Roll no. .....

P-2676

M.D. EXAMINATION, APRIL, 2008

M.D. – PHYSIOLOGY

(Paper - I)

Time : 3 hours

Maximum Marks – 100

Note : Attempt all questions. Draw labeled diagrams and flow chart wherever necessary.

1. Describe the functions of various intracellular organelles. Give a detailed account on the mitochondria and the disorders associated with its abnormality. 20 marks

2. Describe the regulation of cerebral circulation. Give an account on blood-brain barrier. 20 marks

3. Describe in detail ionic basis of action potentials in nerve, cardiac muscle and skeletal muscle. 20 marks

4. Write short notes on : 10 marks each

   (a) Free radicals
   (b) Interstitial fluid regulation
   (c) Genetic engineering
   (d) Nociception

Roll no. P-2677

M.D. EXAMINATION, APRIL, 2008

M.D. – PHYSIOLOGY

(Paper – II)

Time : 3 hours Maximum Marks – 100

Note : Attempt all questions. Support your answers with suitable diagrams / graph.

1. Classify transport systems across the cell membrane. Explain every one by giving an example. Explain the mechanism of operation of Na^+ - K^+ pump with its significance. 20 marks

2. Explain :

   (i) Effect of increase or decrease in K^+ and Na^+ ion concentration from its normal range in extracellular fluid on resting membrane potential. 15 marks

   (ii) G. Protein as transcellular signaling Molecule. 15 marks

3. Write in short :

   (i) Define orthograde axoplasmic transport, retrograde axoplasmic transport and wallerian degeneration. 15 marks

   (ii) Syneptic transmission 15 marks

4. Explain :

   (i) Define stress and the mechanism of stress response 10 marks

   (ii) Insulin and blood glucose regulation 10 marks

Roll no. .....

P-2678

M.D. EXAMINATION, APRIL, 2008

M.D. – PHYSIOLOGY

(Paper – III)

(Recent Advances)

Time : 3 hours

Maximum Marks – 100

Note : Attempt all questions. Draw labeled diagrams and flow chart wherever necessary.

1. Give on account of the recent developments in the field of 'stem cell' research. 30 marks

2. Comment on the recent developments on :

   (a) Human cortical plasticity 10 marks
   (b) Control of huger and thrust 10 marks

3. Discuss the following :

   (a) Ovarian hormones 10 marks
   (b) EEG 10 marks

4. Write briefly on the following :

   (a) Stretch reflex 10 marks
   (b) Pre-Botzinger complex 10 marks
   (c) Macular sparing 10 marks

Roll No. .....

P–05

M. D. EXAMINATION, April/May, 2009

PHYSIOLOGY

Paper First

Time : Three Hours] [*Maximum Marks : 100*

Note : Answer all questions. Attempt serially. Support your answers with suitable diagrams, flowcharts etc. wherever required. All questions carry equal marks.

Write briefly about the following :

1. Describe the body fluid compartments. How will you measure the blood volume ?
2. Fibrinolytic system and its regulation.
3. Describe the conduction system of the heart. Write about pacemaker potentials.
4. Discuss about Oxygen-hemoglobin dissociation curve and describe factors affecting it.
5. Discuss the cardiovascular responses to the exercise.
6. Discuss the various ways how the pH is maintained in the blood ?

P. T. O.

7. Describe the Eintoven's law. Discuss the arrangement of various leads of EKG according to development of potential.

8. Discuss about the Student's *t*-test with examples.

9. Discuss the physiological basis of the breathing (Inspiration and Expriation).

10. Discuss about the system which develop acquired immunity.

Roll No. .....

P – 06

M. D. EXAMINATION, April/May, 2009

PHYSIOLOGY

Paper Second

Time : Three Hours] [*Maximum Marks : 100*

Note : (i) Attempt all questions.

(ii) Give experimental proof when necessary.

(iii) Use diagrams wherever necessary.

1. Draw a diagram of enteric nervous system and discuss its role in motility of gastro-intestinal tract.
2. Describe the mechanism of secretion of hydrochloric acid by gastric mucosa. Discuss its clinical significance.
3. Discuss the role of kidney as an endocrine organ.
4. List the peculiarities of Renal blood flow and discuss the mechanism of its Autoregulation.
5. List the hormones secreted by Adrenal Cortex and describe the physiological actions of Glucocorticoids.
6. Explain the turnover of calcium in the body, using a simple line diagram. Describe the function of an Osteoclast.
7. Describe the hormonal regulation of normal blood sugar level. Explain the term counter regulatory hormones and give the clinical symptoms of Hypoglycaemia.

