



# SHRI VIDHYABHARATHI MATRIC HR. SEC. SCHOOL

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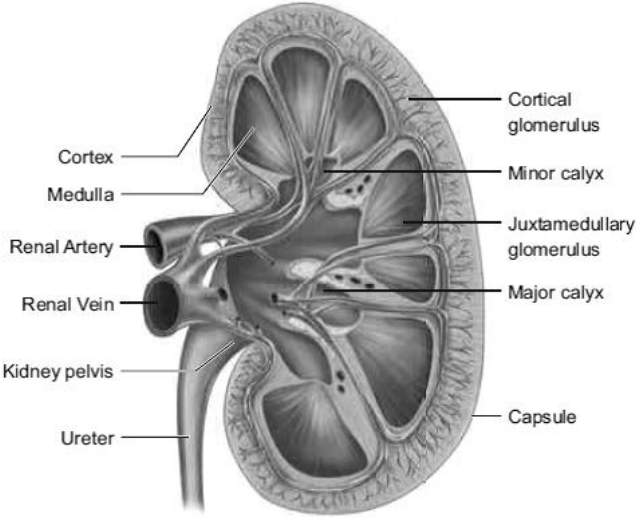
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XI - STANDARD ZOOLOGY

COMMON HALF YEARLY EXAMINATION - DEC - 2018 14.12.2018

PART - I		15 X 1 = 15
Q.N	Answer	Mark
1.	a) Taxon	1
2.	d) a-iii, b-iv, c-ii, d-i	1
3.	b) Haemocyanin	1
4.	a) Physalia - Portugese man of war	1
5.	c) Uric acid	1
6.	b) Fibrinogen	1
7.	d) Ciliated epithelium - Gall bladder	1
8.	c) Pigeon	1
9.	a) Bile juice emulsifies the fat	1
10.	c) Carbomine Haemoglobin	1
11.	c) Uricotelic	1
12.	a) Myasthenia gravis	1
13.	a) P = Acetylcholine, Q = Ca <sup>++</sup>	1
14.	a) Rhodopsin	1
15.	a) (i) and (ii)	1
PART - II		6 X 2 = 12
16.	<b>Osteichthyes.</b> <ul style="list-style-type: none"><li>❖ It includes both marine and freshwater fishes with bony endoskeleton and spindle shaped body.</li><li>❖ Skin is covered by ganoid, cycloid or ctenoid scales.</li><li>❖ Respiration is by four pairs of filamentous gills and is covered by an operculum on either side.</li><li>❖ Air bladder is present with or without a connection to the gut. It helps in gaseous exchange (lung fishes) and for maintaining buoyancy in most of the ray finned fishes.</li><li>❖ They have a ventrally placed two chambered heart. Excretory organs are mesonephric kidneys and are ammonotelic.</li><li>❖ Presence of well developed lateral line sense organ. Sexes are separate, external fertilization is seen and most forms are oviparous.</li></ul>	(any 2) 2x1=2
17.	<b>Cladogram</b> – A branching diagram showing the relationship between a number of species.	2
18.	<b>Systematic position of frog.</b> Phylum : Chordata Class : Amphibia Order : Anura Genus : <i>Rana</i> Species : <i>hexadactyla</i>	2
19.	<ul style="list-style-type: none"><li>❖ In cockroach the sclerites of the dorsal side are called <b>tergites</b>.</li><li>❖ Those on the ventral side are called <b>sternites</b>.</li></ul>	1 1

