Department of Biochemistry, GMC, Surat

1st MBBS Preliminary Examination Biochemistry Paper – II - June – 2019

Duration : 2 hours **Max Mark: 50**

Q: 1 Write Notes (2 out of 3) **(08 Marks)**

1. Write definition, types and clinical significant of protein structures.
2. Write heme synthesis pathway. Give biochemical explanation for acute intermittent porphyria.
3. Salvage pathway of Purine synthesis & Lysch Nyhan Syndrome

Q: 2 Describe in brief (4 out of 6) **(12 Marks)**

1. Difference between competitive and suicide inhibition with example.
2. Post-translation modification. Give any two examples to explain it's significant.
3. Overview of phenylalanine metabolism and biochemical explanation of phenyketonuria.
4. Differentiation of jaundice through blood and urine examination.
5. Enumerate type of mutation & their effects with example.
6. Definition & significance of protein denaturation

Q: 3 Write answer in few line (5 out of 6) **(05 Marks)**

1. Difference between Intron & Exon
2. Difference between PCR & Replication
3. Fates & Significant of Glycine
4. Principle and Significant of RFLP
5. Specific dynamic action of food
6. Make sequence of following proteins as per increasing their total amino acids residue
   - Glutathione , Insulin , Pre-pro insulin , adult haemoglobin ,Aspartame

Q: 4 read the case & answer the questions **(10 marks)**

A 7 year old male child came in pediatric OPD with breathlessness and bilateral pedal edema (both limb edema) since 6-7 days. On general examination, it was found that patient has tachycardia (increase heart rate) and pallor (pale conjunctive). On abdominal examination , there was hepato – splenomegaly. His parent told that child has thalassaemia and many blood transfusion has done previously. But they do not have any previous record of investigation or treatment

Doctor advise parent to admit child. Doctor advised following blood investigation for child.

Parameter	Value	Referance Range	Haemoglobin Electrophoresis
Haemoglobin	5.5	12 – 15.5 gm/dL	HbA2 and HbF band is prominently visible
S.Alanine Transaminase	500	15 – 45 IU/L	HbA band is very light.
Serum Iron	1000	60 – 170 mcg/dL	**Diagnosed** = Thalassaemia Major
Serum Ferritin	900	7–140 ng/mL	**Cardiac 2D-Echo**
Serum TIBC	200	240–450 mcg/dL	Ejection fraction < 30 % , Dilated cardiac chamber size , Thickening of cardiac wall

Patient was treated with Injection Furosemide (Diuretic)
Whole Blood Transfusion 1 unit (300 ml)
Inj Deferoxamine (chelating drug) followed by oral Deferoxamine

Answer Following Questions from given above given case.

1. What is biochemical explanation for prominent HbA2 & HbF as well as very light HbA band in this case?
2. What is reason for high serum iron & ferritin level as well as for low TIBC level?
3. What is role of deferoxamine drug in this case?
4. What can reason for hepato-splenomegaly aand cardiomegaly?
5. What other investigation do you like to suggest for this whole family?

Q:5 Write Justification (Answer in few lines) (5 out of 7) **(10 Marks)**

1. Increase ammonia causes toxicity to brain
2. Diarrhea cause normal anion gap acidosis.
3. Arginine can be useful to improve athletic performance.
4. Glucose gives more energy with malate-aspartate shuttle than glycerol-3-phosphate shuttle.
5. At high altitude, hemoglobin has lower affinity to oxygen.
6. Histidine load test is used for detection of folate deficiency.
7. Urobilinogen is absent in urine of obstructive jaundice.

Q:6 Write Answer in Few line (5 out of 6) **(05 Marks)**

1. Action and significant of warfarin on vitamin k cycle.
2. Difference between Creatine & Creatinine
3. Difference between DNA polymerase-I & DNA polymerase-III
4. Molecular abnormality in sickle cell disease
5. Chimeric DNA.
6. Make sequence of following food product as per increasing Glycemic index
   - Vanilla Ice-cream , Cane-Sugar , Pepsi (soft drike) , Boiled Egg, Rice