Mansoura University
Faculty of Medicine

Physiology Department
Log Book
2016 – 2017

ختم القسم

إيصال تسليم Log Book

اسم الطالب : .....

الفرقة : .....

رقم الجلوس : .....

تاريخ التسليم : .....

توقيع المستلم : .....

رسالــة الكلــية

"تقديم مستوى عال التميز فى التعليم والتدريب الطبى
وتقديم خدمات صحية متميزة للمجتمع
عن طريق المراكز الطبية المتخصصة
وكذلك الإرتقاء بالبحث العلمى"

رؤيــة الكلــية

"أن نصنف إقليميا ونحقق التميز فى التعليم الطبى
والبحوث وخدمة المجتمع"

Course Specification 2015/2016

For the Medical Physiology (first year)

Faculty : Medicine
Department : Medical Physiology

Course Specification:

Programme(s) on which the course is given :	M.B.B.Ch program
Department offering the course :	Department of Medical Physiology
Academic year / level :	1st year
Date of specification approval :	29/11/2015

A- Basic information:

Title: Medical Physiology Code: PSL.1

Lecture: 150 Tutorial: Practical 60 Total: 210

B- Professional Information:

1 - Overall Aims of Course

The overall aim of the course is to provide the students with the basic knowledge of physiology and develop several practical skills related to experimental work through training on several basic medical skills.

2 – Intended Learning Outcomes of Course (ILOs)

A - Knowledge and Understanding:

By the end of the course, students should be able to:

A1- Recognize the different cellular components, their functions and physical rules controlling them

A2- Identify different divisions of nervous system and the components of each especially the divisions controlling the visceral functions (autonomic nervous system)

A3- Recognize normal functional structure of neurons, neuromuscular junction, muscle and list their effects and factors affecting them.

A4-Discuss composition of blood, different cellular elements and functions

A5-Describe the functional anatomy of CVS and most common abnormalities e.g. shock and edema

A6-Explain the physiological anatomy of respiratory system and explain mechanics of respiration and abnormal patterns

B- Intellectual Skills:

By the end of the course, students should be able to:

B1- Integrate facts about function of different organs subserving the homeostasis.as (nerves, muscles, heart, lungs, vessels and blood)

B2- Solve medical problems related to diagnosis & treatment of physiological problems as: pH disturbance, hemorrhage, shock.

P-Professional and Practical Skills:

By the end of the course, students should be able to:

C1- Determine the effect of gradation of stimuli on simple muscle twitch

C2- Determine the effect of temperature on simple muscle twitch

C3- Determine the effect of fatigue on simple muscle twitch

C4-Measure arterial blood pressure
C5- Determine auscultatory areas and auscultate the heart sounds
C6-Interprete ECG
C7-Determine blood groups
C8- Interpret Hb content in blood sample
C9- Interpret ESR
C10- Interpret normal pulmonary function tests

T- General and Transferable Skills:

By the end of the course, students should be able to:

D1. Adopt principles of the lifelong learning needs of the medical profession.
D2 Present information clearly in written, electronic and oral forms

3 – Contents

Distributed as follow:

Topic	No. of hours	Lecture	Practical
1- Biophysics **I) Transport across cell membrane:** 1- Functional aspects of the cell membrane. 2- Transport through cell membrane *(Diffusion, factors affecting net rate of diffusion)*. 3- Transport through cell membrane *(Osmosis)*. 4- Transport through cell membrane *(Active transport mechanisms, Vesicular transport mechanisms)*. **II) Electric properties of the cell membrane:** 5- Introduction & Equilibrium potential. 6- Donann's equilibrium. 7- Resting membrane potential *(mechanism & calculation)*. 8- Neuronal and skeletal muscle action potential *(ionic basis)*.	**10**	**10** 5 Hours 5 Hours	
2- Autonomic Nervous System 1- Introduction (Regulatory systems, Nervous system, Neuron, reflex action), Functional divisions of nervous system. 2- Somatic and autonomic reflex arc. 3- Autonomic Nervous System (General characters, Origin, Course). 4- Autonomic ganglia, Distribution of efferent autonomic fibers. 5- Sympathetic nervous system. 6- Parasympathetic nervous system. 7- Interrelationship between sympathetic and parasympathetic nervous system, Effect of autonomic nervous system on blood vessels.	**22**	**22** 2 Hours 1 Hour 2 Hours 2 Hours 2 Hours 2 Hours 2 Hours	

