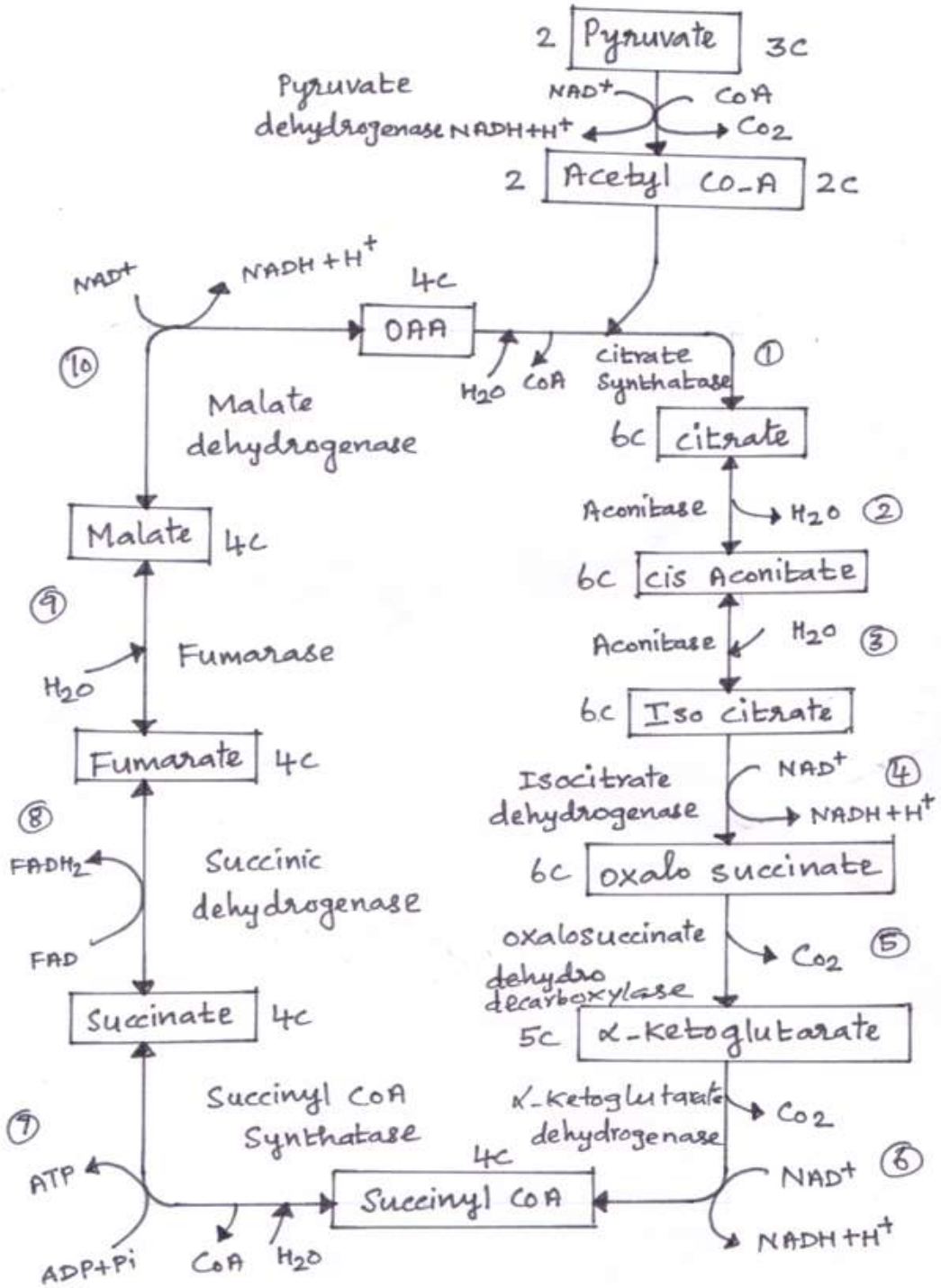


ii) Anatomical variation of dicot and monocot roots: (Pg:No. 26) $2\frac{1}{2}$

S.No	Characters	Dicot root	Monocot root
1.	Pericyle	Gives rise to lateral roots, phellogen and a part of vascular cambium.	Gives rise to lateral roots only.
2.	Vascular tissue	Usually limited number of xylem and phloem strips.	Usually more number of xylem and phloem strips,
3.	Conjunctive tissue	Parenchymatous. Its cells are differentiated into vascular cambium.	Mostly sclerenchymatous but sometimes parenchymatous. It is never differentiated in to vascular cambium.
4.	Cambium	It appears as a secondary meristem at the time of secondary growth.	It is altogether absent.
5.	Xylem	Usually tetrach	Usually polyarch

