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**PG CBCS**  
**M.Sc. Semester-IV Examination, 2020**  
**M.Sc. ZOOLOGY**  
 Paper Code: ZOO 402

**Full Marks: 40****Time: 2 Hours**

**Write the answer for each group 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.*

**Group-A**  
**(Marks: 20)**

**(DEVELOPMENTAL BIOLOGY)**

**Answer one question of the following: (250 words)**

**20X1=20**

1. Describe the molecular and biochemical events that occur in mammalian female reproductive tract of a mammalian sperm during capacitation. 20
2. State the role of calcium ions in activation of sea urchin oocyte. What are the late responses of sea urchin fertilization? 10+10
3. State the antagonistic relationship between BMP4 and organizer. Briefly describe the functions of Chordin and Noggin. 10+10
4. Name major sperm binding glycoproteins in mouse Zona pellucida and elucidate their functions. Write the functions of Bindin in fertilization of sea urchin. How epimorphosis differs from morphallaxis? 10+5+5

**Group-B**  
**(Marks: 20)**  
**(Neuroendocrinology)**

**Answer one question of the following: (250 words)**

**20X1=20**

1. Explain the ionic basis of depolarization of neurons. State the differences between the fine structure, secretory activity and physiological function of neurons and neurosecretory cells. Explain first-order neuroendocrine reflex with an example.  
5 + 10 + 5
2. Give a short account of neurohaemal organ in insects. State the names and functions of two major and two minor brain neurohormones of insects. Write a note on anti-gonadal neurohormone of crustaceans.  
5 + 10 + 5
3. Explain the differences between type-1 and type-2 diabetes mellitus. Give an account of polycystic ovarian syndrome and its control. Add a note on female hirsutism and its control.  
5+10+5
4. Differentiate between Voltage gated sodium and potassium channels in axonal transport. Write notes on Olfactory Sensory Neurons (ONS). Write a note on Parkinson's disease.  
15+5

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