8- Function of autonomic nervous system under different situation, Sympathectomy and parasympathectomy. 9- Comparison of sympathetic and parasympathetic nervous system, Central integration (control of autonomic function). 10- Chemical transmission *(Synapse, Storage of chemical transmitter, Release of chemical transmitter, Mechanism of action of chemical transmitter)*. 11- Cholinergic transmission *(Sites of release of acetylcholine, Biosynthesis, Removal, Action, Cholinergic receptors)*, Transmission in sympathetic ganglia, Drugs acting on cholinergic receptors, Myasthenia gravis. 12- Adrenergic transmission (Sites of release, action, Biosynthesis of catecholamines, Removal), Adrenergic receptors, Drugs acting on adrenergic receptors, Comparison of adrenaline and noradrenaline, Denervation supersensitivity.		2 Hours 1 Hour 2 Hours 2 Hours 2 Hours	
3-Physiology of Nerve and Muscle **I) Nerve** 1- Structure of neurons, Axonal transport, Nerve fiber, Excitability, Stimulus. 2- Resting membrane potential. 3- Action potential *(ionic basis, Propagation, Recording)*. 4- Effects of stimulation of the nerve fibers, Properties of the nerve impulse, Difference between graded potential and action potential. 5- Changes occurring in the nerve as a result of conduction of a nerve impulse. 6- Factors affecting the excitability and conductivity of the nerve fibers & Nerve block. **II) Neuro - muscular junction** 7- Functional anatomy of the neuro-muscular junction, Mechanism of neuro-muscular transmission, properties of neuro-muscular transmission, Myasthenia gravis. **III) Muscle** **A) Skeletal muscle**	**41**	**23** 1 Hour 2 Hours 2 Hours 2 Hours 2 Hours 2 Hours	**18** 2 Hours 2 Hours 2 Hours 2 Hours

8- Physiology of muscle contraction. 9- Changes occurring as a result of muscle contraction. 10- Effects of stimulation of skeletal muscle by: *(a single stimulus, two successive stimuli, several successive stimuli)*. **B) Smooth muscles** 11- Smooth muscles *(Distribution, Functions, Structure)*, Excitation contraction coupling of smooth muscles. 12- Smooth muscles *(Types, Innervation, Action potential, Properties)*, Factors affecting contractility and excitability of smooth muscles, plasticity.		2 Hours 2 Hours 2 Hours 2 Hours 2 Hours	2 Hours 4 Hours 2 Hours
4-Blood **Blood and Plasma Proteins** 1- General functions of the blood, Composition of the blood, Plasma proteins *(Sites of formation, Dynamic state, sources, Albumin-Globulin ratio, Functions)*. **Red Blood Cells** 2- Regulation of Erythropoiesis. 3- Hematocrit value & Some physical properties of blood *(Erythrocyte sedimentation rate, Osmotic resistance of the RBCs, Blood viscosity)*. 4- Anemias *(Physiological causes, types, Effects of anemia on the circulatory system)*. 5- Polycythemia & Blood indices. **White Blood Cell and Immunity** 6- Leukocytes *(Types, Life span, Leucopoiesis)*. 7- Functions of leukocytes, Tissue macrophage system, Pathological variation in leukocytic count. 8- Immunity: Innate or non-specific immunity, Acquired immunity *(Development of immune system, Recognition of antigen)*. 9- Humoral immune response *(Mechanism of immunoglobulin secretion, Nature of antibodies, Mechanism of action of antibodies)*. 10- Cell mediated immune response, Types and functions of T-lymphocytes. **Blood Groups and Blood Transfusion** 12- Blood typing *(O-A-B blood groups, Rh blood groups)* & Blood	**37**	**25** 2 Hours 2 Hours 2 Hours 1 Hours 2 Hours 1 Hours 2 Hours 2 Hours 2 Hours 1 Hours	**12** 4 Hours 2 Hours 2 Hours 2 Hours