20.	<p style="text-align: center;"><b>Connective Tissues</b></p> <pre> graph TD     CT[Connective Tissues] --&gt; L[Loose Connective Tissues]     CT --&gt; D[Dense Connective Tissues]     CT --&gt; S[Specialised Connective Tissues] </pre> <p><b>Loose Connective Tissues</b> 1. Areolar Tissue 2. Adipose Tissue 3. Reticular Tissue</p> <p><b>Dense Connective Tissues</b> 1. Dense Regular 2. Dense Irregular 3. Elastic</p> <p><b>Specialised Connective Tissues</b> 1. Cartilage 2. Bone 3. Blood</p>		2
21.	The pancreatic juice contains enzymes such as trypsinogen, chymotrypsinogen, carboxypeptidases, pancreatic amylases, pancreatic lipases and nucleases.		2
22.	<p><b>Methaemoglobin</b></p> <ul style="list-style-type: none"> <li>❖ If the iron component of the haemmoieties is in the ferric state, than the normal ferrous state, it is called methaemoglobin.</li> <li>❖ Methaemoglobindoes not bind O<sub>2</sub>. Normally RBC contains less than 1% methaemoglobin.</li> </ul>		1 1
23.	<b>Malleus, incus and stapes collectively are called ear ossicles.</b>		2
24.	<p><b>Chemical Messengers</b></p> <p>The endocrine system influences the metabolic activities by means of <b>hormones</b> (hormone means <i>to excite</i>) which are chemical messengers released into the blood and circulated as chemical signals and acts specifically on certain organs or tissues called target organs or target tissues.</p>		2
<b>PART - III</b>			6 X 3 = 18
25.	<p><b>Excretory organs of arthropodans</b></p> <ul style="list-style-type: none"> <li>❖ malpighian tubules</li> <li>❖ green glands</li> <li>❖ coxal glands, etc.</li> </ul>		1 1 1
26.	<p><b>Automated species identification tools</b></p> <p>It consists of Cyber tools. For example: DAISY, ALIS, ABIS, SPIDA Draw wing, etc. ALIS → Automated Leafhopper Identification System. DAISY → Digital Automated Identification System. ABIS → Automatic Bee Identification System. SPIDA → Species Identified Automatically (spiders, wasp and bee wing characters). Draw wing → Honey bee wing identification.</p>		1 1 1
27.	<p><b>Kwashiorkar</b></p> <p>Symptoms are dry skin, pot-belly, oedema in the legs and face, stunted growth, changes in hair colour, weakness and irritability.</p>		3
28.	<p><b>Dead space</b></p> <ul style="list-style-type: none"> <li>❖ Some of the inspired air never reaches the gas exchange areas but fills the respiratory passages where exchange of gases does not occur. This air is called dead space.</li> <li>❖ Dead space is not involved in gaseous exchange. It amounts to approximately 150mL.</li> </ul>		2 1
29.	<p style="text-align: center;"><b>Arteries</b></p> <p>The blood vessels that carry blood away from the heart are called arteries except pulmonary artery.</p>	<p style="text-align: center;"><b>Veins</b></p> <p>The blood vessels that carry blood towards heart are called veins. Except pulmonary vein.</p>	any 3 3x1=3

	All arteries carry oxygenated blood, except pulmonary artery.	Veins carry deoxygenated blood, except the pulmonary.	
	The arteries usually lie deep inside the body	They are superficial	
	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	
	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	
30.	<ul style="list-style-type: none"> <li>❖ <b>Heparin</b> is an anticoagulant produced in small quantities by mast cells of connective tissue.</li> <li>❖ Heparin prevents coagulation in small blood vessels.</li> </ul>		2 1
31.	<ul style="list-style-type: none"> <li>❖ <b>Thalamus</b> is composed of grey mater which serves as a relay centre for impulses between the spinal cord, brain stem and cerebrum.</li> <li>❖ Within the thalamus, information is sorted and edited and plays a key role in learning and memory.</li> <li>❖ It is a major coordinating centre for sensory and motor signalling.</li> </ul>		1 1 1
32.	<p><b>Types of Joints:</b></p> <p>(i) <b>Fibrous joints or Synarthroses:</b> They are immovable fixed joints in which no movement between the bones is possible. Sutures of the flat skull bones are fibrous joints.</p> <p>(ii) <b>Cartilaginous joints or Amphiarthroses:</b> They are slightly movable joints in which the joint surfaces are separated by a cartilage and slight movement is only possible. E.g., Joints of adjacent vertebrae of the vertebral column.</p> <p>(iii) <b>Synovial joints or Diarthroses joints:</b> They are freely movable joints, the articulating bones are separated by a cavity which is filled with synovial fluid.</p> <p>E.g., Pivot joint – between atlas and axis  Plane/gliding joint – between the carpals  Saddle joint – between the carpal and metacarpal  Ball and socket joint – between humerus and pectoral girdle  Hinge joint – knee joint  Condyloid or Angular or Ellipsoid – joint between radius and carpal</p>		1 1 1
33.			diagram - 2 Parts - 1

