THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 0524] **MAY 2024** **Sub. Code: 4016**

M.D. DEGREE EXAMINATION

BRANCH V – PHYSIOLOGY

PAPER IV – APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Q.P. Code: 204016

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

I. Essay Questions: **(2 x 15 = 30)**

1. Explain the significance of liver function tests in the diagnosis and monitoring of liver disease. What are the key enzymes and biomarkers measured in LFTs and how do their levels change in conditions such as Hepatitis, Cirrhosis ad Liver cancer?

2. What is acute mountain sickness? Describe the cardiovascular and respiratory changes during high altitude pulmonary disease.

II. Short notes: **(10 x 5 = 50)**

1. Application of recombinant DNA technology.
2. Changes in respiration on inhaling irritant fumes.
3. Abnormal sounds in Cardiovascular system.
4. Respiratory changes during exercise.
5. Thermal changes during muscle contraction.
6. Tests for haemostatic function.
7. Isotopes and their uses in Physiology.
8. Explain mechanism of action of Bevacizumab, Cetuximab in colorectal cancer.
9. Pharmacomechnical coupling in smooth muscle contraction.
10. Physiology of vomiting.

III. Reasoning Out: **(4 x 5 = 20)**

1. Explain how middle ear infections interfere with hearing.
2. Explain the physiological basis for dissociated anaesthesia in Syringomyelia.
3. Sildenafil causes blue vision.
4. Carcinoid syndrome and octreotide.

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THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 1224] **DECEMBER 2024** **Sub. Code: 4016**

(OCTOBER 2024 EXAM SESSION)

M.D. DEGREE EXAMINATION

PHYSIOLOGY

PAPER IV – APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Q.P. Code: 204016

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

I. Essay Questions: **(2 x 15 = 30)**

1. Discuss in detail about calcium homeostasis and its role in human body.
2. Discuss in detail about Spermatogenesis and the role of hormones which regulate it.

II. Short notes: **(10 x 5 = 50)**

1. Ovulation indicators.
2. Pierre Marie.
3. Immunological pregnancy tests.
4. Local hormones.
5. Uterine artery Embolization through ultrasound.
6. GiFT, ZiFT, IVF techniques.
7. Hashimoto's thyroiditis.
8. Addisonian crisis.
9. Asherman syndrome.
10. Postpartum apoplexy.

III. Reasoning Out: **(4 x 5 = 20)**

1. Carpopedal spasm after thyroidectomy – Justify it.
2. Double Bohr effect of Placenta.
3. Urinary Estriol Estimation in Pregnant mother at term (38 weeks gestation) – Why?
4. Corpus Cancer syndrome.

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THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 0525] **MAY 2025** **Sub. Code: 4016**

M.D. DEGREE EXAMINATION

PHYSIOLOGY

PAPER IV – APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Q.P. Code: 204016

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

I. Essay Questions: **(2 x 15 = 30)**

1. Discuss the recent advances in various contraceptive methods and explain the physiological basis of their actions.

2. Discuss various functions of glucocorticoids. Add a note on Cushing's syndrome.

II. Short notes: **(10 x 5 = 50)**

1. Milk ejection reflex.
2. Permissive action.
3. Synthesis of thyroid hormone.
4. Capsule endoscopy.
5. Diabetes insipidus.
6. Chromosomal aberrations.
7. Somatomedins.
8. Stem cell therapy.
9. Write about magnetic radio immunoassay.
10. Discuss the regulation and abnormalities of growth hormone secretion.

III. Reasoning Out: **(4 x 5 = 20)**

1. Gonadal sex of a fetus is determined by Y – chromosome – Explain.
2. Body fitness prolongs life – Explain.
3. Discuss ketosis is more common and severe in type 1 than type 2 diabetes.
4. What is Aldosterone escape? Give reason.

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THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MD 1025] **OCTOBER 2025** **Sub. Code: 4016**

M.D. DEGREE EXAMINATION

PHYSIOLOGY

PAPER IV – APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Q.P. Code: 204016

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

I. Essay Questions: **(2 x 15 = 30)**

1. What are the Hormones Involved in Control of Glucose Level? Explain the Physiological Basis of Pathogenesis and Treatment of DM.

2. Discuss in detail about the Neuro-Endocrine Control of Menstrual Cycle. Add a note on effects of Menopause.

II. Short notes: **(10 x 5 = 50)**

1. Role of Hormones in the Growth of Individual.
2. Hypothalamo Hypophyseal Portal Axis.
3. Hashimoto's thyroiditis.
4. Circadian rhythm.
5. Regulation of Aldosterone Secretion.
6. Male Contraceptives.
7. Klinefelter syndrome.
8. In- vitro Fertilization.
9. Feto Placental Unit.
10. Significance of Stress Proteins.

III. Reasoning Out: **(4 x 5 = 20)**

1. Hypocalcemia Results in Tetany – Explain.
2. Male Athletes who take large amount of Androgenic Steroids become Sterile – Explain.
3. Fertility is suppressed by hormonal oral pills. How?
4. Glucocorticoids suppress rejection in organ transplantation.

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THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MD 0526] **MAY 2026** **Sub. Code: 4016**

M.D. DEGREE EXAMINATION

PHYSIOLOGY

PAPER IV – APPLIED PHYSIOLOGY INCLUDING RECENT ADVANCES

Q.P. Code: 204016

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

I. Essay Questions: **(2 x 15 = 30)**

1. Explain the process of Colorectal tumorogenesis. Describe emerging targeted therapies and Immune therapies for Colorectal cancer. How are genetic biomarkers used to personalize treatment decisions and improve patient outcomes?

2. A 40–year–old man presents with a thyroid swelling. What investigative procedures could be done to assess the functional status of this thyroid? How will you interpret the result?

II. Short notes: **(10 x 5 = 50)**

1. Effect of weightlessness on body functions.
2. Treadmill testing for assessing Cardiac function.
3. Body temperature regulation in a cold environment.
4. Automatic bladder.
5. Hyperpnoea a) in high altitude b) muscular exercise.
6. SCUBA.
7. Define and classify polycythaemia. What are the cardiovascular complications that can arise due to polycythaemia?
8. Cholecystography.
9. Significance of Stress proteins.
10. Liraglutide.

III. Reasoning Out: **(4 x 5 = 20)**

1. Dilated heart has to do more work than undilated heart.
2. A person with obstructive jaundice was found to have prolonged clotting time.
3. Gut microbiota and inflammatory bowel disease.
4. The nerve gases that were developed for chemical warfare generally inhibit acetylcholine esterase. Why does this inhibition produce death?

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