

**DEPARTMENT OF BIOCHEMISTRY
TEACHING SCHEDULE -JANUARY- 2021
I MBBS**

DATE	DAY	TIME	TOPIC	STAFF
02.01.20	Saturday	10.30-1.15pm	B1 - OSPE and Charts	Dr.D.Ponnudhali
04.01.21	Monday	10.30-1.15pm	C1 - OSPE and Charts	Dr.Vijayasamundeeswari
05.01.21	Tuesday	8.00 - 9.00am(T)	Extracellular matrix	Dr.Sudha
		10.30-1.15pm	A1 -OSPE and Charts	Dr.Priya dhas
06.01.21	Wednesday	9.00 - 10.00am(T)	Adrenal Function Test	Dr.Nandhini
		10.30-1.15pm	B2 - OSPE and Charts	Dr.D.Ponnudhali
07.01.21	Thursday	9.00 - 10.00am (SDL)	Liver Function Test	Dr.Vijayasamundeeswari
		10.30-1.15pm	C2 - OSPE and Charts	Dr.Sudha
08.01.21	Friday	10.30-1.15pm	A2- OSPE and Charts	Dr.Nandhini
09.01.21	Saturday	9.30am - 12.30pm	Model practical exam - C	All teaching faculty
11.01.21	Monday	9.30am - 12.30pm	Model practical exam - D	All teaching faculty
12.01.21	Tuesday	9.30am - 12.30pm	Model practical exam - A	All teaching faculty
13.01.21	Wednesday	9.30am - 12.30pm	Model practical exam - B	All teaching faculty
14.01.21	Thursday		PONGAL HOLIDAYS	
15.01.21	Friday			
16.01.20	Saturday			
18.01.21	Monday	9.30am - 12.30pm		Model exam - Anatomy Paper I
19.01.21	Tuesday	9.30am - 12.30pm	Model exam - Anatomy Paper II	
20.01.21	Wednesday	9.30am - 12.30pm	Model exam - Physiology Paper I	
21.01.21	Thursday	9.30am - 12.30pm	Model exam - Physiology Paper II	
22.01.21	Friday	9.30am - 12.30pm	Model exam - Biochemistry Paper I	All teaching faculty
23.01.21	Saturday	9.30am - 12.30pm	Model exam - Biochemistry Paper II	All teaching faculty
25.01.21	Monday	10.30-1.15pm	Practicals revision	Dr.Priya dhas

26.01.21	Tuesday		REPUBLIC DAY	
27.01.21	Wednesday	9.00 - 10.00am (SDL)	Theory revision	Dr.D.Ponnudhali
		10.30-1.15pm	Practicals revision	Dr.Vijayasamundeeswari
28.01.21	Thursday	9.00 - 10.00am(SDL)	Theory revision	Dr.Sudha
		10.30-1.15pm	Practicals revision	Dr.Nandhini
29.01.21	Friday	10.30-1.15pm	Practicals revision	Dr.Priya dhas
30.01.20	Saturday	10.30-1.15pm	Practicals revision	Dr.D.Ponnudhali

Annexure – III Model Exam Schedule

Department of Biochemistry

I MBBS –2019-20 Batch

Model Exam Schedule –January2021

Date	Time	Portions	Mode of Examination
09.01.2021 11.01.2021 12.01.2021 13.01.2021	9.30 am to 12.30 pm 2pm to 4 pm	Practical Exam Theory Viva	Offline
22.01.2021	9.30 -12.30 pm	Biochemistry Paper I	Offline
23.01.2021	9.30 -12.30 pm	Biochemistry Paper II	Offline

Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem

Department of Biochemistry

I MBBS (2019-20 Batch)

MODEL EXAM

22.1.2021

9.30 am -12.30 pm

Total Marks :100

BIOCHEMISTRY PAPER I

ESSAY QUESTIONS: (2x15= 30 marks)

1. What is the normal plasma lipid profile? Classify the lipoproteins and tabulate the compositions and functions of 4 lipoproteins. Explain the metabolism of HDL in detail. Give an account of the hyperlipoproteinemias. (2+1+2+2+4+4)

2. A 13-year-old child, born of consanguineous marriage, presented with photosensitivity and recurrent blistering. The blisters were first noticed by the parents at the age of 4–5 years. The blisters were mostly present on exposed areas and used to heal with scarring. There was no history of a similar problem in the family. There was no history of acute neurological attacks.

