



TRIPURA UNIVERSITY

(A CENTRAL UNIVERSITY)

SURYAMANINAGAR, 799022

Syllabus for

B. Sc. TDPH & TDP

HUMAN PHYSIOLOGY

SEMESTER-III (Major)

YEAR 2015

HUMAN PHYSIOLOGY HONOURS (TDPH)

Semester-03

PAPER-03 (H3A)

Total Marks: 60

UNIT VII : Metabolic Biochemistry and Molecular Respiration

1. Enzymatic mechanism and regulation of Glycolysis, Glycogenolysis and TCA cycle; Energetics of Glycolysis and TCA cycle, Anapleurotic cycle.
2. Oxidation and biosynthesis of Fatty acids: Energetics of β oxidation : Ketone bodies- formation , function and fate
3. Deamination and Transamination, Catabolism of Amino acids- Phenylalanine, Tyrosine, S- containing amino acids and tryptophan.
4. Urea formation- mechanism and regulation
5. Inborn errors of metabolism- Glycogen storage disease, Phenylketonuria, Albinism.
6. Gluconeogenesis, Pentose Phosphate and Uronic acid pathway-mechanism and significance
7. Biosynthesis of Cholesterol: mechanism and significance
8. Catabolism of Purine and Pyrimidine.
9. Organization of Electron Transport Chain, Chemi-osmotic hypothesis, Uncouplers.
10. Mechanism of Oxidative Phosphorilation: $F_0 F_1$ ATP-ase, Inhibitor

UNIT-VIII : Nutritional Biochemistry

1. Vitamins- water and fat soluble vitamins –sources, daily requirements and functions.
2. Chemical nature and structure of Vitamins: biosynthesis of vitamin-C, A and D.
3. Co-enzymatic role of vitamins in metabolism.
4. Vitamin deficiency symptoms and disorders : hyper vitaminosis.
5. Bulk and trace elements and physiological roles of - Na^+ , K^+ , Ca^{++} , Mg^{++} , Fe^{++} , Zn^{++} , Se^{-} , Cu^{++} , Iodine.
6. Calorific value of foods and determination by Bomb Calorimeter. SDA of foods, RQ, their definition and physiological importance.
7. BMR, factor affecting BMR, determination by Benedict's Roth Apparatus.
8. Nutritional importance and dietary requirements of Carbohydrate, proteins and fats. RDA- Carbohydrates, protein fats and other nutrients. Complete and incomplete proteins, biological value of proteins, essential amino acids and fatty acids.
9. Food groups, formulation of **balanced** diet for Growing child, Adult man and Women. Pregnant and Lactating mother. Elderly people.
10. Malnutrition, protein calorie malnutrition (Kwarshiorkor) and undernutrition (Marasmus), their preventive and curative measures: Obesity.

HUMAN PHYSIOLOGY
TDPH , 3rd SEMESTER, PRACTICAL
PAPER-H3B MARKS-40

A. CLINICAL BIOCHEMISTRY

1. Qualitative identification of Bio-chemical samples of physiological importance- HCl, Lactic acid, Uric acid, albumin, peptone, gelatin, Starch, Dextrin, Glucose, Fructose, Maltose, Lactose, Sucrose, urea, Bile Salt, Acetone, Glycerol.
2. Estimation of serum cholesterol by Ferric chloride method
3. Estimation of blood glucose by Folin-Wu method
4. Estimation of serum/plasma protein by Biuret method
5. Estimation of serum triglyceride by Neri and Fringe method
6. Estimation of serum SGPT/SGOT

B. NUTRITIONAL BIOCHEMISTRY

1. Colorimetric estimation of blood haemoglobin
2. Estimation vitamin-C in blood by 2,6-dichlorophenol indophenols method
3. Estimation of lactose content of milk by Benedict's method
4. Estimation of percentage quantity of carbohydrate in rice/potato.
5. Estimation of moisture content of food

C. Assessment of Nutritional Status by Anthropometric and diet Survey method (Compulsory)

Distribution of marks:

TOTAL MARKS:	40	
Internal Assessment:	08	
Term end Exam :	32	
A. Clinical Bio-chemistry (any one experiment):		08
B. Nutritional Bio-chemistry(any one experiment):		08
C. Nutritional status Survey Reports		08
a) Anthropometry	04	
b) Diet survey report	04	
D. Practical Note book		04
E. Viva voce		04



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Syllabus for

B. Sc. TDPG

HUMAN PHYSIOLOGY

SEMESTER-III (GENERAL)

YEAR 2015

HUMAN PHYSIOLOGY ELECTIVE (TDPG)

Semester-03

PAPER-03 (P3A)

Total Marks: 50

UNIT- VII : NEUROCHEMISTRY AND NEUROPHYSIOLOGY (25 marks)

1. Macromolecular Neurochemistry : Carbohydrate utilization in the Brain, Role of Proteins and Lipids in the brain.
2. Transmitter- neurochemistry : Acetylcholine, Catecholamines, Serotonin, Amino acids and Peptides.
3. Skin and cutaneous receptors : Skin structure, Overview and types of receptors.
4. Structural and functional organization of nervous system
5. Properties of neuron, genesis and propagation of nerve impulse.
6. Transmission of impulse: Synaptic and Myoneural.
7. Reflex, Reflex arc, Properties of reflex action, Conditioned and Unconditioned reflexes.
8. Ascending (Sensory) tracts: origin, course, termination and function
9. Descending (Motor) tracts: origin, course, termination and function
10. Modern concept of skeletal muscle contraction.

UNIT- VIII : RENAL PHYSIOLOGY & ENVIRONMENTAL STRESS BIOCHEMISTRY (25 marks)

1. Anatomical structure of Human kidney, Structure and function of nephron; GFR, factors affecting GFR.
2. Mechanism of Urine formation, Formation of dilute and concentrated urine. Normal and abnormal constituents of urine- their significance, Inulin and creatinine clearance test.
3. Micturition and reflexes.
4. Renal circulation: course & peculiarities.
5. Non-excretory functions of kidney: i) Water Balance, ii) Renin-angiotensin system, iii) Acid-base balance, iv) Role in erythropoiesis
6. Chronic Renal failure- Causes, Renal hypertension
7. Free radicals and Oxidative stress, Generation of free radicals in the body.
8. Role of superoxide dismutase catalase, Glutathione in oxidative stress physiology. Heavy metals as agents of oxidative stress.
9. Major antioxidants: role of Vitamins and Minerals as antioxidant: Pesticides: Organo-phosphates, Organo-chlorine and Carbamate ; their toxic action in human body.
10. Active and Passive smoking, Major harmful compounds in smoke & their deleterious effects on human body.

HUMAN PHYSIOLOGY

TDPG , 3rd SEMESTER, PRACTICAL
PAPER-P3B MARKS-50

1. Identification of abnormal constituents of urine: Albumin, Ketone, Sugar (glucose), bile salt and blood
2. Estimation of creatinine in blood
3. Models on excretory system: study of Kidney, Ureter, Urinary bladder and Urethra: their anatomical position, structure and function.
4. Identification of histological slides in relation to Skin and Excretory system
5. Human reflexes:
Superficial (Plantar /Abdominal reflexes) , Deep (Knee-Jerk / Biceps & Triceps jerk reflexes).
6. Determination of muscle strength & endurance by Handgrip Dynamometry.

Distribution of marks:

TOTAL MARKS:	50
Internal Assessment:	10
Term end Exam :	40

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|------------------------|------------|
| 1. Three experiments: | 10 X 3 =30 |
| 2. Practical Note book | 05 |
| 3. Viva voce | 05 |
