Total number of printed pages–16

3 (Sem–5/CBCS) ZOO HE 2/HE 3/HE 4

2025

ZOOLOGY

(Honours Elective)

Answer the Questions from any one Option.

OPTION–A

Paper : ZOO–HE–5026

(Animal Biotechnology)

OPTION–B

Paper : ZOO–HE–5036

(Endocrinology)

OPTION–C

Paper : ZOO–HE–5046

(Parasitology)

Full Marks : 60

Time : Three hours

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

OPTION–A

Paper : ZOO–HE–5026

(Animal Biotechnology)

1. Answer the following questions as directed : ***(any seven)*** 1×7=7

   (a) *HeLa* is a mammalian cell line. *(True/False)*

   (b) _____ is the source of stem cell in adults. *(Fill in the blank)*

   (c) What is a Ti Plasmid ?

   (d) Name a restriction endonuclease which produces a blunt cut.

   (e) What is the starting material in construction of genomic library ?

   (f) Define DNA probe.

   (g) Vaccine was discovered by _____. *(Fill in the blank)*

   (h) What is a plaque hybridization ?

   (i) The sheep 'Dolly' is the first mammal cloned from adult somatic cells. *(True/False)*

   (j) Name a natural media used in plant cell culture.

   (k) What is Taq DNA polymerase ?

   (l) GM crops has detrimental effects on human health. *(True/False)*

2. Answer the following questions very briefly : ***(any four)*** 2×4=8

   (a) Mention the main disadvantages of YAC.

   (b) What is annealing temperature in PCR ?

   (c) Define shuttle vectors.

   (d) What is a knock out mice ?

   (e) What is electroblotting ?

   (f) Name a cryoprotectant used in cell preservation.

   (g) What are isoschizomers ?

   (h) What is Golden Rice ?

3. Answer ***any three*** of the following questions briefly : 5×3=15

   (a) What are the advantages of serum free media in cell culture ?

   (b) Discuss the utilities of gene therapy for human welfare.

   (c) Write the principle of Sanger sequencing technique.

(d) How transgenic animals are used as bioreactors ?

(e) Write a short note on DNA fingerprinting in crime detection.

(f) What are the characteristics of type II restriction enzymes ?

(g) What is a microsatellite marker ?

(h) How a retrovirus is used in gene transfer ?

4. Answer ***any three*** of the following questions : 10×3=30

(a) What is a primary cell culture ? Elaborate different procedure to develop a primary cell line. 2+8=10

(b) What is Recombinant DNA technology ? Discuss about the production of Recombinant insulin and human growth hormone by Recombinant DNA technology. 2+4+4=10

(c) What is transgenic plant ? Write a note on insect resistant and herbicide resistant plants. 2+4+4=10

(d) Who discovered PCR ? What is the principle of PCR? Elaborate the use of PCR in biotechnology. 1+3+6=10

(e) What is a DNA library ? Discuss the method for construction of cDNA library. 2+8=10

(f) Discuss the technique of Western blotting and its applications. 6+4=10

(g) Illustrate the transformation techniques by calcium chloride method and electroporation in gene manipulation. 5+5=10

(h) What is DNA cloning ? Write a note on methods of construction of large capacity vectors M13 and BAC. 2+8=10

———

OPTION–B

Paper : ZOO–HE–5036

(Endocrinology)

1. Answer the following question as directed : ***(any seven)*** 1×7=7

(a) What is calmodulin ?

(b) Regression of corpus luteum is associated with the withdrawal of progesterone.
(Write True ***or*** *False)*

(c) The hormone which acts through a nuclear receptor is

(i) Growth hormone

(ii) Insulin

(iii) Oxytocin

(iv) Thyroid hormone
(Choose the correct answer)

(d) What is calcitonin ?

(e) Which of the following is a neurohormone ?

(i) Thyronine

(ii) Prolactin

(iii) Gonadotropin-releasing hormone

(iv) Cortisol
(Choose the correct answer)

(f) Hypothalamus controls the secretion of melanophore stimulating hormone (MSH). *(Write True* ***or*** *False)*

(g) State the function of the hormone 'vasopressin'.

(h) Islets of Langerhans produce a hormone which controls diabetes is _____ .
(Fill in the blank)

(i) Estrogen/Progesterone/Cortisol/Glucagon is not a steroid hormone.
(Choose the correct answer)

(j) The hormone transported by the hypothalamo-hypophyseal portal system is

(i) Oxytocin

(ii) Prolactin

(iii) Gonadotropin-releasing hormone

(iv) Adrenocorticotrophic hormone
(Choose the correct answer)

(k) In adrenal gland, glucocorticoids are secreted by _____ .
(Fill in the blank)

(l) Which of the following hormones is a glycoprotein ?

(i) Thyrotropin

(ii) Cortisone

(iii) Oxytocin

(iv) Adrenaline

(Choose the correct answer)

2. Answer the following questions : ***(any four)*** 2×4=8

(a) Why is iodine as a nutrient, important to our body ?

(b) Name the cells present in parathyroid gland.

(c) What are hormone receptors ?

(d) What is pinealocytes ?