On examination, there were severe atrophic scars on the face and exposed parts of the extremities, which had resulted in mutilating deformities of the fingers. Though erythrodontia was not spotted with the naked eyes, the teeth revealed a pink-red fluorescence under Wood's lamp.

Lab investigations:

1. LFT& RFT- normal
2. Mild anemia - Hb 8.0 g/dl,
3. Porphobilinogen was normal in urine.
4. On screening with a spectrophotometer, urinary total porphyrin- 1187 nmol/mmol of creatinine (normal <35 nmol/mmol).
5. Twenty-four-hour urinary levels of uroporphyrin and coproporphyrin were raised.
6. The erythrocyticporphyrins showed a level of 124.3 µg/100 ml (reference value less than 40 µg/100 ml using the hematofluorometric method).

1. ----- are a group of inborn errors of metabolism associated with the synthesis of heme&----- are due to defect in the synthesis of globin chains (2)
2. Explain the enzyme defects , inheritance, urine findings & clinical features of any 4 types of porphyrias.(8)
3. Enumerate the synthesis of heme& add a note on the regulation of heme synthesis.(4)
4. Name 2 causes of acquired porphyrias.(1)

SHORT NOTES: (6x 5= 30 marks)

1. What are the products formed in HMP shunt pathway? Enumerate the significance of this pathway in our body.
2. What are the 2 types of GTT? Enumerate the indications for GTT & tabulate the plasma glucose levels in normal & diabetic patients. Add a note on renalglucosuria.(1+1+ 2+1)
3. Explain the enzyme profile in liver diseases along with their normal values.
4. Explain the deficiency manifestations of folic acid and write a brief note on folate antagonists.
5. Describe Wald's visual cycle & Illustrate with a picture. Enumerate the mechanism that helps us to adapt suddenly from bright to dim light.
6. What is balanced diet? Give an account of the steps of prescribing a normal diet. Mention one dietary advice for diabetic patients.

III. Answer briefly (10 x 2= 20 marks)

1. What is active transport? Give an example.
2. What is Lactose Intolerance due to? Mention the cause of diarrhoea in lactose intolerance.
3. Name any two types of eicosanoids and write one function of each in our body.
4. What is a lung surfactant? Name the phospholipid that acts as lung surfactant and write the disorder cause due to its deficiency.
5. What is competitive inhibition of enzymes? Give an example of one such reaction, with competitive inhibitor.
6. Name 2 neurologically important vitamins. Name the neurological vitamin involved in transamination reactions & mention its coenzyme.
7. What is the normal hemoglobin level in blood? What is thalassemia due to? Mention the two types of Thalassemias.
8. What is oxidative phosphorylation? Give 2 uncouplers of oxidative phosphorylation.
9. What is BMR? What are the normal values in adult men & women?
10. Name one dietary fibre. Give 2 biochemical effects of dietary fibres.

MCQ's:

Marks : 20 x 1 = 20 marks

- 1) Which of the following is a homopolysaccharide of Fructose?
C. Insulin B. Inulin C. Chitin D. Heparin
- 2) Glucose and galactose are epimers and they differ structurally in orientation of H and OH on:
A. C1 B. C3 C. C2 D. C4
- 3) Which one of the following polysaccharide contains beta (β)-glycosidic bonds
A. Starch B. Glycogen
C. Cellulose D. Amylose
- 4) Which of the following is not a reducing sugar?
A. Lactose B. Maltose
C. Sucrose D. Fructose
- 5) The glycosaminoglycan that acts as an anticoagulant
A. Heparin B. Hyaluronic acid
C. Chondroitin sulphate D. Dermatan sulphate
- 6) Which of the following is an example of ω 3 Fatty acid?
A. Linolenic acid B. Linoleic acid
C. Oleic Acid D. Arachidonic acid
- 7) The Phospholipid present in Lung Surfactant
A. Lecithin B. Cephalin
C. Sphingomyelin D. Phosphatidyl inositol
- 8) Which of the following is the precursor for the synthesis of Prostaglandins?
A. Linoleic acid B. Oleic acid
C. Arachidonic acid D. Acetic acid
- 9) Which of the following is true about competitive inhibition?
A. K_m is increased B. Inhibitor is not a structural analog
C. It is irreversible D. V_m is decreased
- 10) Which of the following enzymes catalyse suicidal inhibition?
A. Cyclooxygenase B. Cytochrome oxidase C. Enolase D. Lipase
- 11) The K_m value of an enzyme
A. Substrate concentration at half maximal velocity
B. Half the substrate concentration concentration at maximal velocity
C. Total enzyme concentration

D. Total substrate concentration

12) The coenzyme form of Vitamin B1 is:

- A. Nicotinamide adenine dinucleotide
- B. Flavine adenine dinucleotide
- C. Thiamine sulfate
- D. Thiamine pyrophosphate

13) The antagonist of Biotin seen in raw eggs is:

- A. Warfarin
- B. Dicumoral
- C. Avidin
- D. Ethanol

14) Which of the following is a physiological Uncoupler?

