SHRI VIDHYABHARATHI MATRIC HR.SEC.SCHOOL

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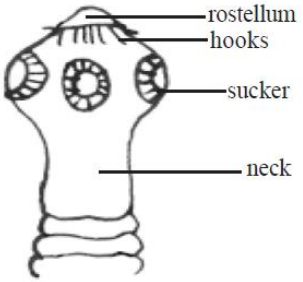
COMMON HALF YEARLY EXAMINATION 2018

STD: XII-PURESCIENCE **14.12.2018**
SUBJECT: ZOOLOGY **MARKS : 70**

Q. NO	ANSWER KEY	MARKS
	SECTION -I	
1.	c) osteomalacia	1
2.	d) the epiglottis closes oesophagus	1
3.	c) oncogenic viruses	1
4.	c) Amoebiasis - Versinia pestis	1
5.	a) bacterial toxin	1
6.	d) it is the response of non-specific immunity of the body	1
7.	c) Hb^AHb^S	1
8.	b) germ line cell gene therapy	1
9.	a) Gulf of mannar Biosphere Reserve	1
10.	b) Thomas Malthus	1
11.	c) Reason explains Assertion correctly	1
12.	b) smoker	1
13.	c) Germplasm theory	1
14.	a) A-iii, B-i, C-iv, D-ii	1
15.	d) Trout	1
	SECTION -II	
16.	• About one in five people experience no chest pain in myocardial infarction. However, there may be fainting, sweating and pale skin. This pattern of symptom is known as "silent infarction".	2
17.	• ELISA test (Enzyme Linked Immuno Sorbent Assay) is a sensitive preliminary blood test used to detect HIV antibodies. • Western Blot is the confirmatory test, which is highly specific and based on specific antibodies to viral core proteins.	1 1
18.	• Immunodeficiency may result from gene mutations, infections, malnutrition or accidents.	2
19.	• **Pedigree analysis** • Unlike animals, controlled crosses cannot be made in human beings. Hence human geneticists, resort to a scrutiny of established matings. The scrutiny of established matings to obtain information about the genetic characters/traits is called pedigree analysis.	1 1
20.	• The hazardous biomedical wastes are usually disposed off by means of incineration. • Human anatomical wastes, discarded medicines, toxic drugs, blood, pus, animal wastes, microbiological and biotechnological wastes etc are called Bio-medical wastes.	1 1

21.	• Sphygmomanometer helps to estimate the state of blood circulation and the working of heart. • Sphygmonanometer helps to diagnose pathological conditions such as hypertension (increased BP) and hypotension (reduction in BP)	1 1
22.	• High temperature (41-41.5^{0}c) swelling of the neck, thorax, flanks and lumbar regions which are neither hot nor painful. • Blood discharges from natural openings, the affected animal dies in 10 to 36hrs.	1 1
23.	• II law of Lamarck • If an organism is 'in need' of an organ, sooner or later it will arise. • 'want' or 'inner feeling' to possess a particular character can lead to the origin of such a character.	 1 1
24.	• The hatching pit must have facility for continuous and slow flow of water. It also must be provided with an enclosure of fine mesh net called Hapa. • The happa is rectangular in shape. It is held on four bamboo poles, one at each corner. The size of hapa and mesh of its net differ according to use. This hapa prevents the escape of the laid eggs and protect the eggs from the predators.	1 1
	SECTION -III	
25.	• The mature spermatozoa that are formed leave each testis through an epididymis, a long coiled tube that lies above and behind each testis. • The sperms are stored in the epididymis and periodically pushed into the vasdeferens the tube that connects an epididymis to an ejaculatory duct.	**1** **2**
26.	• In the brain the medulla oblongata contains a respiratory center. • When the alveoli are stretched at the height of inspiration the receptors send stimuli to the expiratory center of the medulla through the vagus nerve which inhibits further inspiration. This sequence of events is called **Herring-Breuer reflex**. • In addition, the medulla contains a pneumotaxic center which is connected to the breathing centre and helps to ensure rhythmic breathing. During inspiration, the inspiratory part of the respiratory center sends impulses to the pneumotaxic center which responds by sending impulses to the expiratory part of the respiratory center. The expiratory center is then activated and so the inspiratory center is inhibited reflexly. Thus the respiratory rhythm is controlled by these centers in the brain.	1 1 1
27.		diagram -2 parts - 1
28.	• The thymus was considered as an organ without any recognized function. But its role in the development of cell mediated immunity has been found recently. The primary function of the thymus is the productinn of thymic lymphocytes (T cells). It is the major site for T lymphocyte proliferation in the body. However, of the lymphocytes produced, only about one per cent leave the thymus. The rest are destroyed locally by programmed cell death or apoptosis. • In the thymus, the lymphocytes acquire new surface antigens (Thy antigens). Lymphocytes produced in the thymus are called 'thymus (T) dependent lymphocytes' or 'T cells'. Unlike, lymphocytes proliferation in the peripheral organs, the function of thymus is independent of antigenic stimulation. • The thymus confers immunological competence on the lymphocytes during their stay in the organ. Prethymic lymphocytes are not immunocompetent. In	1 1

