SHRI VIDHYABHARATHI MATRIC HR.SEC.SCHOOL

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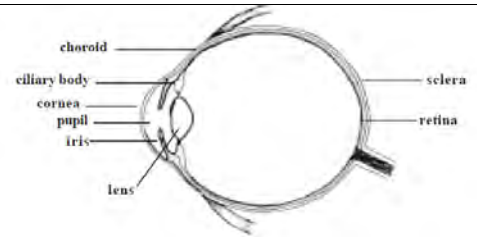
STD: XII **19.03.2019**

SUBJECT: BIO- ZOOLOGY **TENTATIVE ANSWER KEY**

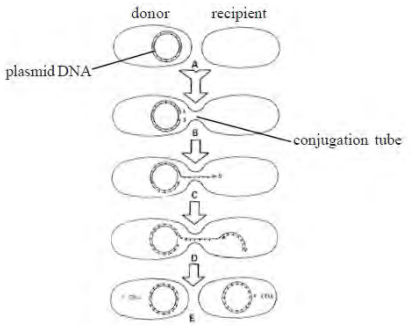
MARKS : 35

SECTION - I

	CHOOSE THE CORRECT ANSWER	
Q.No	**B-TYPE**	**Marks**
1	c) (1)-(iii), (2)-(i), (3)-(iv), (4)-(ii)	1
2	b) Production of antibodies by B-lymphocytes	1
3	a) Hayem's solution	1
4	c) Agammaglobulinemia	1
5	a) human activities against nature	1
6	a) Myasthenia gravis	1
7	a) Law of use and disuse	1
8	c) 25 mm Hg	1
	SECTION - II	
9	Thyrotoxicosis is always associated with weight loss because it causes increased BMR and reduces serum cholesterol level.	2
10	The symptoms of cholera are vomiting, profuse diarrhoeal stool (rice water stool) Which results in severe dehydration, loss of minerals, increased blood acidity and haemoconcentration.	2
11	Sometimes an allergen may cause a sudden, violent and fatal reaction in a sensititive individual ; this is called anaphylaxis.	2
12	➢ Cattle in normal health appear bright, alert and active in their movements with a shiny coat. ➢ They also enjoy normal appetite and sleep.	1 1
13	**Hardy-Weinberg equilibrium** ➢ This law concerns a theoretical situation for a population not undergoing any evolutionary change. Thus according to the law the normal mendelian genic frequencies are maintained under certain conditions(absence of mutation, selection and gene flow or migration only. ➢ If such conditions are not followed, the gene frequency will change leading to deviations and cause variations, such variation will be the sources for future evolution.	1 1
14	➢ Biodiversity should be preserved as the common heritage of all humans. All species have a right to exist; one strategy considered as a priority is **conserving hotspots** around the globe. ➢ These are areas characterized by high concentrations of endemic species and experiencing unusually rapid rate of habit modification loss.There are around 25 hotspots identified from all over the world.	1 1

	SECTION - III	
15	**a)** xerosis xeropthalmia keratomalacia nyctalopia b) The Vitamin responsible for clotting of blood is Vitamin K	2 1
16		Digram -2 Parts -1 (any four)
17	1. agglutination of particulate matter, including bacteria and viruses, 2. opsonisation or coating over bacteria to facilitate recognition and phagocytosis by the phagocytes and 3. neutralization of toxins released by bacteria.	1 1 1
18	If the ozone is depleted more ultraviolet radiations (especially ultraviolet B (UVB) will reach the earths surface. **Effect on plants:-** will affect crop yield and forest productivity. **Effect on animals:-** will cause damage to fish larvae and other small animals **Effect on human health:-** Results in non-melanoma skin cancer and melanoma, acute ery them a (sun burn), ocular abnormalities, cataract, affect immune responses.	1 1 1
19	➢ Though the leghorns are adapted to most of the climates, they are thriving well in dry areas. ➢ They mature early and they begin to lay eggs at the age of 5or 6 months. Hence, the breed is economically important and preferred in commercial forms.	1 ½ 1 ½
	SECTION - IV	
20	➢ Blood pressure is measured using sphygmomanometer and stethoscope ➢ Hyper tension puts a strain on the heart and blood vessels. Apart from increasing the risk of having a stroke or developing heart failure or coronary artery disease, high blood pressure may cause kidney damage and retinopathy (damage to the retina at the back of the eye). **Stroke** "Stroke is a rapidly developed clinical sign of focal disturbances of cerebral function lasting more than 24 hours or leading to death". **Brain haemorrhage.** Haemorrhage or bleeding of brain vessels may be cause by hypertension which results in bursting of blood vessels or due to aneurysm. **Retinopathy** Retinopathy is the disease of the retina, usually resulting from either diabetes mellitus or alternatively from persistent hypertension (high blood pressure). There are two types of retinopathy. **Hypertensive retinopathy** is characterized by narrowing of the retinal arteries. Areas of the retina may be destroyed and causes haemorrhage and white deposits may also occur in the retina. It may even lead to **retinal detachment**. Remedy is laser treatment. Damage to the coronary blood vessel or narrowing of the coronary vessel leads to **coronary artery disease (CAD).** Blood flow through the arteries is restricted, leading to damages of the heart muscle. Heart disorders like heart attack, myocardial infarction, the chest pain or Angina are usually caused by CAD.	1 1 1 1 1