34.	<p><b>Rules of Nomenclature</b></p> <ul style="list-style-type: none"> <li>• The scientific name should be italicized in printed form and if handwritten, it should be underlined separately.</li> <li>• The generic name's (<i>Genus</i>) first alphabet should be in uppercase.</li> <li>• The specific name (<i>species</i>) should be in lowercase.</li> <li>• The scientific names of any two organisms are not similar.</li> <li>• The name or abbreviated name of the scientist who first publishes the scientific name may be written after the species name along with the year of publication. For example <i>Lion-Felis leo</i> Linn., 1758 or <i>Felis leo</i> L., 1758.</li> <li>• If the species name is framed after any person's name the name of the species shall end with i, ii or ae. For example, a new species of a grounddwelling lizard (<i>Cyrtodactylus</i>) has been discovered and named after Scientist Varad Giri, <i>Cyrtodactylus varadgirii</i>.</li> </ul>	any 5 5x1=5
(OR)	<p><b>Echinodermata</b></p> <ol style="list-style-type: none"> <li>All Echinoderms are marine animals. <ul style="list-style-type: none"> <li>• The adults are radially symmetrical but the larvae are bilaterally symmetrical.</li> <li>• These animals have a mesodermal endoskeleton of calcareous ossicles and hence the name Echinodermata (spiny skin).</li> </ul> </li> <li>They are exclusively marine with organ system level of organisation. <ul style="list-style-type: none"> <li>• The most distinctive feature of echinoderms is the presence of the water vascular system or ambulacral system with tube feet or podia, which helps in locomotion, capture and transport of food and respiration.</li> </ul> </li> <li>The digestive system is complete with mouth on ventral side and anus on the dorsal side. Excretory organs are absent.</li> <li>The nervous system and sensory organs are poorly developed. The circulatory system is open type without heart and blood vessels.</li> <li>Sexes are separate. Reproduction is sexual and fertilization is external. Development is indirect with free swimming bilaterally symmetrical larval forms. Some echinoderms exhibit autotomy with remarkable powers of regeneration. Examples: <i>Asterias</i> (Starfish or sea star), <i>Echinus</i> (Sea-urchin), <i>Antedon</i> (Sea-lily), <i>Cucumaria</i> (Sea-cucumber), <i>Ophiura</i> (Brittle star)</li> </ol>	1  1  1  1  1
35.	<p><b>Mammalia</b></p> <ol style="list-style-type: none"> <li>They are found in a variety of habitats. <ul style="list-style-type: none"> <li>• Their body is covered by hair, a unique feature of mammals.</li> <li>• Some of them are adapted to fly or live in water.</li> <li>• Presence of mammary glands is the most unique feature of mammals.</li> </ul> </li> <li>They have two pairs of limbs adapted for walking, running, climbing, burrowing, swimming and flying.</li> <li>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.</li> <li>Teeth are thecodont, heterodont and diphodont. 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.</li> </ol>	1  1  1  1

