

APRIL 2001

[KD 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss Kreb's cycle in detail. (25)
 2. What are different types of Glucose Transporters?
Discuss their role in carbohydrate metabolism. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Pharmacological control of Insulin secretion
 - (b) Glucagon
 - (c) Growth factors
 - (d) Islet cell antibodies
 - (e) Energy requirements of Brain.
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NOVEMBER 2001

[KE 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the physiological and pharmacological mechanism of Insulin Secretion. (25)
 2. Discuss the aetiopathogenesis of Macro-Vascular complications of Diabetes mellitus. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Role of GTT in diagnosis
 - (b) Fructosamine
 - (c) Insulin Tolerance Test
 - (d) Assessment of Insulin Resistance
 - (e) Feto-placental unit in Diabetes.
-

MARCH 2002

[KG 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss the biochemical and metabolic aberrations in diabetic ketoacidosis. (25)
 2. Discuss the current etiological factors in atherosclerosis. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Role of C-peptide assay in diabetology.
 - (b) Hormones secreted by the pancreas.
 - (c) Pathology of pancreas in Fibrocalculous Pancreatic Diabetes.
 - (d) Thiazolidinediones.
 - (e) Measurement of Insulin resistance.
-

SEPTEMBER 2002

[KH 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Discuss Regulation of blood sugar. (25)
 2. Discuss Kreb's cycle in detail. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Impaired Glucose Tolerance
 - (b) Insulin Resistance
 - (c) Oral Hypoglycaemic Drugs
 - (d) Islet cell Tumours
 - (e) Growth Hormone.
-

APRIL 2003

[KI 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

1. Describe the development and different components of islets of Langerhans. (25)
 2. Describe the physiologic role of glucagon with reference to pathophysiology in Diabetes. (25)
 3. Write short notes on : (5 × 10 = 50)
 - (a) Insulin like growth factor
 - (b) Gluconeogenesis
 - (c) VLDL
 - (d) Hormonal factors of insulin secretion
 - (e) Insulin receptor gene
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OCTOBER 2003

[KJ 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

Theory : Two hours and
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

M.C.Q. must be answered **SEPARATELY** on the answer sheet provided as per the instructions given on the first page of the M.C.Q. Booklet.

Answer ALL questions.

Draw suitable diagrams wherever necessary.

Essay :

(2 × 15 = 30)

1. Write an essay on biosynthesis and secretion of insulin.
2. Discuss briefly the pathogenesis of beta cell defects and insulin resistance in Type 2 Diabetes Mellitus.

3. Write short notes on :

(10 × 5 = 50)

- (1) Stress hyperglycemia
- (2) Biguanide – induced lactic acidosis
- (3) Prandial glucose regulation
- (4) Anti obesity agents
- (5) Peakless insulin
- (6) The standard OGTT
- (7) Pro insulin
- (8) Glucose toxicity
- (9) Insulin receptor
- (10) Nonenzymatic glycation of enzymes.

AUGUST 2004

[KL 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

(New Regulations)

Part I

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours

Maximum : 100 marks

**Theory : Two hours and
forty minutes**

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

- I. Essay : (2 × 15 = 30)**
- (1) Pathogenesis of Diabetes ketoacidosis.**
 - (2) Insulin biosynthesis and secretion.**
- II. Write short notes on : (10 × 5 = 50)**
- (a) Fructosamine**
 - (b) GAD antibody**
 - (c) Amylin**

- (d) Insulin receptor**
 - (e) Insulinopathies**
 - (f) Vascular wall in diabetes**
 - (g) Insulin resistance and dyslipidaemia in Diabetes**
 - (h) Ob/ob mice**
 - (i) Counter regulatory hormones in Type 1 diabetes**
 - (j) Animal models for Type 2 diabetes.**
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SEPTEMBER 2006

[KP 1552]

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

Paper I — APPLIED BASIC MEDICAL SCIENCES

Time : Three hours Maximum : 100 marks

Theory : Two hours and Theory : 80 marks
 forty minutes

M.C.Q. : Twenty minutes M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

(1) Outline the primary structure of human insulin and describe its biosynthesis and processing. Enumerate its metabolic actions. (20)

(2) Outline the structure of a typical glucose transporter. Mention the best-characterized glucose transporters and their functional significance. Describe the insulin regulation of glucose transport into the cells. (15)

(3) Outline the mechanisms of diabetic ketoacidosis. Describe the pathophysiological basis of its symptoms and signs. (15)

II. Write Short notes on : (6 × 5 = 30)

- (a) Advanced glycosylation end products
- (b) Pathology of diabetic retinopathy
- (c) Viruses implicated in aetiology of diabetes mellitus
- (d) Proposed mechanisms of beta cell death
- (e) Meglitinide analogues
- (f) Charles H. Best. _____

[KQ 1558] MARCH 2007

Sub. Code : 3064

DIPLOMA IN DIABETOLOGY EXAMINATION.