transfusion. **Platelets and Homeostasis** 13- Platelets *(Functional structure, Functions)*. 14- Hemostasis *(Vascular constriction, Formation of the platelet plug, Formation of the blood clot)*, Role of Ca^{+2} and vitamin K in blood clotting, Fate or course of the clot. 15- Prevention of blood clotting in the normal vascular system, The fibrinolytic system, Anticoagulants, Disorders of hemostasis, Hemostatic function tests. **Blood Volume** 16- Measurement of volumes of body fluid compartments, Measurement of blood volume in man.		2 Hours 2 Hours 1 Hours 1 Hours	2 Hours
5-Circulation 1- Introduction, Physiological anatomy of the heart. 2- Properties of the cardiac muscle *(Rhythmicity)*. 3- Properties of the cardiac muscle *(Excitability)*. 4- Arrhythmia. 5- Properties of the cardiac muscle *(Conductivity)*. 6- Properties of the cardiac muscle *(Contractility)*. 7- Cardiac Cycle. 8- Methods of studying of the cardiac cycle *(Jugular venous pulse)*. 9- Methods of studying of the cardiac cycle *(Aortic pressure and arterial pulsation)*. 10- Electocardiogram *(Leads, Normal ECG, Axis)*. 11- Electocardiogram *(Abnormalities)*. 12- Heart sounds. 13- Innervation of the heart. 14- Heart Rate *(Physiological Variations, Nervous Regulation)*. 15- Heart Rate *(Chemical & Physical regulation)*. 16- The Cardiac Output *(Definitions, Variations, Methods of determination)*. 17- The Cardiac Output *(Factors affecting COP)*. 18- The cardiac output *(Regulation of COP)*. 19- Work of the heart, Mechanical efficiency of the heart, Cardiac	**65**	**45** 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours 2 Hours 1 Hours 1 Hours 2 Hours 2 Hours 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours 1 Hours	**20** 8 Hours 4 Hours 4 Hours

reserve.			
20- Arterial blood pressure *(Definitions, Physiological Variations, Determination)*.		1 Hours	
21- Arterial blood pressure *(Factors that determine ABP)*.		1 Hours	
22- The Vasomotor Center & Factors affecting it.		2 Hours	4 Hours
23- Regulation of the diameter of arterioles *(Regulation of local blood flow)*.		1 Hours	
24- Regulation of the diameter of arterioles *(Systemic Regulation: Nervous & Chemical)*.		2 Hours	
25- Regulation of ABP *(Short-term Regulation)*.		1 Hours	
26- Regulation of ABP *(Intermediate & Long-term regulation)* & Hypertension.		1 Hours	
27- Capillary Circulation *(Anatomy, Factors affecting capillary blood flow & Capillary blood pressure)*.		1 Hours	
28- The Interstitium & The Interstitial Fluid *(Mechanisms of transcapillary exchange of substances, Formation and drainage of interstitial fluid)*.		1 Hours	
29- Venous Circulation *(Factors affecting, Measurement of venous pressure, Effect of acceleration on the circulatory system)*.		1 Hours	
30- Lymphatic Circulation *(Anatomy, Function, factors affecting)*.		1 Hours	
31- Edema.		1 Hours	
32- The Coronary Circulation *(Anatomy, Myocardial O_2 consumption, Regulation)*.		1 Hours	
33- The Pulmonary Circulation *(Anatomy, Functions, Regulation)* & Pulmonary Interstitial Fluid *(Formation, Pulmonary edema)*.		1 Hours	
34- The Cerebral Circulation *(Anatomy, Regulation)* & Blood Brain Barrier).		1 Hours	
35- Splanchnic Circulation & Hepatic Circulation.		1 Hours	
36- The Cutaneous Circulation.		1 Hours	
37- Hemorrhage *(Types, Manifestation, Compensatory changes)*.		1 Hours	
38- Shock *(Types, Causes of Circulatory Shock, Mechanism of irreversible shock, Treatment)*.		1 Hours	
39- Effect of exercise on the circulation.		1 Hours	

6-Respiratory Physiology	**35**	**25**	**10**
1- Physiological anatomy of the respiratory system & Respiratory cycle.		1 Hours	
2- Mechanics of respiration.		1 Hours	
3- Factors that affect pulmonary ventilation		1 Hours	
4- Factors that affect pulmonary ventilation & Work of breathing.		2 Hours	2 Hours
5- Lung volumes and capacities		2 Hours	4 Hours
6- Pulmonary function tests.		1 Hours	4 Hours
7- Exchange of gases *(Factors affecting)*, Ventilation / perfusion ratio, Diffusion through placental membrane.		2 Hours	
8- Oxygen transport by blood.		2 Hours	
9- Carbon dioxide transport by the blood.		2 Hours	
10- Regulation of respiration *(Localization of respiratory centers, Generation of rhythmic respiration)*.		1 Hours	
11- Nervous regulation of respiration.		1 Hours	
12- Chemical regulation of respiration.		1 Hours	
13- Hypoxia *(Types, Causes, Body response to hypoxia)*.		2 Hours	
14- Cyanosis, Asphyxia, Effect of muscular exercise on respiration, Artificial respiration.		2 Hours	
15- Abnormal pattern of breathing *(periodic, dyspenia, apnea)*.		2 Hours	
16- Effect of exposure to high partial pressure of gases, Pneumothorax, Metabolic function of the lung.		2 Hours	