(OR)

Flow chart of Kreb's cycle: (Pg:No. 147)



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TIRUCHENGODE(TK), NAMAKKAL (DT) PIN-637202
Cell : 99655-31727, 99655-35967

COMMON HALF YEARLY EXAMINATION 2019

STD: XI **23.12.2019**

SUBJECT: BIO- ZOOLOGY **MARKS : 35**

Q. NO	ANSWER KEY	MARKS
	SECTION -I	
1.	c)16S rRNA	1
2.	a)Pseudostratified epithelium	1
3.	c)Casein – Tripsin	1
4.	b)I-d,II-c,III-b,IV-a	1
5.	b)hip bone	1
6.	c)A is correct, but R is wrong	1
7.	c)Thymus	1
8.	c)Antidiuretic hormone	1
	SECTION –II **Answer any four of the following questions**	4 x 2 = 8
9	Relationships among various biological species based upon similarities and differences in their physical or genetic characteristics.	2
10	❖ Blood is a fluid connective tissue derived from the mesoderm. ❖ Further like connective tissue it has a matrix (plasma)with cells such as RBC,WBC and platelets. ❖ It circulates in the body and takes part in transport of substances and respiratory gases.Hence it is considered as a connective tissue.	1 1
11	❖ **GERD**-Gastero Oesophagus Reflex Disorder. ❖ It is commonly known as Heart burn.	1 1
12	❖ The fluid inside the lymphatic's is called lymph. ❖ The narrow passages in the lymph nodes are the sinusoids that are lined with macrophages. The lymph nodes successfully prevent the invading microorganisms form reaching the blood stream. Cells found in the lymphatic's are the lymphocytes. Lymphocytes collected in the lymphatic fluid are carried via the arterial blood and are recycled back to the lymph. Fats are absorbed through lymph in the lacteals present in the villi of the intestinal wall.	1 1
13	❖ Rapid muscle spasms occur in the muscles due to deficiency of parathyroid hormone resulting in reduced calcium levels in the body.	2
14	❖ Diabetes insipidus is caused due to hyposecretion of vasopressin (ADH) from neurohypophysis. ❖ Due to deficiency of ADH inability absorption of H_2O from DCT & Collecting duct causes more amount of water found in urea is called Diabetes insipidus.	1 1

	SECTION-III **Write any three of the following.Question No.19 is compulsory**	
15	❖ In the phylum Arthropoda the animal body is covered by chitinous exoskeleton for protection and to prevent water loss, It is shed off periodically by a process called moulting or ecdysis.	3
16	❖ In Cockroach the entire body is covered by a hard, brown coloured, chitinous exoskeleton. ❖ In each segment, exoskeleton has hardened plates called **sclerites**, which are joined together by a delicate and elastic **articular membrane** or **arthrodial membrane**. ❖ The sclerites of the dorsal side are called **tergites**, those on the ventral side are called **sternites** and those of lateral sides are called **pleurites**	1 1 1
17	❖ The thin squamous epithelial cells of the alveoli are composed of Type I and Type II cells. ❖ Type II cells are thicker, synthesized and secrete a substance called Surfactant. ❖ It lowers the surface tension in the alveoli and prevents the lung from collapsing.	1 1 1
18	❖ Aquaporins are water-permeable channels in membrane of Nephron (membrane transport proteins) that allow water to move across the epithelial cells in relation to the osmotic difference from the lumen to the interstitial fluid.	3
19	❖ The external parietal layer of the Bowman's capsule is made up of simple squampous epithelium and the visceral layer is made of epithelial cells called podocytes.	3
	SECTION-IV **Answer all questions**	
20	**Disorders of skeletal system:** Arthritis and osteoporosis are the major disorders of skeletal system. ❖ **Arthritis:** Arthritis is an inflammatory (or) degenerative disease that damages the joints. There are several types of arthritis. ❖ **Osteoarthritis:** The bone ends of the knees and other freely movable joints wear away as a person ages.The joints of knees, hip, fingers and vertebral column are affected. ❖ **R h e u m a t o i d arthritis:** The synovial membranes become inflamed and there is an accumulation of fluid in the joints. The joints swell and become extremely painful. It can begin at any age but symptoms usually emerge before the age of fifty. ❖ **Gouty arthritis or gout:**Inflammation of joints due to accumulation of uric acid crystals or inability to excrete it. It gets deposited in synovial joints. ❖ **Osteoporosis:** It occurs due to deficiency of vitamin D and hormonal imbalance. The bone becomes soft and fragile. It causes rickets in children and osteomalacia in adult females. It can be minimized with adequate calcium intake, vitamin D intake and regular physical activities.	1 1 1 1 1

