# Table of Specifications for MD-Internal Medicine Intermediate Examination

12.16	T			
N	Subject(s)	Topic(s)	Subtopic(s)	No. of
0.				MCQs
				(For
		19		topics
				not for
				sub-
-				topics)
1	General	Hepatology	• Ascites due to cirrhosis	
	Principles		• Variceal bleeding due to liver cirrhosis	07
	of		Hepatic encephalopathy	
	Medicine		Hepatocellular carcinoma	
	Medicine		• Hepatitis A, B, C and E	
			Wilson's disease	
			Hemochromatosis	
			Autoimmune hepatitis	
			Alcoholic liver disease	
			Non-alcoholic fatty liver disease	
			Budd Chiari Syndrome	
	٠	-	• Liver abscess	
		Gastroenterology	Gastro-esophageal reflux disease	
		Gastroenterology	Eosinophilic esophagitis	10
		X	Peptic ulcer disease	10
			• Celiac disease	
			Acute and chronic diarrhea	
			Malabsorption	
			Acute pancreatitis	
			• Chronic pancreatitis	
			Intestinal tuberculosis	
			CONTRACTOR	
			• Inflammatory bowel disease	
			Carcinoma colon	
			• Entero-endocrine tumors and its	
			• manifestation, testing and treatment	
			Achalasia Cardia	
		Nephrology	Acute kidney injury	06
	8		Chronic kidney disease	
			Acute tubular necrosis	
			Glomerulonephritis	
			Nephrotic and nephritic syndromes	



		Renal artery stenosis	
Con	diology	• Clinical manifestations, diagnosis and	07
Car	diology	management of :	07
		Congenital valvular heart diseases	
		<ul><li>Mitral stenosis and regurgitation</li></ul>	
	9	> Aortic stenosis and regurgitation	
		> Infective endocarditis	
		➤ Rheumatic heart disease	
		➤ Stable and unstable angina	
		➤ Myocardial infarction	
	¥	Congestive cardiac failure	
		Coarctation of aorta	
		➤ Pulmonary hypertension	
		> Cardiomyopathy	
		> Tachy and brady arrythmias	
		> Systemic hypertension	
		<ul><li>Peripheral vascular disease</li></ul>	
		> Chronic venous insufficiency	
		> Aortic dissection	
		➤ Superior vena cava syndrome	
Hom	natology	• Etiology, clinical features, diagnostic	06
	latology	workup and treatment of:	UU
		> Approach to anemia	
		➤ Anemia of chronic diseases	
		➤ Deficiency anemias: Iron, B12 and	
		Folic Acid	
-		> Thalassemia	
		Hemolytic anemias	
		➤ Sickle cell anemia	
		Aplastic anemia	
		Polycythemia rubra vera	
		> Leukemias	
		Essential thrombocytosis	
		Hodgkins and Non-Hodgkins	
		lymphoma	
		Amyloidosis	
		Congenital and acquired Platelet	
		disorders	
		Disseminated intravascular	
		coagulation	
		Acquired and congenital coagulation	
		disorders	
Infe	ctious	• Presenting problems in infectious	08
Dise		disease	
Dise	ast	> Fever	
		Positive blood culture	



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- > Acute diarrhea and vomiting
- > Infections acquired in the tropics
- > Infections in adolescence
- > Infections in pregnancy

#### Viral Infections

- > Systemic viral infections with exanthema
- > Systemic viral infections without exanthem
- > Viral infections of the skin
- > Gastrointestinal viral infections
- > Respiratory viral infections
- Viral infections with neurological involvement
- Viral infections with rheumatological involvement

#### • Prion disease

#### Bacterial infections

- Bacterial infections of the skin, soft tissues and bones
- > Systemic bacterial infections
- > Gastrointestinal bacterial infections
- Respiratory bacterial infections
- ➤ Bacterial infections with neurological involvement
- > Mycobacterial infections
- Rickettsial and intracellular bacterial infections
- Chlamydial infections

#### • Protozoal infections

- > Systemic protozoal infections
- ➤ Leishmaniasis
- Gastrointestinal protozoal infections