Course	Outcomes																				
	A1	A2	A3	A4	A5	A6	B1	B2	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2		
1- **Biophysics**																						
I) Transport across cell membrane	√	√						√											√	√		
II) Electric properties of the cell membrane.	√	√						√											√	√		
2-Autonomic Nervous System																						
1-Introduction, Divisions of nervous system.		√					√												√	√		
2- Cranial nerves, Spinal nerves, Transverse section in the spinal cord, Somatic and autonomic reflex arc.		√					√												√	√		
3- Autonomic Nervous System		√					√												√	√		
4- Autonomic ganglia		√					√												√	√		
5- Sympathetic nervous system.		√					√												√	√		
6- Parasympathetic nervous system.		√					√												√	√		
7- Interrelationship between sympathetic and parasympathetic nervous system		√					√												√	√		
8- Function of autonomic nervous system under different situation, Sympathectomy and parasympathectomy.		√					√												√	√		
9- Comparison of sympathetic and parasympathetic nervous system, Central integration		√					√												√	√		
10- Chemical transmission		√					√												√	√		
11- Cholinergic transmission		√					√												√	√		
12- Adrenergic transmission		√					√															
3-Physiology of Nerve and Muscle																						
1) Nerve			√				√		√	√	√								√	√		
2) Neuro - muscular junction			√				√		√	√	√								√	√		
3) Muscle			√				√		√	√	√								√	√		
4- Blood																						
1) Blood and Plasma Proteins				√			√	√											√	√		
2) Red Blood Cells				√			√	√									√		√	√		
3) White Blood Cell and immunity				√			√	√											√	√		
4) Blood Groups and Blood Transfusion				√			√	√							√				√	√		

Course	Outcomes																				
	A1	A2	A3	A4	A5	A6	B1	B2	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2		
5) Platelets and Hemostasis				√			√	√											√	√		
6) Blood Volume				√			√	√								√			√	√		
5-Circulation																						
1- Introduction, Physiological anatomy of the heart					√		√	√											√	√		
2- Properties of the cardiac muscle					√		√	√											√	√		
3- Cardiac Cycle					√		√	√					√						√	√		
4- - Electocardiogram					√		√	√						√					√	√		
5- Heart sounds					√		√	√					√						√	√		
6-Innervation of the heart					√		√	√											√	√		
7-Heart Rate					√		√	√											√	√		
8-The Cardiac Output					√		√	√											√	√		
9-Work of the heart, Mechanical efficiency of the heart, Cardiac reserve.					√		√	√											√	√		
10-Arterial blood pressure					√		√	√				√							√	√		
11-The Vasomotor Center & Factors affecting it.					√		√	√											√	√		
12-Regulation of the diameter of arterioles					√		√	√											√	√		
13-Capillary Circulation					√		√	√											√	√		
14- The Interstitium & The Interstitial Fluid					√		√	√											√	√		
15-Venous Circulation					√		√	√											√	√		
16-Lymphatic Circulation					√		√	√											√	√		
17- Edema.					√		√	√											√	√		
18-The Coronary Circulation					√		√	√											√	√		
19-The Pulmonary Circulation					√		√	√											√	√		
20-The Cerebral Circulation					√		√	√											√	√		
21-Splanchnic Circulation & Hepatic Circulation					√		√	√											√	√		
22-The Cutaneous Circulation					√		√	√											√	√		
23-The Fetal Circulation					√		√	√											√	√		
24-Hemorrhage					√		√	√											√	√		
25- Shock					√		√	√											√	√		

