CS/B.Sc (H) BT/SEM-4/ABT-404/2011

2011

ANIMAL BIOTECHNOLOGY

Time Allotted : 3 Hours *Full Marks :* 70

The figures in the margin indicate full marks.

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

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : $10 \times 1 = 10$

i) A nasal spray containing adenovirus carrying a functional human CFTR gene is used to treat cystic fibrosis. This is an example of ..... gene therapy.

a) in situ

b) in vivo

c) ex vivo

d) vaccine.

ii) Which of the following is a key difference between the production of transgenic animals and transgenic plants ?

a) Transgenic animals have all of their cells transformed, while transgenic plants have only a few of their cells transformed

b) Transgenic animals have only a few of their cells transformed, while transgenic plants have all of

their cells transformed

c) Transgenic animals cannot be regenerated from

somatic cells, while transgenic plants can

d) Transgenic animals can be regenerated from

somatic cells, while transgenic plant cannot.

iii) Which of the following transgenic pharming products is

incorrectly paired with the host organism that produces

it ?

a) Haemoglobin — rabbit

b) Human growth hormone — rat

c) Lactoferrin — cows

d) Alpha-1-antitrypsin — sheep.

iv) A knockout mouse is so named because

a) it contains aggression genes

b) it contains multiple copies of a human gene

c) it contains an activated human gene

d) none of these.

v) The best cryopreservant for cryopreservation is

a) Liquid nitrogen

b) Dimethyl sulphoxide

c) Solid CO_2

d) Glycerol.

vi) What was reported as the first species to be successfully

cloned in 1952 ?

a) Dolphin

b) Tadpole

c) Amoeba

d) Water flea.

vii) Developing embryo from a superior breed is transferred into the uterus of a female with inferior characteristics by the process of

a) hybridization

b) artificial insemination

c) embryo transfer

d) random mating.

viii) The protist that causes trypansomiasis (African sleeping sickness) is transmitted to humans through the bite of a tsetse fly. Currently, insecticides are the most effective way to control tsetse fly population and thus control the spread of trypanosomiasis. However, there is widespread fear that long-term use of insecticides may become less and less effective. Which statement best explains that fear ?

a) Natural selection could occur in the protist populations, so that they become able to inhabit a different insect host

b) Natural selection could occur in the protist populations, so that they become able to infect humans without an insect host

c) Natural selection could occur in the tsetse fly population, so that they become resistant to the insecticides

d) Natural selection could occur in the tsetse fly population, so that they could carry a different pathogenic protist.

ix) Emphysema is caused due to the deficiency of

a) Alpha-1 antitrypsin

b) Lysozyme

c) Lacteferrin

d) None of these.

x) The ileriosis is transmitted by

a) Air

b) Water

c) Air and Water

d) Vector.

xi) Coccidiosis in poultry is caused by

a) *Eimeria sp*. b) *Isospora sp.*

c) *E.coli* d) Both A & B.

xii) Chagas disease is caused by

a) *T. brucei rhodesiense*

b) *T. cruzi*

c) Virus

d) None of these.

GROUP – B

(Short Answer Type Questions)

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

2. Write a short note on Enviropig.

3. Briefly describe the basic principle of DNA microinjection with schematic diagram with respect to gene transfer in animals.

4. Briefly explain the cloning procedure followed for creation of dolly with schematic representation.

5. What do you understand by the term ‘IVF’ ? Write down the limitations of IVF. 2 + 3

6. Write a short note on in vitro sperm capacitation.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. Discuss the needs for creation of transgenic animals. What are the significance of creating marathon mouse ? Briefly state the process of transgenic cow production with supportive schematic representation. Name the first transgenically produced cow. 3 + 3 + 8 + 1

8. What is coccidiosis ? In which animals is this disease common ? What are the clinical signs associated with the disease ? How can this disease be controlled ? 2 + 2 + 6 + 5

9. What are clone & cloning ? Why the first cloned mammal had to face premature death ? What are the advantages and drawbacks are associated if HIV is taken as a vector for gene transfer. 2 + 3 + 10

10. What is embryo transfer technology ? What are the advantages of this technique ? Discuss briefly the in vitro cattle embryo production and its transfer to surrogate mother. 1 + 2 + (10 + 2)

11. What is theileriosis ? Name the parasites that cause the disease. Describe the life cycle of parasites in the arthropod vector and mammalian host. Name four important biotechnological tools used for diagnosis of theileriosis.

1 + 3 + 5 + 6

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