	<p>5. 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.</p> <p>Examples</p> <p>Oviparous- <i>Ornithorhynchus</i> (Platypus),  Viviparous- <i>Macropus</i> (Kangaroo), <i>Pteropus</i> (Flying fox),  <i>Macaca</i> (Monkey), <i>Canis</i> (Dog), <i>Felis</i> (Cat), <i>Elephas</i> (Elephant),  <i>Equus</i> (Horse), <i>Delphinus</i> (Common dolphin)  <i>Balaenoptera</i> (Blue whale), <i>Panthera tigris</i> (Tiger), <i>Panther leo</i> (Lion),  <i>Homo sapiens</i> (Human) <i>Bos</i> (Cattle).</p>	1
OR	<p><b>Functions of Epithelial tissue.</b>  Diffusion, Secretion, absorption, Protection</p> <p><b>Squamous epithelium</b> - Diffusion (Air sacs of lungs)  <b>Cuboidal epithelium</b> - Secretion (Secretory portions of small glands)  <b>Columnar epithelium</b> - Absorption (Digestive tract)  <b>Transitional epithelium</b> - Protection (Lining the ureters)</p>	1 1 1 1 1
36.	<p><b>Flight muscles</b></p> <p>1. Wings are modified forelimbs and the organs of flight.</p> <ul style="list-style-type: none"> <li>The musculature of the fore limbs are greatly modified in response to the function they perform.</li> <li>Flight is the coordinated effort of a number of paired muscles.</li> <li>The muscles which operate the wings during flight are called <b>flight muscles</b>.</li> </ul> <p>2. The major flight muscles of pigeon are the <b>pectoral muscles</b>.</p> <ul style="list-style-type: none"> <li>Pectoral muscles are of two types namely the <b>Pectoralis major</b> and <b>Pectoralis minor</b>.</li> </ul> <p>3. The pectoralis major muscle is a large and powerful flight muscle which arises from the sternum.</p> <ul style="list-style-type: none"> <li>Contraction of these muscles lower the wings in flight.</li> </ul> <p>4. Pectoralis minor (subclavius) is small and elongated muscle which elevates the wings during flight.</p> <p>5. Besides the pectoralis, the small <b>coracobrachialis</b> muscle also helps to pull the wings down and to rotate wings during flight.</p>	1  1  1 1 1
OR	<p><b>The Blood-Vascular System in frog</b></p> <p>1. Blood vascular system consists of a <b>heart</b> with three chambers, <b>blood vessels</b> and <b>blood</b>.</p> <ul style="list-style-type: none"> <li>Heart is covered by a double-walled membrane called <b>pericardium</b>. There are two thin walled anterior chambers called auricles (Atria) and a single thick walled posterior chamber called ventricle.</li> <li><b>Sinus venosus</b> is a large, thin walled, triangular chamber, which is present on the <b>dorsal side</b> of the heart.</li> </ul> <p>2. <b>Truncus arteriosus</b> is a thick walled and cylindrical structure which is obliquely placed on the <b>ventral surface</b> of the heart.</p> <ul style="list-style-type: none"> <li>It arises from the ventricle and divides into right and left <b>aortic trunk</b>, which is further divided into <b>three aortic arches</b> namely carotid, systemic and pulmo-cutaneous.</li> </ul>	1  1