P. T. O.

8. Describe the ovarian changes occurring during menstrual cycle. Give the methods used for detection of ovulation.

9. Describe the mechanism of absorption of the iron from gastrointestinal tracts and discuss the factors effecting its bioavailability.

10. Write short notes on the following :
    (a) Goldblat Hypertension
    (b) Free Water Clearance

Roll No. .....

P – 07

M. D. EXAMINATION, April/May, 2009

PHYSIOLOGY

Paper Third

Time : Three Hours] [*Maximum Marks : 100*

Note : Attempt all the *ten* questions. All questions carry equal marks.

1. Describe the molecular basis of skeletal muscle contraction. 10

2. Define total tension, passive tension and active tension. How does the relationship of actin to myosin explain the length-tension curve of skeletal muscle ? 10

3. Define and explain habituation, sensitization, long-term potentiation and long-term depression. 10

4. What are "on center" and "of center" cells ? Define lateral inhibition and comment on its general physiological significance. 10

5. Describe the way that movements of molecules in the air are converted into impulses in afferent nerve fibers of the auditory nerve. 10

6. Describe the pain suppression (Analgesia) system in the brain and spinal cord. 10

P. T. O.

7. Describe the brainstem control of posture and movement. 10

8. Discuss body rhythms, including the role of the suprachiasmatic nucleus in their regulation. 10

9. Define conditioned reflexes, describe their properties and analyze their physiologic basis. 10

10. Summarize the differences between fluent and nonfluent aphasia and explain each type on the basis of its pathophysiology. 10

Roll No. .....

P – 08

M. D. EXAMINATION, April/May, 2009

PHYSIOLOGY

Paper Fourth

(Recent Advances)

Time : Three Hours] [*Maximum Marks : 100*

Note : Attempt all questions.

1. Comment on the possible mechanisms involved in the regulation of body weight; include the recent advances. 20

2. Describe the role of ionic fluxes across cell membranes during : 30
   (a) Generation of pacemaker potential in heart
   (b) Operation of each loop of henle as counter-current multiplier
   (c) Secretion of HCl from Stomach

3. Describe the nature of function and possible control of capillaries in the brain, liver and skeletal muscles. 30

4. Describe the mechanisms operating for the defence of ECF volume and tonicity in man. 20

20

Library

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

MD PHYSIOLOGY

(PAPER ONE)

GENERAL PHYSIOLOGY

[Time allotted: Three hours] [Max Marks: 100]

Note: Attempt all questions
Illustrate with suitable diagnosis.

Q. 1. Explain the regulation of acid-base balance in the body. Add a note on disturbances of acid-base balance and significance of anion gap. (20)

Q. 2. Define and classify immunity. Describe the development of humoral immunity. Add a note on the physiological basis of vaccinations. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Process of urine formation.

b. Transport across the cell membrane.

c. Signs and symptoms, diagnosis and physiological basis of management of iron deficiency anaemia.

Q. 4. Write short notes on: (5 x 6 = 30)

a. Apoptosis

b. Erythroblastosis foetalis

c. Micturition reflex

d. Counter current mechanism

e. Dialysis

X

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

MD PHYSIOLOGY

(PAPER TWO)

SYSTEMIC PHYSIOLOGY- I

[Time allotted: Three hours] [Max Marks: 100]

Note: Attempt all questions

Q. 1. Describe the pathophysiology and recent advances in the management of peptic ulcer including its prevention. (20)

Q. 2. Discuss the physiology of high altitude and acclimatization. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Cardio vascular changes in moderate exercise.

b. Non-respiratory functions of lung.

c. Gastric motality and emptying.

Q. 4. Write short notes on: (5 x 6 = 30)

a. Role of fibrinolytic system in myocardial infarction.

b. Thermogenic action of food

c. VO_2 max.

d. Heart lung preparation.

e. Endothelial cell as an organ.

