# 2017

## M.Sc.

## 1st Semester Examination

## ZOOLOGY

**PAPER—ZOO-102**

**Subject Code—35**

*Full Marks* : 40

*Time* : 2 Hours

*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.*

*Illustrate the answers wherever necessary.*

***Use separate Answer-scripts for Group-A & Group-B***

### Group—A

### *( Cell Biology )*

**1.** Answer any *two* questions from the following : 2×2

(a) "Microtubule Associated Protein (MAP) is associated with a fatal neurodegenerative disorder" — Elaborate.

(b) State the role of HIF (Hypoxia inducing factor) in tumor angiogenesis.

(c) "Phosphoglyceriode is vertually absent in most biomembranes" — Explain.

(d) State the function of integrin ?

2. Answer any *two* questions from the following : 2×4

(a) What is Poloboxes ? Explain how activation of cdk is regulated by Polo Kinase. 1+3

(b) What are the principle steps of cancer metastasis ? State the role of Matrix metaloproteases in these process. 2+2

(c) Discuss the mechanism of microtubule assembly, with proper diagram. 4

(d) How do you explain nuclear localization of NFKB is related to influx of $Ca^{+2}$ in cytoplasm. 4

3. Answer any *one* question of the following : 1×8

(a) (i) Illustrate the mechanism of plus end directed and minus end directed microtubular motor transport in eukaryotic cell.

(ii) What is GAGs ? Mention its types. 5+1+2

(b) (i) Explain how mature TGF-β proteins are formed in extra cellular matrix.

(ii) State the role of different types of Smad proteins in TGF-β signalling.

## Group—B

### *( Biophysics )*

**4.** Answer any *two* questions of the following : 2×2

(a) Why radioactive decay is to be noted as ionizing radiations ?

(b) What do you mean by haemolysis and plasmolysis ?

(c) State the function of ionophore in plasma membrane.

(d) Write a note on : Brownian movement.

**5.** Answer any *two* questions of the following : 2×4

(a) Prove it : $T_{\frac{1}{2}} = \frac{0.693}{\lambda}$

[ $T_{\frac{1}{2}}$ = Half life of a radioactive element

$\lambda$ = Disintegration constant ] 4

(b) State the bio-chemical organization of Glycophorin. What is 'Lipid Raft'. 3+1

(c) 'Lipid molecules within the plasma membrane are dynamic in nature'— Prove it with experimental evidence. 4

(d) Write notes on (any *two*) of the following : 2×2

(i) Dialysis ;

(ii) Radio isotopes ;

(iii) Liposome ;

(iv) Alpha particles.

**6.** Answer any *one* question of the following : 1×8

(a) How you manufacture **biomembrane** in Biophysical Laboratory ? Comment on : **(4n + 2)** radioactive series. 6+2

(b) Write notes on (any *four*) of the following : 4×2

(i) Cholesterol,

(ii) Autoradiography,

(iii) Positive $\beta$-decay,

(iv) Scientillation counter,

(v) Nano materials,

(vi) Glycocalyse.

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