



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – NOVEMBER 2016

BT 3955 - MOLECULAR PATHOLOGY

Date: 09-11-2016
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART – A
Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5 Marks)

- The telomere sequence is _____.
a) TTAGGG b) TTAAGG c) TAAGGG d) TTTAGG
- Antenaepedia* complex is present in which organism?
a) *Acetabularia* b) *E. Coli* c) *Arabidopsis* d) *Drosophila*
- Which of the following is a “Prion” disease?
a) Kuru b) Asthma c) Parkinson’s d) Cancer
- Which gene is associated with obesity?
a) *FTO* b) *CFTR* c) *FOXC1* d) *TC7L*
- What % of drugs are detoxified by CYP2D6 enzyme?
a) 15 b) 40 c) 25 d) 50

II. State whether the following are true or false

(5x1=5 Marks)

- ATP1* is an example of a mitochondrial gene.
- There are 82 exons present in Dystrophin gene.
- “Foot and Mouth” disease is caused by prions.
- Hepatocytes do not have regeneration potential.
- Fast metabolizers require less dose of drug compared to ultra-fast metabolizers of drug.

III. Complete the following

(5 x 1= 5 Marks)

- ROS stands for _____.
- “UPD” is seen in _____ disease.
- Dr. Stanley Prusiner was a Nobel Prize winner for the discovery of _____.
- Resveretrol can increase _____ cholesterol, which is beneficial to humans.
- Huntington’s disease is due to the expansion of _____.

IV. Answer the following, each within 50 words

(5 x 1 = 5 Marks)

- What is the cause of Bovine spongiform encephalitis?
- Define Biological anticipation with an example.
- What is pattern formation?
- Expand MODY. Which is the most commonly seen MODY phenotype in India?
- What is the function of Cytochrome P450?

PART – B

(5 × 8 = 40 Marks)

Answer the following, each within 500 words. Draw diagrams wherever necessary.

21. (a) Explain the molecular mechanisms involved in the repair of oxidative DNA damage.

OR

b) Discuss the role of telomerase in aging.

22. (a) What are the clinical features of human mitochondrial DNA mutations in adults?

OR

(b) What are the roles of chaperones in aging?

23. (a) Write a note on AngelMan syndrome and genomic imprinting.

OR

(b) Discuss the characteristics of Biomarkers.

24. (a) Mention two neurodegenerative disorders and explain.

OR

(b) Explain the gene - environment involvement in the causation of type 2 diabetes.

25 (a) Describe the various stages involved in the metabolism of a drug.

OR

(b) Discuss the effect of teratogens in disease development in humans.

PART – C

(2 × 20 = 40 Marks)

Answer any TWO of the following, each within 1500 words; Draw diagrams wherever necessary

26. Describe the cellular and molecular mechanisms of necrotic cell death.

27. How do you obtain “Proof of Concept” in the development of a drug? Explain in detail the various phases involved in it.

28. Describe atherosclerosis with suitable diagrams.

29. Discuss the role of Cytochrome P450 gene in drug metabolism with at least two examples.