X

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

MD PHYSIOLOGY

(PAPER THREE)

SYSTEMIC PHYSIOLOGY-II

[Time allotted: Three hours] [Max Marks: 100]

Note: Attempt all questions

Q. 1. Name the posture – regulating parts of CNS and discuss the role of each. (20)

Q. 2. Name the hormones secreted by anterior pituitary. Describe the actions of growth hormone. Write in brief about clinical conditions associated with hyper and hypo secretion of growth hormone. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Role of the hypothalamus in the regulation of food intake.

b. Hormonal changes during menstrual cycle.

c. How pitch and loudness are coded in the auditory pathway?

Q. 4. Write short notes on: (5 x 6 = 30)

a. Motor Unit

b. Sarcotubular system in skeletal muscle

c. Dark adaptation

d. Wernicke's area

e. Conn's syndrome

X

POST GRADUATE DEGREE EXAMINATION, APRIL- 2011

MD PHYSIOLOGY
(PAPER FOUR)
RECENT ADVANCES

[Time allotted: Three hours] [Max Marks: 100]

Note: Attempt all questions

Q. 1. Describe the recent concept of regulation of food intake. (20)

Q. 2. What are gastrointestinal hormones? List the names of these hormones and describe the actions of any one of them. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Caisons Disease

b. Patch clamp technique

c. Second messenger system

Q. 4. Write short notes on: (5 x 6 = 30)

a. Endocrine functions of placenta

b. Working memory

c. Presynaptic Inhibition

d. Metabolic syndrome

e. High altitude cerebral oedema

X

Paper ID- 111

POST GRADUATE EXAMINATION, APRIL/ MAY- 2014

MD PHYSIOLOGY

(PAPER ONE)

GENERAL PHYSIOLOGY

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Discuss the renal regulation of fluid and electrolyte balance with particular reference to the principle that "Volume overrides tonicity". (20)

Q. 2. Discuss the various second messenger systems in a cell. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Apoptosis

b. Anti haemostatic Mechanisms

c. Oxidative stress

Q. 4. Write short notes on: (5 x 6 = 30)

a. DNA finger printing

b. ANOVA

c. Law of LAPLACE

d. Immunological Syndrome

e. Neuropathic bladder

X

Paper ID- 112

POST GRADUATE EXAMINATION, APRIL/ MAY- 2014

MD PHYSIOLOGY

(PAPER TWO)

SYSTEMIC PHYSIOLOGY - I

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. What is Fick's principle? Discuss its applications in determination of cardiac output. (20)

Q. 2. Describe evolution of respiratory system. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Acclimatization to low oxygen pressure.

b. Venous return

c. GIT Hormones

Q. 4. Write short notes on: (5 x 6 = 30)

a. Metabolism of calcium

b. Jaundice

c. Absorption of fat

d. Rhythmicity of S.A. node

e. Hypoxia

X

Paper ID- 113

POST GRADUATE EXAMINATION, APRIL/ MAY- 2014

MD PHYSIOLOGY

(PAPER THREE)

SYSTEMIC PHYSIOLOGY - II

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Discuss body rhythms, including the role of SCN in their regulation. Describe the contribution of hypothalamus in regulation of food intake. (20)

Q. 2. Describe the actions of insulin and glucagon and explain the regulation of their secretion. List the major differences between type-I and type-II diabetes. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Long-term potentiation and its significance.

b. The neurilemma and explain how it functions in the regeneration of cut peripheral nerve fibers.

c. How mechanical energy is converted into nerve impulses by the organ of Corti.

Q. 4. Write short notes on: (5 x 6 = 30)

a. Actions of PTH

b. Visual accommodation

c. List the hormones secreted by the gonads and placenta.

d. Motor unit

e. Spermatogenesis.

X

Paper ID- 114

POST GRADUATE EXAMINATION, APRIL/ MAY- 2014

MD PHYSIOLOGY

(PAPER FOUR)

RECENT ADVANCES

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Classify circulatory shock. Describe its pathogenesis with emphasis on recent concepts of pathophysiology. (20)

Q. 2. Describe the mechanisms for control of voluntary movements and give the symptoms of basal ganglia lesion. (20)

Q. 3. Describe briefly: (3 x 10 = 30)

a. Somatomedins and their actions

b. Clinical application of dynamic lung function tests.

c. Gold blat model of hypertension.

Q. 4. Write short notes on: (5 x 6 = 30)

a. Functions of Natriuretic peptides

b. Auto regulation of GFR.

c. Functions of 'Gastrin'.

d. Method to analyze the data which is skewed and nominal.

e. Local Hormones.