	the thymus they are 'educated' so that they become capable of mounting cell mediated immune response against appropriate antigens. This is effected by hormone-like factors such as thymulin, thymosin and thymopoietin produced by the thymus.	1
29.	• The clinical manifestations of thalassemia include (i) decrease in the bone marrow activity, (ii) peripheral haemolysis, (iii) splenomegaly (enlarged spleen) and hepatomegaly, (enlarged liver) etc. The thalassemic children die at the age of seventeen.	 1 1 1
30.	• This is another rapidly developing clean up technology cleaning the environment with biological options such as microbes and plants is called bioremedication. • Certain plants such as Gibberella fusarium were able to breakdown cyanide and reduce it to a non-toxic form.	2 1
31.	• Aseel : Aseel is noted for its pugnacity. • The colour of the breed is white or black. The hens are not good egg layers but are excellent sitters. • Aseel breed is found in almost all states of India, but abundant in Andhra Pradesh.	1 1 1
32.	• Royal jelly is secreted by the glands of nurse bees of the age of 6-12 days. • It is a very nutritious food and is fed to the young larvae and adult queen. • Royal jelly is milky white in colour. • It is composed of proteins, lipids, carbohydrates, water and ash. • Royal jelly is a nutrious food for human beings as it increases vigour and vitality.	 1 1 1
33.	• Wooden poles are placed upright in the inter tidal zone. • In this method, ropes with spat attached are wound around large vertical poles called bouchots. • Mussels and oysters are cultured by this practice.	1 1 1
	Section-IV	
34.	• Nyctalopia • The sensory region of the eye is the posterior retina. This region contains several sensory cells called rods and cones. • Rhodopsin or Visual Purple is a puplish red photosensitive pigment present in the outer segment of the **rods** (120 million rods). • It is made up of protein portion, an opsin (scotopsin) combined with an aldehyde of vitamin A called Retinene. • On exposure to light, rhodopsin is bleached, ie., broken down to retinene and opsin, but is resynthesised in the dark. • Some of the retinene recombines with scotopsin to form rhodopsin while some are reduced to vitamin A. • The rods are extremely sensitive to light and are responsible for vision in dim light. This is called SCOTOPIC VISION.	1 1 1 1 1
	(OR) • Mineralocorticoids (or)Aldosterone • The major effect is on the metabolism of sodium ions and indirectly potassium ions. • The major mineralocorticoid hormone is Aldosterone. • Its most important effect is to promote the resorption of sodium ions from the renal glomerular filtrate. • Secondary effects of sodium retention are an increased chloride retention and a decreased potassium retention by the kidneys. • The most important function of the adrenal cortex is its role in stress tolerance.	 1 1 1