Paper I — APPLIED BASIC MEDICAL SCIENCES

(Common to

Candidates admitted from 1993–94 onwards

and

Candidates admitted from 2004–05 onwards)

Time : Three hours

Maximum : 100 marks

Theory : Two hours and
forty minutes

Theory : 80 marks

M.C.Q. : Twenty minutes

M.C.Q. : 20 marks

Answer ALL questions.

Draw suitable diagrams wherever necessary.

I. Essay :

1. Describe the Alpha, Beta and Delta cells of the pancreas, the structure and function and other islet cell products. (20)
2. Describe the enteroinsular axis and incretins. (15)
3. Insulin receptor structure and function. (15)

II. Short notes : (6 × 5 = 30)

- (a) Non glucose lowering properties of insulin.
- (b) Molecular basis of insulin resistance.
- (c) Genetic factors in pathogenesis of T1 DM.
- (d) MODY.
- (e) Counter regulatory hormones in hypoglycemia.
- (f) Drug induced Diabetes.

MARCH -2009

[KU 1558]

Sub. Code: 3071

**DIPLOMA IN DIABETOLOGY EXAMINATION.
Paper I – APPLIED BASIC MEDICAL SCIENCES
(Common to all Regulations)**

Q.P. Code : 343071

Time : Three hours

Maximum : 100 marks

Draw suitable diagram wherever necessary.

Answer ALL questions.

I. Essay questions : (2 X 20 = 40)

1. Insulin resistance: Definition, Mechanisms, it's assessment and consequences of insulin resistance.
2. Pathogenesis of Chronic complications of diabetes mellitus.

II. Write short notes on : (10 X 6 = 60)

1. Auto immunity and diabetes.
2. Visceral Fat.
3. Threfty gene hypothesis.
4. Glucagon and it's role in diabetes.
5. Incretin effect.
6. AMP Kinase.
7. Wollfram's syndrome.
8. Non invasive glucose monitoring.
9. Genetic beta-cell defects.
10. C-Peptide.

March 2010

[KW 1558]

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY EXAMINATION

APPLIED BASIC MEDICAL SCIENCES

(Common to all Regulations)

Q.P. Code : 343071

Time : Three hours

Maximum : 100 marks

Draw suitable diagram wherever necessary

Answer ALL questions

I. Essay questions : (2 x 20 = 40)

1. Discuss in detail the physiological response to hypoglycemia in normal subjects and as well as in patients with diabetes mellitus.
2. Classifications of lipoproteins. Discuss their metabolism.

II. Write short notes on : (10 x 6 = 60)

1. Structure and functions of insulin receptors.
2. Somoyogi phenomenon.
3. Metabolic adaptations to pregnancy.
4. LADA.
5. DPP-IV inhibitor.
6. Sitosterolemia.
7. Leptin.
8. Blood supply to pancreas.
9. Inflammatory markers.
10. Insulinoma.

[KX 1558]

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION.

Part I / Paper I - APPLIED BASIC MEDICAL SCIENCES

(Common to all Candidates)

Q.P. Code : 343071

Time : Three hours

Maximum : 100 marks

Draw suitable diagram wherever necessary.

Answer ALL questions.

I. Essay questions :

(2 X 20 = 40)

1. Discuss the Relationship between Obesity and Type 2 Diabetes, with particular focus on adipocytokines. How does Obesity and Type 2 Diabetes pose a risk of Cardiovascular Disease?
2. Discuss the Immunology and Pathogenesis of Type I Diabetes.

II. Write short notes on :

(10 X 6 = 60)

1. Measurement of Microalbuminuria.
2. Lipotoxicity.
3. Insulin pump therapy.
4. Drug induced Diabetes.
5. Artificial Sweeteners.
6. Islets of Langerhans.
7. Mechanism of action of Metformin.
8. Blood supply to Pancreas.
9. Autoimmunity and Diabetes.
10. Glucagon in Diabetes.