	(OR)	
	❖ In infants, hypothyroidism causes **cretinism.** A cretin shows retarded skeletalgrowth, absence of sexual maturity, retarded mental ability, thick wrinkled skin, protruded enlarged tongue, bloated face, thick and short limbs occurs. The other symptoms are low BMR, slow pulse rate, subnormal body temperature and elevated blood cholesterol levels. ❖ Hyposecretion of thyroid in adults causes **myxodema**. It is otherwise called **Gull's disease**. This disease is characterised by decreased mental activity, memory loss, slowness of movement, speech, and general weakness of body, dry coarse skin, scarce hair, puffy appearance, disturbed sexual function,low BMR, poor appetite, and subnormal body temperature. ❖ **Grave's disease** also called as **thyrotoxicosis** or **exophthalmic goitre**.This disease is caused due to hyper secretion of thyroid. It is characterised by enlargement of thyroid gland, increasedBMR (50% - 100%), elevated respiratory and excretory rates, increased heart beat, high BP, increased body temperature,protrusion of eyeball and weakness of eyemuscles and weight loss. ❖ **Simple goitre** is also known as **Endemicgoitre**. It is caused due to hyposecretion of thyroxine. The symptoms includesenlargement of thyroid gland, fall in serum thyroxine level, increased TSH secretion.	1½ 1½ 1 1
21	❖ They are found in a variety of habitats. Their body is covered by hair, a unique feature of mammals. Some of them are adapted to fly or live in water. Presence of mammary glands is the most unique feature of mammals. ❖ They have two pairs of limbs adapted for walking, running, climbing, burrowing, swimming and flying. Their skin is glandular in nature, consisting of sweat glands, scent glands and sebaceous glands. Exoskeleton includes horny epidermal horns, spines, scales, claws, nails, hooves and bony dermal plates. ❖ Teeth are thecodont, heterodont and diphyodont. External ears or pinnae are present. The heart is four chambered and possess a left systematic arch. Mature RBCs are circular, biconcave and non nucleated. ❖ Mammals have a large brain when compared to other animals They show greatest intelligence among all animals. Their kidneys are metanephric and are ureotelic. ❖ All are homeothermic, sexes are separate and fertilization is internal. ❖ Examples Oviparous- *Ornithorhynchus* (Platypus), Viviparous- *Macropus* (Kangaroo), *Pteropus* (Flying fox).	1 1 1 1 1

	(OR)	

Arteries	Veins	
The blood vessels that carry blood away from the heart are called arteries except pulmonary artery.	The blood vessels that carry blood towards heart are called veins. Except pulmonary vein.	1
All arteries carry oxygenated blood, except pulmonary artery.	Veins carry deoxygenated blood, except the pulmonary.	1
The arteries usually lie deep inside the body	They are superficial	1
The walls of the arteries are thick, non collapsible to with stand high pressure.	The blood pressure is low and the lumen has a wide wall which is collapsible	1
As blood enters an arteriole it may have a pressure of 85 mm Hg.	Blood samples are usually taken from the veins rather arteries because of low pressure in the veins	1

MARK ANALYSIS

PART	Book Back Questions	Interior questions	Total No. of Questions	Total Mark
I	3	5	8	8
II	3	3	6	12
III	1	4	5	15
IV	1	3	4	20
Total	8	15	23	55

Department of ZOOLOGY

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