Course	Outcomes																				
	A1	A2	A3	A4	A5	A6	B1	B2	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	D1	D2		
26-Effect of exercise on the circulation					√		√	√											√	√		
6- Respiratory Physiology																						
1- Physiological anatomy of the respiratory system & Respiratory cycle.						√	√												√	√		
2- Mechanics of respiration						√	√												√	√		
3- Factors that affect pulmonary ventilation						√	√												√	√		
4- Lung volumes and capacities						√	√											√	√	√		
5-Pulmonary function tests.						√	√											√	√	√		
6-Exchange of gases						√	√												√	√		
7-Oxygen transport by blood						√	√												√	√		
8-Carbon dioxide transport by the blood.						√	√												√	√		
9-Regulation of respiration						√	√												√	√		
10-Hypoxia						√	√												√	√		
11-Cyanosis, Asphyxia, Effect of muscular exercise on respiration, Artificial respiration.						√	√												√	√		
12-Abnormal pattern of breathing						√	√												√	√		
13- Effect of exposure to high partial pressure of gases, Pneumothorax, Metabolic function of the lung.						√	√												√	√		
							√															

4 – Teaching and Learning Methods

Teaching Methods	Description
Lectures	Scientific material is presented through : 1- Power point presentations 2- Animations & videos
Practical lessons	Each practical class is delivered in the following form : 1- Students are divided into 2 groups in 2 physiological laboratories 2- They have a short lecture to explain the background of the practical lesson (25 minutes) 3- Then each group is divided into small groups under supervision of demonstrators to do the practical part of the section (1 hour). 4- Then they record the data they have noticed in their practical books (20 minutes).
Self learning	Power point presentation prepared by the student

5 – Student Assessment Methods

Method of assessment	Description	To Assess
1- Written examinations	- An exam at the end of the academic year - consist of short Essay Questions in different branches	A1-A2-A3-A4-A5-A6- B1-B2
2- MCQ exams	- 2 exams which are held in January& May	A1-A2-A3-A4-A5-A6- B1-B2
3- objective structured practical exam (OSPE)	- An exam held by end of the academic year. - Consists of 5 experiments in a form of multi-station	C1-C2-C3-C4--C5-C6-C7-C8-C9-C10
4- Sheet examination	- An exam held by end of the academic year. - Consists of 35 MCQ which are related to the practical classes.	C1-C2-C3-C4--C5-C6-C7-C8-C9-C10
5- Structured oral exam	- held by the end of the academic year. - The student is examined by 2 different professors to assess his knowledge in all branches of physiology that was studied.	A1-A2-A3-A4-A5-A6- B1-B2
6- Essay and presentation		D1-D2

Assessment Schedule

-Written Examination 50 % (125 Marks)
-Structured Oral 8 % (20 Marks)
-OSPE 8% (20 Marks)
-Midterrm MCQ 16 % (40 Marks)
-Sheet 14% (35 Marks)
-Log book 2% (5 Marks)
- Essay and presentation 2% (5 Marks)

Total 100% (250 marks)

6 – List of References

6.1- Course Notes	Staff member books & lecture notes
6.2- Essential Books (Text Books)	a) Textbook of Medical Physiology (Guyton & Hall). b) Review of Medical Physiology (William F. Ganong).
6.3- Recommended Books	Physiology (NMS)
6.4- Periodicals, Web Sites, …etc	http:// Advan. Physiology.org

7 – Facilities Required for Teaching and Learning

a) Lecture halls.
b) Audiovisual facilities.
c) Virtual Library including multimedia teaching facilities.
d) Publishing facilities including: Printers, photocopy machines.
e) well-equipped laboratories.
f) Laboratory animals

Course Coordinator: **Dr. Mohamed Adel**

Head of Department: **Prof dr. Sabry Mohammed Awad Gad**

Mansoura University
Faculty of Medicine
Physiology Department

توزيع درجات التحريري و MCQ للفرقة الأولى للمنهج الدراسى ٢٠١٥/٢٠١٦

	Relative Weight	Total	M C Q	Written
Autonomic nervous system	13%	25	15	10
Nerve and muscle	14%	26	16	10
Biophysics	9%	9	4	5
Blood	13%	26	11	15
Cardiovascular system	37%	54	24	30
Respiration	14%	25	10	15
	100%	165	80	85

رئيس قسم الفسيولوجيا

أ.د/ هناء أحمد حسن عبد المنعم

Mansoura University

Faculty of Medicine

Department of Medical Physiology

Log Book

For

Undergraduate Students

OF

Physiology Course

1st year

2016- 2017

Course Specification 2015/2016

For the Medical Physiology (first year)

Faculty : Medicine

Department : Medical Physiology

Course Specification:

Programme(s) on which the course is given :	M.B.B.Ch program
Department offering the course :	Department of Medical Physiology
Academic year / level :	1st year
Date of specification approval :	29/11/2015

A- Basic information:

Title: Medical Physiology Code: PSL.1

Lecture: 150 Tutorial: Practical 60 Total: 210

B- Professional Information:

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The overall aim of the course is to provide the students with the basic knowledge of physiology and develop several practical skills related to experimental work through training on several basic medical skills.