	<p>3. The <b>Carotid</b> trunk supplies blood to the anterior region of the body.</p> <ul style="list-style-type: none"> <li>• The <b>Systemic trunk</b> of each side is joined posteriorly to form the <b>dorsal aorta</b>.</li> <li>• They supply blood to the posterior part of the body. <b>Pulmo-cutaneous trunk</b> supplies blood to the lungs and skin.</li> </ul> <p>4. Sinus venosus receive the deoxygenated blood from the body parts by two anterior precaval veins and one post caval vein.</p> <ul style="list-style-type: none"> <li>• It delivers the blood to the right auricle; at the same time left auricle receives oxygenated blood through the pulmonary vein.</li> <li>• Renal portal and hepatic portal systems are seen in frog.</li> </ul> <p>5. The <b>blood</b> consists of <b>plasma</b> [60%] and blood <b>cells</b> [40 %], red blood cells, white blood cells, and platelets.</p> <ul style="list-style-type: none"> <li>• RBCs are loaded with red pigment, nucleated and oval in shape</li> <li>• Leucocytes are nucleated, and circular in shape</li> </ul>	1 1
37.	<p><b>Effects of smoking</b></p> <p>1. Research says about 80% of the lung cancer is due to cigarette smoking.</p> <ul style="list-style-type: none"> <li>• There are thousands of known chemicals which includes nicotine, tar, carbon monoxide, ammonia, sulphur- dioxide and even small quantities of arsenic.</li> <li>• Carbon monoxide and nicotine damage the cardiovascular system and tar damages the gaseous exchange system.</li> </ul> <p>2. Nicotine is the chemical that causes addiction and is a stimulant which makes the heart beat faster and the narrowing of blood vessels results in raised blood pressure and coronary heart diseases.</p> <p>3. Presence of carbon monoxide reduces oxygen supply.</p> <ul style="list-style-type: none"> <li>• Lung cancer, cancer of the mouth and larynx is more common in smokers than non-smokers.</li> <li>• Smoking also causes cancer of the stomach, pancreas and bladder and lowers sperm count in men.</li> </ul> <p>4. Smoking can cause lung diseases by damaging the airways and alveoli and results in emphysema and chronic bronchitis.</p> <ul style="list-style-type: none"> <li>• These two diseases along with asthma are often referred as Chronic Obstructive Pulmonary Disease (COPD).</li> </ul> <p>5. When a person smokes, nearly 85% of the smoke released is inhaled by the smoker himself and others in the vicinity, called passive smokers, are also affected.</p>	1 1 1 1 1
OR	<p><b>Red blood cells</b></p> <p>There are about 5 million to 5.5 millions of RBC mm<sup>3</sup> in men and 4.5-5.0 millions of RBC mm<sup>3</sup> in healthy women.</p> <p>Diameter of about 7µm (micrometer). The red colour of the RBC is due to the presence of a respiratory pigment, haemoglobin.</p> <p>The RBCs are devoid of nucleus, mitochondria, ribosomes and endoplasmic reticulum. The average life span of RBCs in a healthy individual is about 120 days after which they are destroyed in the spleen.</p> <p>Erythropoietin is a hormone helps in differentiation of stem cells of the bone marrow to erythrocytes (erythropoiesis)</p>	1

**White blood cells** (leucocytes) are colourless, amoeboid, nucleated cells devoid of haemoglobin and other pigments. Approximately 6000 to 8000 per cubic mm of WBCs.

**Neutrophils** - heterophils or polymorphonuclear (cells with 3-4 lobes of nucleus - 60%- 65% of the total WBCs. phagocytic.

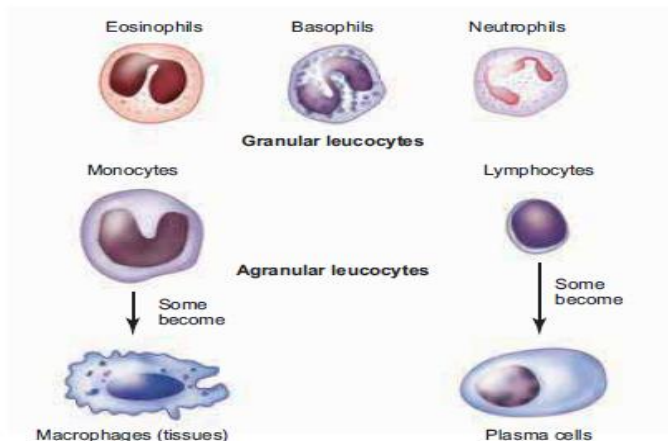
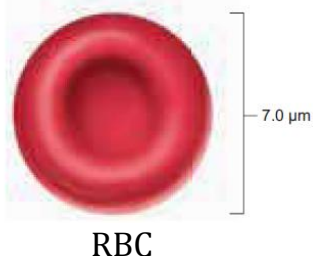
**Eosinophils** - bilobed nucleus - non-phagocytic 2-3% of the total WBCs. - allergic reactions.

**Basophils** - 0.5%- 1.0% - Nucleus is large sized - heparin, serotonin and histamines - inflammatory reactions.

**Lymphocytes** - 28% of WBCs. These have large round nucleus B cells produce antibodies and T cells are involved in cell mediated immunity.