- A. Thermogenin
- B. 2,4 – Dinitrophenol
- C. 2,4 – Dinitrocresol
- D. Rotenone

15) The site of oxidative phosphorylation is:

- A. NADH-CoQ oxidoreductase
- B. Cytochrome oxidase
- C. CoQ-Cytochrome c oxidoreductase
- D. ATP synthase

16) The calorific value of 1 gm of Fat is

- A. 4 k cal /gm
- B. 9 k cal /gm
- C. 6 k cal /gm
- D. 7 k cal /gm

17) Which of the following is true about Kwashiorkor?

- A. Protein deficiency
- B. Shrunken with skin and bone
- C. Serum cortisol increased
- D. Calorie deficiency

18) Enzyme deficient in acute intermittent porphyria is:

- A. ALA synthase
- B. ALA dehydratase
- C. PBG deaminase
- D. Ferrochelatase

19) Which of the following induces heme synthesis:

- A. Barbiturates
- B. Lead
- C. Heme
- D. Zinc

20) The marker enzyme for Golgi complex is

- A. Cathepsin
- B. Galactosyl Transferase
- C. ATP Synthase
- D. LDH

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Department of Biochemistry

I MBBS (2019-20 Batch)

MODEL EXAM

23.1.2021

9.30 am -12.30 pm

Total Marks :100

BIOCHEMISTRY PAPER II

ESSAY QUESTIONS: (2x15= 30 marks)

1. A 29-year-old Han Chinese woman presented with complaints of weight gain of approximately 8kg (body height, 163cm; body weight, 60kg; BMI, 22.6kg/m²) and gradual rounding of her face over the past 6 months. An increasing waist circumference was also observed.

She had signs of easy bruising, thinning of the skin, supraclavicular fat pads, a buffalo hump & purple striae. She reported a previous history of hypercholesterolaemia and polycystic ovary syndrome.

On physical examination, she had a healthy weight (BMI, 22.3kg/m²), mildly rounded face and ecchymosis of the extremities. Other aspects were unremarkable. The results of a complete blood cell count were within the normal limits, and general biochemical findings showed hypercholesterolaemia

Lab investigations:

- Cholesterol (mg/dl) : 264
- LDL-cholesterol (mg/dl): 177
- Triglycerides (mg/dl): 108
- Morning cortisol level of 17.8µg/dL (reference range: 5–25µg/dL)
- ACTH level of <5pg/mL (reference range: <46pg/mL)
- Urinary free-cortisol level of 486µg/day (reference range: 20–80µg/day).

1. The above patient was diagnosed with ----- & is due to hyperactivity of ----- gland. (2)
 2. List out the hormones produced by the involved endocrine gland.(1)
 3. Explain in detail the lab tests done to assess the function of the endocrine gland involved here. (6)
 4. Explain the biological effects of the hormone elevated in the above condition.(2)
 5. Enumerate the causes & clinical features of one disorder related to hyperfunction and one disorder related to the hypofunction of the gland involved.(4)
2. Define translation? Write the site of protein synthesis. Explain in detail the various steps of translation leading to the synthesis of proteins. Enumerate the post- translational processing of proteins and give a brief note on the inhibitors of protein synthesis. (1+1 +6 + 5+ 2)

II. SHORT NOTES (6x 5= 30 marks)

1. Enlist the components of extracellular matrix and write 2 functions of ECM. Give an account on one disorder associated with ECM.
2. Discuss the metabolic role of glycine in our body.
3. What is gene therapy? Describe the process and applications of gene therapy.
4. Name one copper containing enzyme. Explain the disorders related to copper metabolism.
5. What is Anion gap? Discuss the 2 types of metabolic acidosis and its causes.
6. Give an account on the concepts involved in vaccine development.