APRIL 2011

[KY 1558]

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION

APPLIED BASIC MEDICAL SCIENCES

Q.P. Code : 343071

**Time : 3 hours
(180 Min)**

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. Describe the Mechanism and pathophysiology of Microvascular complications of diabetes and discuss the options for interventions.	11	35	15
2. Explain and discuss in detail the role and mechanism of insulin resistance in the pathogenesis of Type II Diabetes mellitus.	11	35	15

II. Write notes on :

1. Morphological features of islets of langerhans.	4	10	7
2. Incretin effect.	4	10	7
3. Mechanism of action of Glitazones.	4	10	7
4. Stem cell therapy in Diabetes.	4	10	7
5. Neonatal Diabetes.	4	10	7
6. NAFLD – Non alcoholic fatty liver disease.	4	10	7
7. IGF – I – Insulin like growth factor.	4	10	7
8. Adiponectin.	4	10	7
9. Dapagliflozin.	4	10	7
10. Glucotoxicity.	4	10	7

April 2012

[LA 1558]

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION

APPLIED BASIC MEDICAL SCIENCES

Q.P. Code : 343071

**Time : 3 hours
(180 Min)**

Maximum : 100 marks

Answer ALL questions in the same order.

I. Elaborate on :

	Pages (Max.)	Time (Max.)	Marks (Max.)
1. Discuss the Immunology and Pathogenesis of Type 1 Diabetes.	16	35	15
2. Describe the Lipid metabolism in normal and diabetes persons and the pathophysiology of dyslipidaemia in Type 1 and Type 2 Diabetes.	16	35	15

II. Write notes on :

1. Anatomy of the Islets of Langerhans.	4	10	7
2. Entero Insular Axis.	4	10	7
3. Mechanism of action of Metformin.	4	10	7
4. Stem cell therapy in Diabetes.	4	10	7
5. Ketogenesis.	4	10	7
6. Polycystic ovarian syndrome.	4	10	7
7. Insulinoma.	4	10	7
8. Leptin.	4	10	7
9. Protein Kinase - C.	4	10	7
10. Actions of Glucagon Like Peptide-1.	4	10	7

(LC 1558)

APRIL 2013

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION

APPLIED BASIC MEDICAL SCIENCES

Q.P.Code: 343071

Time: Three Hours

Maximum: 100 marks

I. Elaborate on:

(2X15=30)

1. Discuss the Insulin receptor and etiopathogenesis of insulin resistance.
2. Describe the metabolic changes during normal pregnancy and diabetic pregnancy.

II. Write notes on:

(10X7=70)

1. Insulin Gene.
2. Incretins
3. Microalbuminuria
4. Classification of diabetes.
5. Thrifty genotype
6. Non Alcoholic Steato Hepatitis
7. Polyol pathway
8. Adiponectin
9. GLUT transporters
10. PPAR gene.

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION

APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P.Code: 343071

Time: Three Hours

Maximum: 100 marks

I. Elaborate on:

(2X15=30)

1. Discuss in detail about Homeostasis of Hepatic glucose output. Mention all about its regulation.
2. Discuss in detail about etio-pathogenesis of Ketone bodies production and their implication in blood. How will you detect ketone bodies in blood and urine.

II. Write notes on:

(10X7=70)

1. Metabolic syndrome.
2. Glycosuria – Diabetic and non-Diabetic
3. Self Monitoring of Blood Glucose.
4. Islet cell antibodies.
5. Polyol pathway and its clinical implication.
6. Reverse cholesterol pathway.
7. Impaired glucose tolerance.
8. C-Peptide.
9. Animal models in Diabetes research.
10. Microscopic appearance of Diabetic Kidney disease.

[LG 1558]

APRIL 2015

Sub. Code: 3071

**DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY**

Q.P. Code: 343071

Time: Three Hours

Maximum: 100 marks

Answer ALL questions

I. Elaborate on:

(2 x 15 = 30)

1. Discuss the lipogenesis-lipolysis cycle in the adipocyte and briefly mention the regulation of NEFA in the plasma.
2. Describe the anatomy of the Islets of Langerhans with a brief note on its non-beta cell functions.

II. Write notes on:

(10 x 7 = 70)

1. Adipokines.
2. IAPP (Islet Amyloid PolyPeptide)
3. Prevention of Type 1 diabetes.
4. Mitochondrial diabetes.
5. Beta cell defects in obesity.
6. Causes of insulin resistance.
7. Histology of islets in Type 2 diabetes.
8. Glucokinase.
9. RCAD syndrome (Renal Cysts And Diabetes)
10. Alpha glucosidase inhibitors.

(LI 1558)

APRIL 2016

Sub. Code:3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P.Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Discuss the pathogenesis and the natural history of Type 2 diabetes mellitus with a note on beta cell function in healthy state and in diabetes.
2. Discuss the epidemiology, clinical presentation and various environmental risk factors for Type 1 diabetes mellitus.

II. Write notes on:

(10 x 7 = 70)

1. Classification of Type 1 diabetes mellitus.
2. Tropical diabetes.
3. Second messengers in regulation of insulin secretion.
4. Candidate genes in Type 1 diabetes.
5. Steroid induced diabetes.
6. Acromegaly and diabetes.
7. Autoimmune polyglandular syndromes.
8. IGF – 1.
9. Renal Glycosuria.
10. Lawrence syndrome.