X

Library

Paper ID- 111

POST GRADUATE EXAMINATION, APRIL - 2015

MD PHYSIOLOGY

(PAPER ONE)

GENERAL PHYSIOLOGY

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Discuss recent development in field of Electrophysiology. **(20)**

Q. 2. Describe voltage clamp experimental model. Explain advantages of this technique for investigation of ionic conductance. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Principle and process of dialysis with an artificial kidney.

b. Organic substance and electrolyte solutions for oral rehydration in diarrhoea.

c. Erythropoietin and its applied aspect.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Genetic mutation in renal transplant.

b. Coomb's test and its importance.

c. Phagocytosis.

d. Gibb's – Donnan equation.

e. Analysis of variance.

X

Paper ID- 112

POST GRADUATE EXAMINATION, APRIL - 2015

MD PHYSIOLOGY

(PAPER TWO)

SYSTEMIC PHYSIOLOGY - I

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Describe the mechanisms involved in regulation of body temperature. **(20)**

Q. 2. Describe the evolution of functioning of the heart. **(20)**

Q. 3. **Describe briefly:** **(3 x 10 = 30)**

a. Pulmonary circulation, comparing it to systemic circulation.

b. The role of oxygen therapy in different types of hypoxia.

c. Pathophysiology of peptic ulcer.

Q. 4. **Write short notes on:** **(5 x 6 = 30)**

a. Work of breathing

b. Oxygen debt

c. Peristalsis

d. Pacemaker potential

e. Protein energy malnutrition.

X

Library

Paper ID- 113

POST GRADUATE EXAMINATION, APRIL - 2015

MD PHYSIOLOGY

(PAPER THREE)

SYSTEMIC PHYSIOLOGY - II

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Outline and explain the neural mechanism involved in the initiation and execution of voluntary movements. **(20)**

Q. 2. Describe the mechanism of sensory transduction and processing of visual information in the retina. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Synthesis and secretion of thyroid hormones.

b. Excitation-contraction coupling.

c. Hormonal changes in pregnancy.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Axoplasmic transport

b. Dystrophin associated protein complex

c. Insulin resistance

d. Functions of the middle ear

e. Gate control theory of pain.

X

O/p Bio-chemistry Library

Paper ID- 114

POST GRADUATE EXAMINATION, APRIL - 2015

MD PHYSIOLOGY

(PAPER FOUR)

RECENT ADVANCES

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Write about neuro-endocrine regulation of energy metabolism. How is it important in pathogenesis of diabetes? **(20)**

Q. 2. Write about role of anthropometric indices in diagnosis of various diseases. What recent advances have occurred in this field? **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Role of amylin hormone in pathogenesis of metabolic diseases.

b. Clinical application of jugular venous pressure.

c. Orphan receptors

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Syndrome Z

b. J Receptors

c. S_3 gallop

d. IRISIN

e. Levels of evidence

X

Paper ID- 111

POST GRADUATE EXAMINATION, SEPT./OCT. - 2016

MD PHYSIOLOGY

(PAPER ONE)

GENERAL PHYSIOLOGY

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Outline the processes involved in the secretion of H^+ into the renal tubules and discuss the significance of these processes in the regulation of acid–base balance. **(20)**

Q. 2. Describe Microcirculation, the extent of a microcirculatory unit and its regulation by neurohumoral mechanisms. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Physiological basis of dialysis in renal disease.

b. Anticlotting mechanisms operating in vivo.

c. Neuromodulators

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Oxidative stress

b. Zinc finger

c. Voltage gated ion channels

d. Applications of Post hoc tests

e. T Helper cells

X

Paper ID- 112

POST GRADUATE EXAMINATION, SEPT./OCT. - 2016

MD PHYSIOLOGY

(PAPER TWO)

SYSTEMIC PHYSIOLOGY - I

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Define stroke volume, cardiac output and cardiac index. Describe the factors affecting cardiac output. **(20)**

Q. 2. Describe the reactions of O_2 with hemoglobin and the oxygen-hemoglobin dissociation curve. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Gastrointestinal hormones.

b. Cardiovascular responses to moderate exercise.

c. Mechanism of deglutition.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Heart lung preparation

b. Specific dynamic action.

c. Stokes-Adams syndrome.

