UG/III/ZOOL/H/VI/18 (New)

2018

ZOOLOGY

[Honours]

PAPER – VI

Full Marks : 90

Time : 4 hours

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

[NEW SYLLABUS]

GROUP – A

1. Answer *one* from the following : 12 × 1

   (*a*) (*i*) Write short notes on repair of UV-induced DNA damage

   (*ii*) What is telomere ? Mention its significance.

(*iii*) Write a short note on the role of β clamp loading complex in replication.

(*iv*) State the role of sigma factor in DNA replication. 4 + (1 + 2) + 3 + 2

(*b*) Differentiate holoenzyme and core enzyme of RNA polymerase. What do you mean by PRIBNOW BOX ? Discuss the binding of transcription factors to the TATA box. 3 + 2 + 7

(*c*) Differentiate missense mutation and nonsense mutation. Describe how Ames test is carried out which is a screening test for potential carcinogens. How does Griffith demonstrated genetic transformations ? 1 + 1 + 5 + 5

2. Answer *three* from the following : 7 × 3

(*a*) (*i*) What do you understand by F factor and H factor cell ?

(*ii*) What is OriC and state its characteristics ? 2 + 2 + 3

(*b*) (*i*) Distinguish between ρ dependent and ρ independent termination.

(*ii*) State the role of DnaC and DNA polymerase III. 3 + 2 + 2

(*c*) (*i*) Why binding of CAP-eAMP complex to the promoter is essential for binding of RNA pol to lac promoter ?

(*ii*) Differentiate between Repressor of lac and tryp operon. What is O^C ? 4 + (2 + 1)

(*d*) (*i*) State the role of SRY and Sox9 in sex determination.

(*ii*) Write a short account on telomeric DNA. 2 + 2 + 3

(*e*) Write down the steps of charging of t-RNA. Mention the role of each arms of tRNA in translation. 4 + 3

3. Answer *three* questions : 4 × 3

(*a*) What are vectors ? State what are the characteristic of a good vector. 1 + 3

(*b*) What is a blunt cut ? What is a plasmid ? 2 + 2

(*c*) Differentiate metastasis and hyperplasia. What are monotypic culture. 2 + 2

(*d*) How protooncogenes are activated to form an oncogene. 4

(*e*) The cyclin-cdk complexes are specific to cell cycle phases – explain. 4

GROUP – B

4. Answer *one* of the following : 12 × 1

(*a*) (*i*) How osmoconformer differs from osmoregulator ?

(*ii*) Mention the role of FSH, LH, estrogen and progesteron in regulation of menstrual cycle with a diagram. 4 + (4 × 2)

(*b*) (*i*) What are isozymes ?

(*ii*) What are co-enzymes ?

(*iii*) State the various conditions which affect enzyme activity. 3 + 3 + 6

(*c*) (*i*) What is glucogenesis ? Write down the steps involved in glycolysis.

(*ii*) Explain the steps involved in synthesis of glucose from lactate.

(*iii*) What are non protein amino acids. Give example.

(*iv*) What is ketosis and ketonuria ?

2 + 2 + 4 + 2 + 2

5. Answer *three* questions : 7 × 3

(*a*) (*i*) Derive Michaelis Menten Equation for enzyme kinetics. State their hypothesis. Is it valid for all enzymes ?

(*ii*) What is Zwitter ion and isoelectric pH ?

(3 + 1 + 1) + (1 + 1)

(*b*) (*i*) What are kupffer cells and where they are found ?

(*ii*) State the functions of islets of Langerhans.

(*iii*) What are the functions of Sertoli cells ?

2 + 3 + 2

(*c*) What are helix distabilising amino acids. Mention how disulphide linkages and hydrogen bonds stabilise the protein structure. 2 + 5

(*d*) (*i*) Discuss the role of Haemoglobin in transport of oxygen through blood.

(*ii*) What is Bohr's effect. 5 + 2

(*e*) (*i*) What do you mean by core temperature ?

(*ii*) Brown fat in young ones are helpful in many ways. Explain.

(*iii*) What are Bradymetabolic and Tachymetabolic animals. Explain with examples. 1 + 2 + 2 + 2

6. Answer *three* questions : 4 × 3

(*a*) How estrous and menstrual cycle differ ? 4

(*b*) Mention the types of neurotransmitter with example. 4

(*c*) What are HDL and comment whether they are helpful to body or not. 4

(*Continued*)

(*d*) State First and Second law of Thermodynamics ? 4

(*e*) What are Calmodulines. State their function. 4