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P.Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Describe the structure of insulin and discuss the stages of insulin biosynthesis, processing and its regulation.
2. Discuss in detail the entero-insular axis and the role of incretins in glucose metabolism.

II. Write notes on:

(10 x 7 = 70)

1. Viruses and Type 1 diabetes.
2. Maturity onset diabetes of the young (MODY).
3. Diabetes in chronic pancreatitis.
4. Glucagon in Diabetes.
5. Endothelial dysfunction in Diabetes.
6. Pathophysiology of HHNKC. (Hyperosmolar Hypoglycemic Non Ketotic Coma).
7. Kimmelstiel-Wilson disease.
8. PPAR Gamma agonists.
9. Fructosamine in diabetes.
10. Pathogenesis of diabetic neuropathy.

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P.Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Describe the metabolic changes that occur in well fed state and starvation.
2. Discuss in detail the pathogenesis and pathology of Diabetic Cardiomyopathy. Add a note on diagnostic evaluation and management of Diabetic Cardiomyopathy.

II. Write notes on:

(10 x 7 = 70)

1. Basal Metabolic Rate.
2. Osmolarity.
3. Cori cycle.
4. 1, 5 Anhydroglucitol.
5. Leptin.
6. Fournier's Gangrene.
7. Meglitinides.
8. Importance of urine examination in Diabetes Mellitus.
9. Dietary Fibre.
10. Cataract in Diabetes Mellitus.

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P. Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Discuss the structure of proinsulin and describe the pathway and regulation of conversion of proinsulin to insulin.
2. Discuss the metabolic abnormalities involved in the aetiopathogenesis of diabetes related microvascular complications.

II. Write notes on:

(10 x 7 = 70)

1. Phases of glucose homeostasis.
2. Development of pancreatic islets.
3. Advanced Glycation End (AGE) products.
4. Beta cell desensitization.
5. Intravenous Glucose Tolerance Test (IV GTT).
6. Muscle fuel metabolism in exercise and starvation.
7. DPP-4 Enzyme.
8. "Single gateway hypothesis" of FFA metabolism.
9. Role of kidney in protein metabolism.
10. Surgical anatomy of the foot.

[LQ 1558]

AUGUST 2020
(MAY 2020 SESSION)

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P. Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Describe the digestion, absorption and metabolic utilization of carbohydrates.
2. Discuss in detail the epidemiology, etiopathogenesis and natural history of T1DM.

II. Write notes on:

(10 x 7 = 70)

1. Insulin gene
2. Adiponectin
3. Rotator cuff.
4. Gluconeogenesis.
5. Exocrine functions of pancreas.
6. Control of appetite.
7. Insulinoma.
8. Bullosis diabeticorum.
9. Metabolic memory hypothesis.
10. Anion gap.

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P. Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on: **(2 x 15 = 30)**

1. Describe the anatomy of the pancreas, its blood supply, innervation and discuss in brief about the organization of the Islets of langerhans.
2. Discuss the various factors affecting glucose and lipid metabolism in chronic renal failure due to diabetic kidney disease.

II. Write notes on: **(10 x 7 = 70)**

1. Beta cell failure in Diabetes Mellitus.
2. Dietary fats and oils in Diabetes Mellitus.
3. Insulin like Growth Factor (IGF).
4. Endoplasmic Reticulum (ER) Stress.
5. Hepatic Glucose Output.
6. Dual SGLT-2 inhibitors.
7. Alpha cell function in Diabetes Mellitus.
8. Amylin and its role in Diabetes Mellitus.
9. Exocrine pancreatic functions.
10. Brown Adipose Tissue & its significance in Diabetes Mellitus.

THE TAMIL NADU DR.MEDICAL UNIVERSITY

(D.DIAB. 0522)

MAY 2022

Sub. Code: 3071

DIPLOMA IN DIABETOLOGY (D.DIAB) EXAMINATION
APPLIED BASIC MEDICAL SCIENCES IN DIABETOLOGY

Q.P. Code: 343071

Time: Three Hours

Maximum: 100 Marks

I. Elaborate on:

(2 x 15 = 30)

1. Discuss in detail the pathogenesis and various systemic complications of Obesity.
2. Discuss in detail the mechanism of action and various types of insulin. Describe the indications, regimens and complications of insulin therapy.

II. Write notes on:

(10 x 7 = 70)

1. Hygiene Hypothesis.
2. Brown Adipose Tissue.
3. Alpha cells of Pancreas.
4. Albuminuria.
5. Glucose Transporters.
6. Mucor mycosis.
7. Cheiroarthropathy.
8. Heart Failure in Diabetes.
9. Lactic Acidosis.
10. C-Peptide.
