

This question paper contains **3** printed pages]

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S. No. of Question Paper : **5607**

Unique Paper Code : **2493010011**

Name of the Paper : **Molecular Basis of Non-Communicable Human Diseases (DSE)**

Name of the Course : **B.Sc. (Hons.) Biochemistry (NEP)**

Semester : **VI**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are *six* questions.

Attempt *four* questions in all. *All* questions carry equal marks.

Question No. 1 is compulsory.

1. (A) Justify the following statements :

- (i) Certain blood pressure medication can lead to hyponatremia.
- (ii) LH : FSH ratio is often relevelated in PCOS.
- (iii) Beta-thalassemia minor individuals show enlarged bone marrow and spleen along with iron-overload.
- (iv) Most patients with trisomy 21 (Down's syndrome) develop Alzhemier's disease at an earlier age.
- (v) Stress can aggravate the irritable bowel syndrome.
- (vi) Most common cancers are of polygenic origin.

P.T.O.

(B) Expand and explain the following terms (any *two*) :

(i) ARDS

(ii) TNBC

(iii) DVT

12,3

2. (A) Explain how the following contribute to the development of atherosclerosis :

(i) Hypertension

(ii) Inflammation

(iii) Caloric overnutrition

(iv) Smoking

(B) How do tumour cells evade immune surveillance ?

10,5

3. Differentiate between the following :

(i) Hyperplastic and Hypertrophic obesity

(ii) Diabetic coma and Insulin shock

(iii) Chronic Bronchitis and emphysema

(iv) Heart attack and heart failure

(v) Oncogenes and protooncogenes

3×5=15

4. Explain the molecular basis, diagnosis, symptoms and treatment strategies for the following :

(1) Sickle cell Anemia

(2) PKU

(3) Cystic Fibrosis

(4) Huntington's disease.

4,4,4,3

5. (A) Discuss gene-environment interactions in chronic diseases with *two* suitable examples.
- (B) Draw a schematic diagram showing the malignant transformation of carcinoma from a normal cell.
- (C) Explain the inheritance pattern of classical Hemophilia and discuss the gene therapy for this disorder.
- (D) Discuss the efficacy and mechanism of action of GLP-1 agonists in management of Diabetes mellitus. 4,4,4,3
6. (A) A 9-year old boy was brought to the OPD with facial swelling, and discomfort in passing urine. He had streptococcal throat infection two weeks ago which was resolved in a few days. The following were the laboratory reports :
- Blood analysis : Hb-13 mg/dl, TLC-9800/ul, DLC- P76 L20 E2 M2, Serum Protein-5.0 gm/dl, Serum Albumin-2.5 gm/dl.
- Urine analysis : Albumin ++, sugar-nil, 2-3 Pus cell/HPF
- (i) Discuss the lab findings and justify your diagnosis.
- (ii) What is the underlying pathology for hypoproteinemia and proteinuria ?
- (iii) Give basis for swelling in face and around eyes.
- (B) Explain the utility and mechanism of action of the following drugs :
- (i) Tamoxifen
- (ii) Statins
- (iii) Beta blockers
- (iv) Methotrexate. 7,8