(e) Name *two* adrenal medullary hormones.

(f) Distinguish between corpus luteum and corpus albicans.

(g) Mention the adenohypophysis hormones.

(h) Write a brief note chemical nature of hormone.

3. Write short notes on : ***(any three)*** 5×3=15

(a) Mechanism of action of protein hormones

(b) Growth hormone

(c) Genetic control of hormone regulation

(d) Hypothalamo-hypophyseal axis

(e) Disorders of thyroid gland

(f) Functions of Glucocorticoid hormones

(g) Histological structure of adrenal gland with suitable diagram

(h) Physiological functions of endocrine pancreas

4. Answer ***any three*** from the following questions : 10×3=30

(a) What is neuro-hormone ? Describe the secretion and regulation of neuro-hormone. 2+4+4=10

(b) Define tropic hormone. Discuss major tropic hormones secreted by pituitary gland. 2+8=10

(c) Discuss the hormonal control of calcium homeostasis.

(d) Give an account of the chemical classes of hormones.

(e) Explain the feedback mechanisms of hormone secretion.

(f) Describe the histology and endocrine functions of mammalian ovary with suitable diagrams. 5+5=10

(g) What is Rathke's pouch? Discuss various physiological functions of the posterior pituitary hormones. 2+8=10

(h) Describe the histological structure of thyroid gland with suitable diagram. Give an account of the functions of thyroid hormones. 5+5=10

OPTION–C

Paper : ZOO–HE–5046

(Parasitology)

1. Choose the correct option : ***(any seven)*** 1×7=7

(i) The mode of transmission for Wuchereria is

(a) blackfly bite

(b) deer fly bite

(c) flees

(d) mosquito bite

(ii) Which of the following is the dormant stage of Giardia?

(a) Cyst

(b) Trophozoite

(c) Tachyzoite

(d) Oocyst

(iii) *Wuchereria bancrofti* causes

(a) Wuchereria

(b) Lymphatic filariasis

(c) Elephantiasis

(d) All of the above

(iv) Man, Monkeys, Baboons and Chimpanzees are the definitive host of

(a) *Schistosoma haematobium*

(b) *S. mansoni*

(c) Both

(d) None of the above

(v) Cercaria larva of *F. hepatica* is the

(a) 1st larval stage

(b) 2nd larval stage

(c) 3rd larval stage

(d) 4th larval stage

(vi) Body consist with a false head one

(a) Ticks

(b) Mitu

(c) Both

(d) None of the above

(vii) 80% of the malarial infection cases occur worldwide by

(a) *P. vivax*

(b) *P. falciparum*

(c) *P. ovale*

(d) *P. malarial*

(viii) The phase responsible for amoebiasis is

(a) Trophozoite

(b) Metacystic stage

(c) Cyst stage

(d) None of the above

(ix) The condition when the parasite remains alive after killing the host is known as

(a) Parasitoidism

(b) Hyperparasitoidism

(c) Hyperparasitism

(d) Parasitism

(x) Disease that affects large no. of animal population in a particular region within a short period and time is

(a) Zoonotic disease

(b) Sporadic disease

(c) Epizootic disease

(d) Exotic disease

(xi) Hepatomegaly is observed in

(a) Leishmaniasis

(b) Taeniasis

(c) Malaria

(d) None of the above

(xii) Culex species acts as a vector for

(a) Loiasis

(b) Malaria

(c) Filariasis

(d) Babesiosis

2. Answer ***any four*** of the following : 2×4=8

(i) Parasitic vertebrates

(ii) Infection of head and body louse

(iii) Characteristics of miracidium larva

(iv) Zoonotic Leishmaniasis

(v) Pandemic disease

(vi) Reservoir host

(vii) Obligatory parasite

(viii) Parasitoidism

3. Short answer type questions : ***(any three)*** 5×3=15

(i) Write about the life-cycle and importance of pretylencus *(Lesion nematode).*

(ii) Write about the pathogenicity and laboratory diagnosis of *Plasmodium vivax.*

(iii) Write about different parasitic vertebrates focussing on vampire bat.

(iv) Write about the biology, importance and control of ticks and mites.

(v) Write about the epidemiology and pathogenicity of *Trypanosoma gambienses.*

(vi) Write about the host-parasitic relationship citing some examples.

(vii) Highlight on some diseases transmitted by mosquitoes.

(viii) Describe morphology, pathogenicity and laboratory diagnosis of *Fasciolopsis buski.*

4. Answer the following : ***(any three)*** 10×3=30

(i) Describe how arthropodan parasites can be harmful to human. Write about the biology of some of the important arthropodan parasites of human being. 3+7=10

(ii) Describe the morphology life-cycle, diagnosis prophylaxis and treatment of *Entamoeba histolytica.*

(iii) Describe *four* parasitic diseases transmitted by vectors along with their prophylaxis and treatment.

(iv) Describe the morphology, pathogenicity, life-cycle and prophylaxis and treatment of *Taenia solium.*

(v) Elaborate the concept of parasitoid and vector. What is hyperparasitism? Define mechanical and biological vector with examples. 4+2+4=10
