

**PG CBCS**  
**M.Sc. Semester-IV Examination, 2022**  
**DEPARTMENT OF ZOOLOGY**  
**PAPER: ZOO 402**

Full Marks: 40

Time: 2 Hours

**Write the answer for each unit in separate sheet**

The figures in the right-hand margin indicate full marks.  
 Candidates are required to give their answers in their own words as far as practicable.

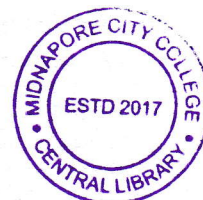
**ZOO 402.1: DEVELOPMENTAL BIOLOGY**

Marks: 20

**GROUP-A****1. Answer any two questions:**

2×2=4

- a) What nAG stands for? What is the function of nAG in regeneration?
- b) What is bindin? Mention its function.
- c) In which area noggin and chordin mRNA is expressed?
- d) Why hydra hypostome is called an organizer?

**GROUP-B****2. Answer any two questions:**

2×4=8

- a) What would be the result if we lasso the newt fertilized egg longitudinally but perpendicular to the first cleavage plane.
- b) What is the function of IP3 in fertilization?
- c) How can it be proved that the head regeneration of hydra producing inhibitory signals that falls off with distance?
- d) Describe the molecular events of mammalian sperm capacitation.

**GROUP-C****3. Answer any one question:**

1×8=8

- a) Briefly explain the molecular mechanism of amphibian dorsal-ventral axis formation.  
 Why denervated newt limb fails to regenerate naturally? 6+2
- b) State briefly the role of ZP1, ZP2 and ZP3 (zona proteins) in the process of mammalian gamete fusion?

(P.T.O.)

(2)

**ZOO 402.2: NEUROENDOCRINOLOGY****Marks: 20****GROUP-A****1. Answer any two questions:****2×2=4**

- a) What are pseudo-unipolar neurons and where are they found?
- b) Name a substance that can act as both an excitatory and an inhibitory neurotransmitter. How can it do so?
- c) Name the cells that produce the myelin sheath around the neuronal axons in the CNS and the PNS respectively.
- d) What is the cytological marker of Parkinson's disease and what is it made up of?

**GROUP-B****2. Answer any two questions:****2×4=8**

- a) Tabulate the differences between the structure and function of ordinary neurons and neurosecretory cells.
- b) Name a neuromodulator and mention its source. How do the neuromodulators differ from the neurotransmitters? 1+3
- c) Tabulate the names, specific source and functions of the 'releasing' and 'inhibitory' neurohormones produced by hypothalamus of vertebrate brain.
- d) With sketch diagram, describe the formation of diverging and converging neural circuits.

**GROUP-C****3. Answer any one question:****1×8=8**

- a) Enumerate the role of opioid neurotransmitters in neuroimmune integration. Explain the neuroendocrine basis of eyestalk ablation in prawn culture. 5+3
- b) Describe the molecular basis of amyloid plaque formation in the brain in Alzheimer's disease with illustration. Write a note on cause, symptoms and control of Cushing's disease. 5+3

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