Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Sc(Genetics)/SEM-3/MSGEN(ABT)-304B/2011-12

2011

ANIMAL DEVELOPMENTAL GENETICS

Time Allotted : $1\frac{1}{2}$ Hours *Full Marks* : 35

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 *five* of the following : $5 \times 1 = 5$

i) In order to function, Hedgehog protein must become complexed with a molecule of

a) cholesterol b) alcohol

c) benzene d) none of these.

ii) In Wnt pathway the GSK3 protein, that is itself repressed by the Wnt signal is

a) an activator b) an inducer

c) an inhibitor d) none of these.

iii) Kupffer cells are found in

a) salivary gland b) lymph gland

c) kidney d) liver.

iv) Syncytial specification is the

a) characteristic of most invertebrates

b) characteristic of all vertebrates and few invertebrates

c) characteristic of most insect classes

d) none of these.

v) 'Mosaic development' is another name of

a) autonomous specification

b) conditional specification

c) syncytial specification

d) none of these.

vi) A cytoplasm that contains many nuclei is called

a) endospore b) syncytium

c) nucleoplasm d) none of these.

vii) XIST RNA is encoded by

a) active *X*-chromosome

b) inactive *X*-chromosome

c) both (a) and (b)

d) none of these.

GROUP – B
(Short Answer Type Questions)

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

2. Write short note on 'Syncytial cell specification'.

3. With appropriate example describe the use of genetic markers in fate map studies.

4. What is CASPASE ? Apoptosis is an evolutionary conserved process. Justify the comment.

5. How are developmental anomalies caused by 'genetic mutation' ? Describe with an example from 'Piebaldism'.

6. Discuss the role of PAX6 in gene transcription.

GROUP – C
(Long Answer Type Questions)

Answer any *one* of the following. 1 × 15 = 15

7. How many types of metamorphosis occur in insects ? Describe with examples. How does hormone play an important role in it ? Describe. 2 + 6 + 7

8. Write short notes on the following : 3 × 5

   a) The hedgehog pathway

   b) Juxtacrine signalling pathway

   c) Wnt pathway.