Total number of printed pages-15

3 (Sem-5/CBCS) ZOO HE 2/HE 3/HE 4

2021

(Held in 2022)

ZOOLOGY

(Honours Elective)

Answer the Questions from any one Option.

OPTION-A

Paper: ZOO-HE-5026

DSE (H) - 2

(Animal Biotechnology)

Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

1.	Fill in t	he blanks:		1×7=7
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- (a) Taq polymerase was isolated from bacterium.
- (b) was the first commercially available genetically engineered product.

- (c) Causative organism for crown gall disease is ———.
- (d) The insert capacity of YAC is ——.
- (f) In production of Bt cotton, the Bt gene is derived from ———.
- (g) Following DNA double strand break, the DNA repair mechanism is initiated by ———.
- 2. Answer the following questions in brief: 2×4=8
 - (a) Write the principle of Western blotting.
 - (b) What are expression vectors?
 - (c) What is DNA microarray?
 - (d) How is nomenclature of restriction enzymes done?
- 3. Answer any three of the following questions: $5\times 3=15$
 - (a) Write briefly the steps involved in PCR.

- (b) Differentiate between genomic and cDNA library.
- (c) Compare between Northern and Southern blotting techniques.
- (d) Give a note on colony hybridization.
- (e) What is gene therapy? Write the applications of gene therapy in medicine.
- 4. What are restriction enzymes? Give a note on frequency and plane of cutting of restriction enzymes. Write different applications of restriction enzymes.

2+4+4=10

Or

Discuss Sanger's method for sequencing DNA.

5. What is biotechnology? Give a brief note on the scopes of biotechnology. 2+8=10

Or

What are the properties of a good vector? Discuss the properties of plasmid, M13 and bacteriophage. 4+6=10

6. What is transgenic animal? Write a note on different transfection methods for the development of transgenic animals.

2+8=10

Or

What is DNA fingerprinting? Discuss different methods of DNA fingerprinting.

2+8=10



OPTION-B

Paper: ZOO-HE-5036

(Endocrinology)

Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer:

1×7=7

- (a) Thyroid hormone deficiency in adult causes
 - (i) myxedema
 - (ii) cretinism
 - (iii) Graves' disease
 - (iv) acromegaly
- (b) Which cells of the islets of Langerhans secrete glucagon?
 - (i) Alpha cells
 - (ii) Beta cells
 - (iii) C cells
 - (iv) D cells

- (c) Which of the following hormones is a steroid?
 - (i) ACTH
 - (ii) Glucagon
 - (iii) Oxytocin
 - (iv) Estradiol
- (d) Melanocyte-stimulating hormone (MSH) is secreted by
 - (i) adenohypophysis
 - (ii) pars intermedia of pituitary
 - (iii) adrenal gland
 - (iv) thyroid gland
- (e) Thyroid hormone synthesis involves the iodination of
 - (i) tyrosine
 - (ii) alanine
 - (iii) tryptophan
 - (iv) methionine

- (f) In adrenal gland, glucocorticoids are secreted by
 - (i) Zona glomerulosa
 - (ii) Zone fasciculata
 - (iii) Zone reticularis
 - (iv) Medulla
- (g) Low level of adrenal cortex hormone causes
 - (i) Goitre
 - (ii) Addison's disease
 - (iii) Cushing syndrome
 - (iv) Tetany
- 2. Answer the following questions: $2\times4=8$
 - (a) What are different chemical classes of hormones?
 - (b) Mention the anterior pituitary hormones.
 - (c) Distinguish between diabetes mellitus and diabetes insipidus.

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Contd.

(d) What is Leydig cell? Which hormone stimulates their secretion?

1+1=2

3. Write short notes on: (any three)

5×3=15

- (a) Endocrine functions of posterior pituitary
- (b) Histological structure of thyroid
- (c) Physiological functions of mineralocorticoids
- (d) Hormonal control of calcium homeostasis
- (e) Functions of parathyroid hormones.
- 4. Answer any three from the following questions: 10×3=30
 - (a) What are hormone receptors? Discuss different mechanisms of hormone actions. 2+8=10
 - (b) Describe the histological structure of adrenal gland with suitable diagram. Give an account of the endocrine functions of adrenal cortex and medulla.