d. Peristalsis

e. Surfactant

X

Paper ID- 113

POST GRADUATE EXAMINATION, SEPT./OCT. - 2016

MD PHYSIOLOGY

(PAPER THREE)

SYSTEMIC PHYSIOLOGY - II

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Describe the neuromuscular junction in skeletal muscle and its clinical importance. **(20)**

Q. 2. Structure, function and dysfunction of cerebellum. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Thyroid function tests
b. Mechanism of accommodation in human eye
c. Calcium homeostasis

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Organ of corti
b. Menstrual cycle
c. Contraceptives
d. Sarcotubular system
e. Diabetes mellitus

X

Paper ID- 114

POST GRADUATE EXAMINATION, SEPT./OCT. - 2016

MD PHYSIOLOGY

(PAPER FOUR)

RECENT ADVANCES

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Describe the Endocrine regulation of food intake, & its recent advances **(14+6= 20)**

Q. 2. Classify all the autonomic function tests. Describe the clinical application of these tests & the details of two of recent ones. **(6+8 +6 =20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Cortical plasticity.
b. Adipokines
c. Orientation columns & Ocular dominance columns.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Natriuretic hormones.
b. Working memory.
c. Decompression sickness.
d. Hormone sensitive Lipoprotien Lipase.
e. Orphan receptors

X

Paper ID- 111

POST GRADUATE EXAMINATION, MAY - 2016

MD PHYSIOLOGY

(PAPER ONE)

GENERAL PHYSIOLOGY

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Describe the Body Fluid Compartments & the methods of measuring them. Explain, how the Homeostasis of body fluids is maintained. **(20)**

Q. 2. Describe the genesis of WBC including the role of Cytokines. Explain the properties and functions of lymphocytes. **(6+2+12=20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. TRL (Toll Like Receptors)

b. Mechanism of Acquired Immunity

c. Functions of G proteins

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Chi square test of difference of significance

b. Thrombocytopenia

c. Whole body Control systems & vicious cycle.

d. Confidence interval

e. Gibs Donnan equilibrium

X

Paper ID- 112

POST GRADUATE EXAMINATION, MAY - 2016

MD PHYSIOLOGY

(PAPER TWO)

SYSTEMIC PHYSIOLOGY - I

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Characteristics & factors affecting and regulation of coronary circulation. **(20)**

Q. 2. Mechanism of secretion of HCl (Hydrochloric acid) and its regulation. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Chemical control of respiration

b. Hypoxia

c. Health benefits of Yoga

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Acclimatization

b. Surfactant

c. Pancreatic secretion

d. Enterohepatic circulation

e. Vitamin A

X

Paper ID- 113

POST GRADUATE EXAMINATION, MAY - 2016

MD PHYSIOLOGY

(PAPER THREE)

SYSTEMIC PHYSIOLOGY - II

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Discuss the physiology of memory and learning with recent development in this field. Add a note on Alzheimer's disease. **(20)**

Q. 2. Discuss the hormonal regulation of blood sugar. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Hormones of posterior pituitary.

b. Neurophysiology of hearing.

c. Hormonal regulation of ovarian and menstrual cycle.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Referred pain

b. Spinal shock and recovery from it.

c. Errors of refraction

d. Cushing's syndrome

e. Contraceptive methods used by male.

X

Paper ID- 114

POST GRADUATE EXAMINATION, MAY - 2016

MD PHYSIOLOGY
(PAPER FOUR)
RECENT ADVANCES

[Time allotted: Three hours] **[Max Marks: 100]**

Note: Attempt all questions
Illustrate with suitable diagram.

Q. 1. Describe the peripheral and central mechanisms involved in processing of pain. Outline the pain suppression system in the brain and spinal cord. **(20)**

Q. 2. Describe the principal early and late ECG manifestations of myocardial infarction and explain the early changes in terms of the underlying ionic events that produce them. **(20)**

Q. 3. Describe briefly: **(3 x 10 = 30)**

a. Autoregulation of GFR and major theories advanced to explain it.

b. Pre-Böttzinger complex and its role in producing spontaneous respiration.

c. Effects of hypoglycemia and the homeostatic mechanisms that combat hypoglycemia.

Q. 4. Write short notes on: **(5 x 6 = 30)**

a. Migrating motor complex (MMC)

b. NMDA receptors

c. DNA finger printing

d. Role of cytokine in hemopoiesis

e. Role of leptin in female puberty

X