	(OR)	
	GENETIC DRIFT OR SEWAL WRIGHT EFFECT : ➢ This theory was developed by Sewall Wright in 1930. It is concerned with the gene frequency of a reproducing small population. In a small population not all the alleles which are representatives of that species may be present. Thus the process of inheritance is in violation of Hardy-Weinberg law. ➢ In such a small population a chance event may increase the frequency of a character that has little adaptive value. Thus the genetic drift may remain a significant factor in the origin of new species on islands and other isolated populations. ➢ Due to loss of alleles having low frequency, amount of genetic variation may get reduced in small populations. Further, continual mating within such populations may cause decrease in the proportion of heterozygotes and increase in the number of homozygotes. However the small population as a whole may develop characters different from that found in the main population. Such deviations may even lead to speciation or formation of a new species. ➢ When a small group of individuals due to genetic drift become founders of a new population the phenomenon is termed as „founder principle". The new population often has genotype frequencies different from the parent population. ➢ Sometimes genotypic frequencies may get changed in a small population isolated temporarily due to natural calamities. When the population regains its original size the members of the small population may have diverged genetically from the original parental population. Hence interbreeding between members of small and larger populations may not be possible. The small population might have evolved into a new species. This type of genetic drift is referred to as **bottleneck effect**. **Natural Selection :-** ➢ In the modern or synthetic theory of evolution natural selection is considered as a population related genetic phenomenon. It leads to changes in allele frequencies and favours or promotes adaptation as a product of evolution. ➢ When the population size of animals or plants in specific locality increases certain environmental factors such as availability of food may become limiting factors. Those organisms exhibiting characteristics which give them a competitive advantage may survive. Thus population size and environmental limiting factor operate together to produce a **selective pressure**. The selection pressure may increase or decrease the spreading of an allele in a gene pool depending on its adaptive value. This inturn will lead to evolutionary changes.	1 1 1½ 1½
21	**BACTERIAL GENETICS** ➢ In bacteria the cells have a single circular strand of DNA. It is not associated with proteins as are eukaryotic chromosomes. The bacterial genes, like the eukaryotic genes possess the features of replication, phenotype expression, mutation and genetic recombination etc. In bacteria the genetic recombination results from three types of gene transfer viz., conjugation,transduction and transformation. ➢ Conjugation involves the transfer of some DNA from one bacterial cell to another followed by the separation of the mating pair of cells. In this, large segments of the chromosomes and in special cases the entire chromosome may be transferred.	1 1



1

- Bacterial transformation is a process in which cell free or naked DNA containing the genetic information is transferred from one bacterial cell to another. It was discovered by an English health officer, Griffith in 1928. The transforming principle was identified as DNA by Avery Macleod and Mc Carthy in 1944. 1
- In transduction, a bacteriophages acts as a vector, transfering a portion of DNA from one bacterium (donor) to another (recepient). If all fragments of bacterial DNA have a chance to enter a transducing phage, the process is called **Generalized transduction**. On the contrary if a few restricted genes of the bacterial chromosomes are transduced by bacteriophage, it is called **specialized transduction**. 1

(OR)

ECG -ELECTROCARDIOGRAM

- The electrocardiogram (ECG) is a record of the electric potential changes that occur in the heart during the cardiac cycle. It is recorded from the surface of the body. The instrument used to record the **ECG** is called Electrocardiogram. The waves of the ECG are due to depolarization and not due to contraction of the heart. This wave of depolarization occurs first before the contraction of the cardiac muscle begins. ½
- The electrical activity of the heart was first recorded by Waller in 1887 with a capillary electrometer. But the work of Einthoven who recorded the ECG with a strong galvanometer only lead to the development of modern electrocardiography. Einthovan was awarded Nobel Prize in 1924. A normal ECG is composed of five waves designated from left to right with the letters P,Q,R,S and T. P,R and T are normally upward or positive waves while Q and S are downward or negative waves. ½

ECG-'PQRST' wave

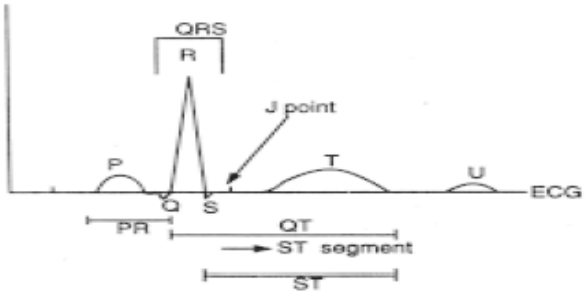
When the cardiac impulse (originating in sinus node which is the primary pace maker) passes through the heart, electrical currents spread inthe tissues surrounding the heart. A small amount of this current spreads to the surface of the body. If electrodes are placed on the skin on opposite sides of the heart, electric potentials generated by these currents can be recorded. This recording is known as electrocardiogram (ECGorEKG). ½

P. Wave: **It occurs in the auricles**.

It is an atrial wave. It is due to the spread of depolarisation in the atria (auricles). Its duration is 0.1 second and it occurs just before the atrial systole. Its amplitude is about 0.1 to 0.3 mv.The cardiac impulse reaches the sinu-auricular node at about the summit of the Pwave. The P wave is a guide to the activity of atria. 1

Q,R, and S Waves

After the completion of P wave, the isoelectric interval occurs. Following this, QR and S waves begin. Q wave is a small negative downward deflection. It is mostly indistinct. It represents atrial septal depolarization. R wave is a prominent positive wave and S wave is a small negative wave. R and S are due to depolarization of the ventricular muscle. The duration of the QRS complex is about 0.08 second and usually does not exceed 0.1second. The average amplitude to R wave is about 1 mv. Lot of diagnostic information can be 1

	gained from alteration in the QRS complex. **T wave** Following S wave there is an isoelectric interval. T wave begins after that. It is due to ventricular repolarization. It is a broad wave. Its average duration is about 0.27 second and amplitude 0.15 to 0.5 mv.  	½ 1

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