2 – Intended Learning Outcomes of Course (ILOs)

A - Knowledge and Understanding:

By the end of the course, students should be able to:

A1- Recognize the different cellular components, their functions and physical rules controlling them

A2- Identify different divisions of nervous system and the components of each especially the divisions controlling the visceral functions (autonomic nervous system)

A3- Recognize normal functional structure of neurons, neuromuscular junction, muscle and list their effects and factors affecting them.

A4-Discuss composition of blood, different cellular elements and functions

A5-Describe the functional anatomy of CVS and most common abnormalities e.g. shock and edema

A6-Explain the physiological anatomy of respiratory system and explain mechanics of respiration and abnormal patterns

B- Intellectual Skills:

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B1- Integrate facts about function of different organs subserving the homeostasis.as (nerves, muscles, heart, lungs, vessels and blood)

B2- Solve medical problems related to diagnosis & treatment of physiological problems as: pH disturbance, hemorrhage, shock.

P-Professional and Practical Skills:

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C1- determine the effect of gradation of stimuli on simple muscle twitch

C2- determine the effect of temperature on simple muscle twitch

C3- determine the effect of fatigue on simple muscle twitch

C4-Measure arterial blood pressure

C5- Determine auscultatory areas and auscultate the heart sounds

C6-Interprete ECG

C7-Determine blood groups

C8- Interpret Hb content in blood sample

C9- Interpret ESR

C10- Interpret normal pulmonary function tests

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D2 Present information clearly in written, electronic and oral forms

MansouraUniversity
Faculty of Medicine
Physiology Department

توزيع درجات التحريري وال MCQ للفرقة الأولى للمنهج الدراسى2015 /2016

	Number of hours	Relative Weight	Total	M C Q	Written
Autonomic nervous system	12	13%	25	15	10
Nerve and muscle	22	14%	27	16	10
Biophysics	9	9%	10	4	5
Blood	16	13%	27	11	15
Cardiovascular system	54	37%	55	24	30
Respiration	15	14%	26	10	15
		100%	165	80	85

رئيس قسم الفسيولوجيا

أ.د/ هناء أحمد حسن عبد المنعم

Recent Photo

❑ Personal Data:

- **Name:**
- **Nationality:**
- **Address:**

- **Telephone:**

  Home:

  Mobile:
- **E-mail:**
- **Date of registration for Physiology Course:**
- **Section:**
- **Group:**
- **Section supervisors:**

Time table of Physiology Course

Date	Subject	Lecturer

Date	Subject	Lecturer

Date	Subject	Lecturer

Date	Subject	Lecturer

PRACTICAL SECTIONS

Experiment ( ):

Date:

Subject:

Results:

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Experiment ( ):

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Mid-Year Practical Examination

ANSWER SHEET

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MARKS **SIGNATURE OF SUPERVISOR**

ESSAY

Title:

Students sharing:

1-

2-

3-

4-

5-

Abstract of the Essay:

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Presentation Date:

Supervisors:

1-

2-

3-

4-

Evaluation:

Signature of principle supervisor

Attendance Report

(Filled by the department)

- Number of sections attended:
- Number of sections missed:
- Total number of sections:
- Percentage of attendance **(number of sections attended / total number)**:

Signature of attendance employee

Signature of principle supervisor

FINAL Practical Examination

Experiment:

Signature of Examiner:

FINAL REPORT

(Filled by the Supervisors)

1 Attendance: ☐ **Above 85%** ☐ **Below 85%**
2 Commitment Level: ☐ **Excellent** ☐ **Satisfactory** ☐ **Poor**
3 Mid-term Practical Examination:
4 Essay:
5 General Evaluation: ☐ **Excellent** ☐ **Good** ☐ **Average** ☐ **Poor**
Written Conclusive Opinion (Optional):

Signature of principle supervisor