 5+5=10

- (c) Describe the histology and endocrine functions of mammalian testes with suitable diagrams. 5+5=10
- (d) What is hypothalamo-hypophyseal axis? Discuss various physiological functions of the anterior pituitary hormones. 2+8=10
- (e) Give an account of the endocrine functions of the pancreas.
- (f) Discuss the molecular mechanism of action of protein hormone. 10



OPTION-C

Paper: ZOO-HE-5046

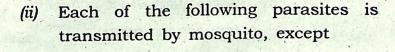
(Parasitology)

Full Marks: 60

Time: Three hours

The figures in the margin indicate full marks for the questions.

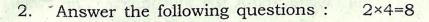
- 1. Choose the correct answer: $1 \times 7 = 7$
 - (i) In malaria, the form of plasmodium that is transmitted from mosquito to human is
 - (a) sporozoite
 - (b) gametocyte
 - (c) merozoite
 - (d) hypnozoite



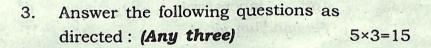
- (a) Leishmania donovani
- (b) Wuchereria bancrofti
- (c) Plasmodium vivax
- (d) Plasmodium falciparum
- (iii) Each of the following statements concerning Ascaris lumbricoides is correct, except
 - (a) Ascaris lumbricoides is one of the largest nematode
 - (b) Ascaris lumbricoides can cause pneumonia
 - (c) Both dogs and cats are intermediate hosts of Ascaris lumbricoides
 - (d) Ascaris lumbricoides is transmitted by ingestion of eggs



- (iv) The intermediate host of fasciola is
 - (a) Lymnaea truncatula
 - (b) Pila globosa
 - (c) Lamellidens
 - (d) Helix
- (v) Which of the following is false about Ancylostoma duodenale?
 - (a) It is a blood-sucking worm
 - (b) Iron deficiency anemia occurs
 - (c) Prevented by drinking filtered water
 - (d) Stool examination is positive for occult blood
- (vi) Ticks and mites belongs to which of the following classes of Arthropoda?
 - (a) Arachnida
 - (b) Insecta
 - (c) Diplopoda
 - (d) Chilopoda
- (vii) Culex sp. acts as a vector for
 - (a) loiasis
 - (b) malaria
 - (c) filariasis
 - (d) babesiosis



- (i) Mention four parasitic diseases transmitted by vectors.
- (ii) Write some preventive measures to control mosquito-borne diseases.
- (iii) Define definitive host with example.
- (iv) What is diarrhoea? Give two examples of parasites producing watery diarrhoea.



- (i) Describe morphology and pathogenicity of Wuchereria bancrofti.
- (ii) Give a brief account of parasitic vertebrates highlighting Mockingbird and Vampire bat.
- (iii) Write about the life cycle, epidemiology and treatment of Ascaris lumbricoides.



- (iv) Write about the morphology, life cycle and treatment of Giardia intestinalis.
- (v) Describe morphology, pathogenicity and laboratory diagnosis of Fasciolopsis buski.
- 4. Answer the following questions: 10×3=30
 - (i) Describe morphology, pathogenecity and laboratory diagnosis of Leishmania donovani. 4+4+2=10
 - (ii) Enlist blood and tissue protozoa.

 Describe morphology, pathogenecity and laboratory diagnosis of Plasmodium vivax. 2+6+2=10
 - (iii) Describe the concept of arthropodan parasities. Write about the biology, importance and control of arthropodan parasites citing an example. 3+7=10
 - (iv) Elaborate the concept of parasitoid and vector. Describe the mechanical and biological vectors with examples.

 5+5=10

(v) What is parasitism? Describe the host-parasite relationship with examples. What is the importance of studying host-parasite relationship.

2+6+2=10

