2211E777

Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Zoology (EA)

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Write a note on autosomal chromosome disorders.	**(14)**
	2	What are banding techniques? Write a detailed account.	
		OR	
	1	What are the indications for invasive prenatal testing? Describe amniocentesis technique.	
	2	Discuss the technique of FISH, giving its limitations and advantages.	
Q-II	**1**	What are the mechanisms for regulation of gene expression in eukaryotes? Discuss.	**(14)**
	2	Give a detailed explanation of excision repair mechanism.	
		OR	
	1	What is the role of DNA modification in prokaryotes? Discuss.	
	2	What is the Human Genome Project? Discuss, giving the information gained on its completion.	
Q-III	**1**	Write a short note on "Telomeres and Cancer".	**(14)**
	2	Draw and explain various steps involved in the EMT of cancer cells.	
		OR	
	1	Write a note on "Angiogenesis regulation in cancer".	
	2	Describe Lineage-specific proteins as a tumor-specific marker of cancer.	
Q-IV	**1**	Write the trypan blue dye exclusion assay's principle, method, advantages, and disadvantages, along with the labeled diagram.	**(14)**
	2	Explain free radical toxicity in brief.	
		OR	
	1	Write the principle, method, applications, advantages, and limitations of the Ames test.	
	2	Describe in detail: The various routes of administration to assess the toxicity of specific test substances.	
Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	What is known about the evolution of chromosome 2 in humans?	**02**
	2	Why are disorders of sex chromosome milder as compared to autosomal disorders?	**02**
	3	Write the karyotype of male with translocation between chromosome 8 & 10 according to ISCN.	**02**
	4	Define gene families.	**02**
	5	What were the reasons for rRNA genes to be isolated first?	**02**
	6	What is the goal of HapMap project?	**02**
	7	What is the CAM model? When is it used?	**02**
	8	What is CA 125 and CA 19-9? What is their diagnostic significance?	**02**
	9	Briefly explain the principle of the PET technique used for diagnosis of cancer.	**02**
	10	Write the general phase I oxidative biotransformation formula which uses CYP450.	**02**
	11	Give four examples of endogenous xenobiotics.	**02**
	12	Define dose and threshold dose.	**02**

(P.T.O)

2211E777-2

Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Zoology (EB)

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Explain briefly: calcium-calmodulin signaling pathway.	**(14)**
	2	Discuss signal transduction for hydrophobic receptors.	
		OR	
	1	Give a note on mechanisms of adenylyl cyclase.	
	2	Write a short note on autophosphorylation.	
Q-II	**1**	Explain the role of anti-diuretic hormone (ADH) in regulating blood pressure in brief.	**(14)**
	2	Write a detailed note on any two glands of human endocrine system.	
		OR	
	1	Write a detailed note on any two disorders of the respective endocrine glands	
	2	Explain mechanism of action of lipid and water-soluble hormones in brief	
Q-III	**1**	Explain the incretin effect of insulin secretion. Add a note on the structure of insulin.	**(14)**
	2	Describe the endocrine role of adipose tissues.	
		OR	
	1	Give a brief description of interplay between the pancreatic islets and other organs.	
	2	Explain the role of Vitamin-D as a hormone.	
Q-IV	**1**	List the factors influencing toxicity and include comprehensive information on each.	**(14)**
	2	Write the principle, method, applications, advantages, and limitations of the Ames test.	
		OR	
	1	Explain free radical toxicity in brief.	
	2	Enumerate the various routes of administration that are helpful to evaluate the toxicity of the test substances and explain them in detail.	

Q-V		**Answer any SEVEN out of TWELVE.**	
	1	Give the full form of "DAG" and mention its role.	**(14)**
	2	State the contribution of "Claude Bernard".	**02**
	3	Define: kinases	**02**
	4	Define tropic and non-tropic hormones with example.	**02**
	5	Define amino acid and fatty acid hormones with example.	**02**
	6	Define insulin and glucagon	**02**
	7	What are the roles of insulin in adipose cells and hepatocytes?	**02**
	8	What is the role of VDCC in β-cells?	**02**
	9	What happens after Epac-2 activation?	**02**
	10	Write the advantages and disadvantages of the trypan blue dye exclusion test.	**02**
	11	Give a diagrammatic representation of the differences between apoptosis and necrosis.	**02**
	12	Define LD50 and LC50.	**02**

2211E777-3

Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Zoology (EC)

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Write a note on the Wildlife Protection Act of India, 1972.	**(14)**
	2	Give the difference between Schedule 1 and Schedule 2 species giving four examples.	
		OR	
	1	Write a short note on National Treaties for Wildlife conservation.	
	2	Describe the roles of the Indian Wildlife Board.	
Q-II	**1**	Write a note on the Wound pathology for wildlife forensic studies.	**(14)**
	2	Write a note on the Use of rodenticides and wildlife poisoning.	
		OR	
	1	Write a note on the Use of insecticides and wildlife poisoning.	
	2	Explain the use of projectile residues in wildlife forensics.	
Q-III	**1**	Write a note on the role of human-caused pollution and wildlife health.	**(14)**
	2	Write a note on agriculture pesticides that are dangerous to wildlife.	
		OR	
	1	Write a note on Aquatic pollution.	
	2	Describe the prospects of Environmental toxicology.	
Q-IV	**1**	List the factors influencing toxicity and include comprehensive information on each one.	**(14)**
	2	Write the principle, method, applications, advantages, and limitations of the Ames test.	
		OR	
	1	Explain free radical toxicity in brief.	
	2	Enumerate the various routes of administration that are helpful to evaluate the toxicity of the test substances and explain them in detail.	
Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	Write two important roles of the State Board of Wildlife.	**02**
	2	Briefly explain: The National Action Plan for Wildlife conservation	**02**
	3	Name any two Project Tiger Sites of Rajasthan or Maharashtra giving its location and important species conserved.	**02**
	4	Explain the decline of vultures and the use of human medicines for the treatment of livestock.	**02**
	5	What is the National Action Plan for Wildlife Conservation?	**02**
	6	Give the common and scientific names of any two Indian wild birds that are poisoned in very high numbers.	**02**
	7	Name the gas responsible for the Bhopal tragedy. What were the main effects on human health?	**02**
	8	What is the Chernobyl nuclear tragedy? What are its current effects on wildlife?	**02**
	9	Mention two recent environmental accidents that happened in India and proved to be very harmful to wildlife.	**02**
	10	Write the advantages and disadvantages of the trypan blue dye exclusion test.	**02**
	11	Give a diagrammatic representation of the differences between apoptosis and necrosis.	**02**
	12	Define LD50 and LC50.	**02**