**Monocytes** (Macrophages) are phagocytic cells - kidney shaped nucleus. 1-3% The macrophages of the central nervous system - 'microglia', sinusoids of the liver - 'Kupffer cells' - pulmonary region - 'alveolar macrophages'.

**Platelets** are also called thrombocytes megakaryocytes lack nuclei. 1, 50,000 -3, 50,000 platelets  $\text{mm}^3$  - involved in coagulation or clotting of blood.



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38.

**Types of movement**

The different types of movements that occur in the cells of our body are amoeboid, ciliary, flagellar and muscular movement.

**Amoeboid movement** - Cells such as macrophages exhibit amoeboid movement for engulfing pathogens by pseudopodia formed by the streaming movement of the cytoplasm.

**Ciliary movement** - This type of movement occurs in the respiratory passages and genital tracts which are lined by ciliated epithelial cells.

**Flagellar movement** - This type of movement occurs in the cells which are having flagella or whip-like motile organelle. The sperm cells show flagellar movement.

**Muscular movement** - The movement of hands, legs, jaws, tongue are caused by the contraction and relaxation of the muscle which is termed as the muscular movement.

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OR

**Hormones of Adenohypophysis**

**i) Growth hormone (GH):** It is also known as somatotrophic hormone (STH) or Somatotropin. It is a peptide hormone. Growth hormone promotes growth of all the tissues and metabolic process of the body. It influences the metabolism of carbohydrates, proteins and lipids and increases the rate of protein biosynthesis in the cells. It stimulates chondrogenesis (cartilage formation), osteogenesis (bone formation) and helps in the retention of

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minerals like nitrogen, potassium, phosphorus, sodium etc., in the body. GH increases the release of fatty acid from adipose tissue and decreases the rate of glucose utilization for energy by the cells. Thus it conserves glucose for glucose dependent tissues, such as the brain.

**ii) Thyroid stimulating hormone (TSH) or thyrotropin:** TSH is a glycoprotein hormone, which stimulates the thyroid gland to secrete Tri-iodothyronine (T<sub>3</sub>) and thyroxine (T<sub>4</sub>). TSH secretion is regulated by negative feedback mechanism. It's release from the anterior pituitary is induced by the thyrotropin releasing hormone (TRH). When thyroxine level in the blood increases, TRH acts on both the pituitary and hypothalamus to inhibit TSH secretion.

**iii) Adreno cortico tropic hormone (ACTH):** ACTH is a peptide hormone that stimulates the adrenal cortex to secrete glucocorticoids and mineralocorticoids. It stimulates melanin synthesis in melanocytes, induces the release of fatty acids from adipose tissues and stimulates insulin secretion. ACTH secretion is regulated by **negative feedback mechanism.**

**iv) Follicle stimulating hormone (FSH):** FSH is a glycoprotein hormone which regulates the functions of the gonads (ovary and testis). In males, FSH along with androgens acts on the germinal epithelium of seminiferous tubules and stimulates the production and release of sperms (spermatogenesis). In females, FSH acts on the ovaries and brings about the development and maturation of graffian follicles.

**v) Luteinizing hormone (LH):** LH is a glycoprotein hormone which is also known as interstitial cell stimulating hormone (ICSH). In males, ICSH acts on the interstitial cells of testis to produce the male sex hormone, testosterone. In females, LH along with FSH matures the ovarian follicles. LH independently induces ovulation, maintains the corpus luteum and promotes synthesis and release of ovarian hormones. FSH and LH are collectively referred as gonadotropins.

FSH and LH are not produced during childhood. The secretion of FSH and LH starts only during pre pubertal period.

**vi) Luteotropic hormone (LTH):** LTH is also called luteotropin or lactogenic hormone or prolactin or mammatropin. It is a protein hormone which stimulates milk secretion after the child birth in females. High prolactin secretion during lactation suppresses LH secretion and ovulation since it induces the corpus luteum hence named as luteo tropic hormone.

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