	• The adrenal gland or supra renal gland is composed of an outer **cortex** and an inner **medulla**. • The adrenal cortex forms the major portion of the total mass of tissue of adrenal gland. • In adults three concentric zones are discernible within the cortex. 1. A thin outer most layer, the **Zona glomerulosa**, 2. A thick middle region, **Zona fasciculata** and 3. A relatively thick inner layer, the **Zona reticularis**. • In man, the cells of zona fasciculata and zona reticularis act as a single unit, the main function of which is to form glucocorticoids and to a lesser extent androgens and possibly oestrogens. • The mineralocorticoid hormone, aldosterone is secreted by the cells of the zona glomerulosa. • The enzymes necessary for its synthesis reside in the cells of the zona glomerulosa. All the adreno corticoid hormones are steroids.	1 1
35.	a) • Man gets infected by swallowing the embryonated eggs along with contaminated water and food. • The infection is generally through ingestion. On reaching the small intestine, the egg hatches and a tiny larva measuring about 200mm to 300mm escapes out. • This larva sheds its outer skin immediately. It is the first moult. Now it is called **rhabditi form** larva. • The larva then penetrates the wall of the small intestine and reaches the blood stream. The larva is then carried to the right auricle and right ventricle and reaches the lungs ultimately. • On the fifth day the larva sheds the outer skin which is the second moult. On the tenth day another moult takes place, the third moult. (Second and third moults take place in the lungs). • Now the larva is about 1 to 3 mm. in length. The larva then goes through the bronchiole, the bronchus and reaches the trachea. • Later, the larva is coughed out into the pharynx and from there it goes down the oesophagus and reaches the small intestine. • On the 25th day the larva sheds its outer skin which is the fourth moult. After a period of two to two and a half months of infection, the adult stage is reached. • The development outside the human body is termed as Exogenous phase.	1 1 1 1 1
	b) • Radioactive pollutants released form nuclear power plants are chronically hazardous. • The commissioning of boiling water power reactors (BWRS) have resulted in the critical accumulation of large number of long lived radionuclides in water. • Environmentalists argue that thermal effluents from nuclear reactors have acutely affected the aquatic eco system. • The dangerous radioactive waste cannot be buried in land without the risk of polluting soil and underground water. • Several well publicised accidents (Ex. Chernobyl disaster at former U.S.S.R.) and radiation episodes have given a lot of fear in the mind of general public regarding the radiation hazards.	1 1 1 1 1
36.	**a) Va**rious measures to eradicate poverty in human society include the following:(any 5) a) Achieving self sufficiency by intensifying agriculture, augmenting green revolution, increasing crop productivity through modern genetic and bio technological approaches. b) Increasing land and water resources. Expanding the area of able cultivable lands, transforming dry lands into productive lands through irrigation water sheds development.	1 1

c) Prevention of land and water pollution by minimizing the usage of chemical pesticides and adopting biological control strategies for pest eradication. 1

d) Establishment of industries and technologies and creating more avenues for employment and man power utilization.

e) Anti- poverty programmes and social security scheme by the Governments. 1

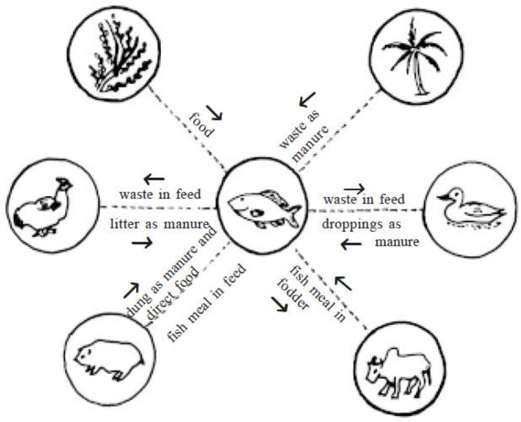
f) Establishing more primary health centres, hospitals and orphanages for destitutes and diseased. 1

g) Enforcement of strict family planning methods.

b)

Integrated fish culture: Culture of fish along with agricultural crops such as paddy, banana and coconut and livestock such as poultry, duck, cattle and pigs is known as integrated fish farming.