(P.T.O)

2211E777-4 Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Zoology (EE)

Time : 2-30 Hours] **November-2024** **[Max. Marks : 70**

Q-I	**1**	What are the components of genetic counseling? Explain.	**(14)**
	2	What are the counseling contexts and situations? Discuss.	
		OR	
	1	What are the additional factors which can impact genetic risk assessment during pedigree analysis? Explain.	
	2	What are the basics of collecting family history? Discuss.	
Q-II	**1**	What is Medical Genetic evaluation? Explain in context of genetic counseling.	**(14)**
	2	Discuss the points to be addressed by a genetic counselor to ensure a proper working alliance with the client.	
		OR	
	1	Write on the counselees coping styles and factors affecting decision-making.	
	2	Write on the process and importance of documentation of genetic disorders.	
Q-III	**1**	Pathway-based counseling in monogenic disease.	**(14)**
	2	Discuss genetic diagnosis for metabolic disorders by an example.	
		OR	
	1	What is molecular pathology? Explain with an example.	
	2	Write a short note on Bayes' theorem application in risk assessment.	
Q-IV	**1**	List the factors influencing toxicity and include comprehensive information on each one.	**(14)**
	2	Write the principle, method, applications, advantages, and limitations of the Ames test.	
		OR	
	1	Explain free radical toxicity in brief.	
	2	Enumerate the various routes of administration that are helpful to evaluate the toxicity of the test substances and explain them in detail.	
Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	What is meant by nondirective counseling?	**02**
	2	Who can be providers of genetic counseling?	**02**
	3	Draw the symbol for surrogate ovum donor.	**02**
	4	What is transference?	**02**
	5	Write on the significance of silence in a session.	**02**
	6	Give an example of use of "redirecting" by the counselor during information exchange.	**02**
	7	Mention the purpose of a gene expression profile.	**02**
	8	Define: MLPA technique.	**02**
	9	Add a note on "allele frequency".	**02**
	10	Write the advantages and disadvantages of the trypan blue dye exclusion test.	**02**
	11	Give a diagrammatic representation of the differences between apoptosis and necrosis.	**02**
	12	Define LD50 and LC50.	**02**

2211E777-5

Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Zoology (EF)

November-2024

Time : 2-30 Hours] **[Max. Marks : 70**

Q-I	**1**	Justify the use of animals in Toxicological research. Explain animal care and handling in experimentation.	**(14)**
	2	Describe the various physical factors considered for maintenance of animals.	
		OR	
	1	Outline a plan and explain CCSEA regulations for setting up an animal house.	
	2	Write a note on the Committee for Care and Supervision of Experiments on Animals.	
Q-II	**1**	Explain the two broad classes of target organ toxicity.	**(14)**
	2	Briefly describe the toxic responses of kidney.	
		OR	
	1	Describe the main effects of reproductive toxicity. Explain the effects of drugs and radiation on the testis.	
	2	Give a brief description of toxic responses of skin.	
Q-III	**1**	Write the types of food additives, the E number of each type, purpose to use, and examples with application.	**(14)**
	2	How are the xenobiotics metabolized? Describe in detail.	
		OR	
	1	Write a detailed note on any four classes of toxicants with examples.	
	2	Describe various types of pesticides based on their application and formulation.	
Q-IV	**1**	Write the trypan blue dye exclusion assay's principle, method, advantages, and disadvantages, along with the labeled diagram.	**(14)**
	2	Explain free radical toxicity in brief.	
		OR	
	1	Write the principle, method, applications, advantages, and limitations of the Ames test.	
	2	Describe in detail: The various routes of administration to assess the toxicity of specific test substances.	
Q-V		**Answer any SEVEN out of TWELVE.**	**(14)**
	1	Briefly discuss the duties of the IAEC.	**02**
	2	Explain the role of IBC.	**02**
	3	State the precautions for breeding of laboratory animals.	**02**
	4	Define: Endocrine disruptors. State 2 examples.	**02**
	5	What are chemical stressers? Give two examples.	**02**
	6	What is interpolation within one toxic class?	**02**
	7	Venom is a complex mixture of generally which molecules?	**02**
	8	Give four examples of plant-origin pesticides.	**02**
	9	Give information on the penetration properties of the alpha particle, beta particle, and gamma rays.	**02**
	10	Write the general phase I oxidative biotransformation formula which uses CYP450.	**02**
	11	Give four examples of endogenous xenobiotics.	**02**
	12	Define dose and threshold dose.	**02**