III. Answer briefly (10 x 2= 20 marks)

1. What is Transmethylation reaction? Give 2 examples of transmethylation reaction.
2. What is serotonin? How is it synthesized? Write 2 functions of serotonin?
3. Name any 2 DNA repair mechanisms. What is the cause of xerodermapigmentosa?
4. What is the normal serum potassium level? What is hyperkalemia and write 2 causes of hyperkalemia.
5. Name one glomerular function test and one test to assess tubular function. What is the normal albumin- creatinine ratio in males & females.
6. Define buffers. Name the buffers present in body fluids.
7. What is the safe limit of fluorine in water? What is fluorosis? Write the types of fluorosis and one clinical presentation of each type.
8. Define phase I of detoxification. Give 2 examples.
9. What is oncogene and tumor suppressor gene? Give one example for tumor suppressor gene.
10. Name the thyroid hormones. Write 2 lab findings in hypothyroidism.

MCQ's:

Marks : 20 x 1 = 20 marks

1. The amino acid with maximum buffering capacity at physiologic pH is
 - A. Arginine
 - B. Alanine
 - C. Histidine
 - D. Asparagine
2. The whole molecule of glycine is incorporated into the ----- atoms of purine
 - A. N4, N5, and C7
 - B. C4, C5, and N7
 - C. C3, C4, and C7
 - D. N3, N4 and C7
3. All the following are included in the Triple test of Prenatal screening, except
 - A. AFP
 - B. uE3

- C. hCG
 - D. Inhibin
4. Osteogenesis imperfecta is a congenital disorder caused by genetic defects in the synthesis of
- A. Type I collagen
 - B. Type II collagen
 - C. Type IV collagen
 - D. Type V collagen
5. A 4 year old boy presented with hypotonia, developmental delay, irritability and self mutilating behaviour. Uric acid level was elevated. The most likely disorder is
- A. Oroticaciduria
 - B. SCID
 - C. Lesch-Nyhan syndrome
 - D. Xanthine oxidase deficiency
6. The arm of tRNA involved in the binding of tRNA to ribosomes is
- A. DHU arm
 - B. Pseudouridine arm
 - C. Anticodon arm
 - D. Acceptor arm
7. The technique used to detect a specific segment of DNA in the whole genome is
- A. Western Blot
 - B. Northern Blot
 - C. Southern Blot
 - D. Recombinant DNA technology
8. The safe limit of fluorine in water is about
- A. 1ppm
 - B. 2 ppm
 - C. 5 ppm
 - D. 20 ppm
9. Normal level of potassium in plasma is
- A. 96 – 106 mg/dl
 - B. 9 – 11 mg/dl
 - C. 136 – 145 mEq/L
 - D. 3.5 – 5mEq/L
10. Loss of hemoglobin in urine is prevented by
- A. Haptoglobin
 - B. Hemopexin
 - C. Ferritin
 - D. Transferrin
11. The most common electrolyte abnormality observed in clinical practice is
- A. Hypernatremia
 - B. Hyponatremia
 - C. Hypokalemia
 - D. Hyperkalemia
12. All the following are causes of high anion gap metabolic acidosis,
- A. Diabetic ketoacidosis
 - B. Diarrhea
 - C. Renal failure
 - D. Lactic acidosis

13. Respiratory alkalosis is characterized by
 - A. Primary excess of carbonic acid
 - B. Primary deficit of carbonic acid
 - C. Primary excess of bicarbonate
 - D. Primary deficit of bicarbonate
14. One of the following is an example of phase two detoxification
 - A. Hydrolysis
 - B. Conjugation
 - C. Reduction
 - D. Dealkylation
15. Which of the following tests checks the synthetic function of liver
 - A. Bilirubin
 - B. AST:ALT ratio
 - C. GGT
 - D. Prothrombin time
16. Acute renal failure is characterized by all except
 - A. Hypokalemia
 - B. Hyperkalemia
 - C. Hyponatremia
 - D. Hyperphosphatemia
17. Colorimeter is based on
 - A. Bohr's law
 - B. Beer-Lambert law
 - C. Starling's law
 - D. Hamburger's law
18. The tumor marker for ovarian cancer is
 - A. Carcinoembryonic antigen
 - B. Beta HCG
 - C. Alpha fetoprotein
 - D. Cancer antigen-125
19. All the following hormones have membrane receptors, except
 - A. Insulin
 - B. Epinephrine
 - C. Thyroxine
 - D. Glucagon
20. One of the following disease results from deficient production of freeradicals
 - A. Alzheimer's disease
 - B. Cancer
 - C. Chronic granulomatous disease
 - D. Amyotrophic lateral sclerosis