Fish farming with agricultural crops: Fish culture in paddy field is carried out in two ways namely **simultaneous culture** and **rotation culture**. In the former, rice and fish are cultivated together and in the latter, fish and rice are cultivated alternatively. The species of ***Catla catla*** and ***Anabas testudineus*** are cultured in this practice. When banana or coconut is cultivated in rows of wetlands, the ditches made between such rows are used for fish culture practice. This culture system is made successful due to continuous supply of water. Larvivorus air-breathing fish species such as ***Channa marulius, Channa striatus*** and ***Tilapia mosambica*** species are cultured in this system. 1



Fish farming with Livestock : In this practice, excreta of ducks, chicks, pigs and cattle are either recycled for use by fish or serve as direct food for fish.

Duck-fish culture : Ducks are known as living manuring machines. The duck dropping consists of inorganic substances and therefore it acts as a source of fertilizer in fish pond. Besides, the ducks feed on unwanted insects, snails and their larvae which may be vectors of fish pathogenic organisms. Fish of more than 10cm size alone should be cultured along with duck, otherwise the duck may feed on the fingerlings. Silver carp, catla, and common carp are ideal for duck-fish culture. 1 1

Chicken-fish culture : The droppings of chickens, rich with nitrogen and phosphorous, would enhance the fertility of the pond. Poultry housingconstructed above the water level using bamboo poles would manure the pond directly. The giant fresh water prawn **Macrobrachium rosenbergii,** silver carp, tilapia, common carp, murrels are cultured in this practice. 1

Cattle- fish culture : For this culture cow *sheds* and bio-gas plants are constructed near the fish pond. The slurry from the bio-gas plant may be discharged into the fish pond to enhance the nutrients of culture system. 1

37. a)

- In clinical procedure adopted to make a successful organ transplantation
  1.Blood groups estimation (ABO and Rh) in the host, 1
  2. Testing the presence of cytotoxic antibodies in the host serum, 1
  3. Cross matching of tissues (Host Vs graft) prior to transplantation, 1
  4. Giving immunosuppressive drugs like cyclosporine and steroids etc to the host, 1
  5. Total lymphoid tissue irradiation etc. 1

	b) • Karyotyping involves the culture of foetal cells found in the amniotic fluid, in vitro, in a highly nutritive solution containing phytohaemagglutinin. • The foetal cells are cultured with colchicine. Colchicine stops mitosis at metaphase. • When these cells are subjected to a hypotonic solution, the cells swell because the soluble salts are of lower concentration than in normal protoplasm. • The water diffuses into the cell and separates the chromosomes. The scattered chromosomes are then placed on a slide, stained and photographed under a microscope. • Individual chromosomes are then cut off from the photograph and marked as homologous pairs to form an idiogram.	1 1 1 1 1
38.	a) • The queen of Fibres is **Silk.** • Silk is the result of secretion of silk glands (modified salivary gland). • There are two long tubular, coiled glands lying one on each side of the alimentary canal of the caterpillar. • These glands are connected to a narrow tube like structure known as ***spinneret***. • The spinneret is a part of the hypopharynx (tongue). **Fibroin,** a sort of liquid fibrous protein is secreted by the silk gland. • It is insoluble in water and is made up of glycine**,** alanine and tyrosin. • As the liquid secretions of the two glands pass through the Spinnert, it transforms them into a single thread. **Sericin**, another secretion produced by a pair of accessory glands, cause the two fibers of fibroin to unite. • Two streams of fibroin along with sericin are expelled through the spinnert due to contraction and expansion of the body of the caterpillar. • This sticky secretion when comes into contact with the air is converted into a fine, long and solid thread of silk.	1 1 1 1 1 1
	b) • **Artificial insemination :** • Artificial insemination is the deposition of male reproductive cells (spermatozoa) in the female reproductive tract by mechanical means rather than by natural mating. • The semen is collected from the male by artificial means. The semen is inseminated into the female by placing a portion of it either in a collected or in a diluted form into the cervix of the uterus by mechanical methods at the proper time and under most hygienic condition. • It helps to eliminate the need for maintenance of herd sire, permits long distance transport of semen by air, avoids spreading of genital diseases, and increase the rate of conception. • Further this method helps better recording, permits use of semen from injured and old bulls and provides a chance of detecting any genital abnormalities or pathological infection and inflammation in cows.	1 1 1 1 1

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