#### • Infections caused by helminths

- > Intestinal human nematodes
- Tissue-dwelling human nematodes
- > Zoonotic nematodes
- Trematodes (flukes)
- Cestodes (tapeworms)

#### Ectoparasites



	• Fungal infections	
	> Superficial mycoses	
	<ul><li>Subcutaneous mycoses</li><li>Systemic mycoses</li></ul>	
Diamondal		0.5
Rheumatology	• Investigation of musculoskeletal disease	05
and Bone Disease	► Joint aspiration	
	> Imaging	
	➤ Blood tests	
	> Tissue biopsy	
	Electromyography	
	2 Block omy ogrupny	
	• Presenting problems in	
	musculoskeletal disease	
	<ul><li>Monoarthritis</li></ul>	
	Polyarthritis	
	> Fracture	
	Generalised musculoskeletal pain	
	Muscle weakness	
	Regional musculoskeletal pain	
	Osteoarthritis	
	• Crystal-induced arthritis	
	• Fibromyalgia	
	Bone and joint infections	
	•	
	Rheumatoid arthritis	
	Axial spondyloarthritides	
	➤ Reactive arthritis	
	> Psoriatic arthritis	
	➤ Enteropathic (spondylo) arthritis	
	Autoimmune connective tissue	
	diseases	
	> Osteoporosis	
	Osteomalacia, rickets and vitamin D	
	deficiency	
	Paget's disease of bone	
Endocrinology	The Thyroid Gland	08
	• Presenting problems in thyroid	
	disease	
,	> Thyrotoxicosis	
	> Hypothyroidism	
	Asymptomatic abnormal thyroid	
	function tests	



- > Thyroid lump or swelling
- Autoimmune thyroid disease
- Transient thyroiditis
- Iodine-associated thyroid disease
- Simple and multinodular goitre
- Thyroid neoplasia

Congenital thyroid disease

#### The Parathyroid Gland

- Presenting problems in parathyroid disease
  - > Hypercalcaemia
  - > Hypocalcaemia
- Primary hyperparathyroidism
- Familial hypocalciuric hypercalcaemia Hypoparathyroidism

#### The Adrenal Glands

- Primary hyperaldosteronism
- Phaeochromocytoma paraganglioma
- Congenital adrenal hyperplasia

### The Endocrine Pancreas and Gastrointestinal Tract

and

- Presenting problems in endocrine pancreas disease
- Spontaneous hypoglycaemia
- Gastroenteropancreatic neuroendocrine tumours

## The hypothalamus and the pituitary gland

- Functional anatomy, physiology and investigations
- Presenting problems in hypothalamic and pituitary disease
  - > Hypopituitarism
  - > Pituitary tumour

Hyperprolactinaemia/galactorrhoea

- Prolactinoma
- Acromegaly



		Danuadurativa	a Presenting problems in manuadusting	Λ1
		Reproductive	• Presenting problems in reproductive disease	01
		System	> Delayed puberty	
			> Amenorrhoea	
			<ul><li>Male hypogonadism</li></ul>	
	•		> Infertility	
			Gynaecomastia	
			> Hirsutism	
			Polycystic ovary syndrome	
	e:		Turner syndrome	
			• Klinefelter syndrome	0.7
		Respiratory	Presenting problems in	<b>0</b> 7
		System	respiratory disease	
			• Cough	
			Breathlessness	
			Chest pain	
			Finger clubbing	
			Hemoptysis	
			'Incidental' pulmonary nodule	
			Pleural effusion	
			Respiratory failure	
			Obstructive pulmonary disease	
			• Asthma	
			• Chronic Obstructive Pulmonary Disease	
			Bronchiectasis	
			Cystic Fibrosis	
			Infections of the respiratory	
			system	
			<ul> <li>Upper Respiratory Tract Infection</li> </ul>	
			Pneumonia	
			● Tuberculosis	
			• Respiratory Diseases caused by Fungi	
*		,	,	
			Tumours of the bronchus and	
			lung	



			Primary tumours of the lung	
			Secondary tumours of the lung	
			Tumours of the mediastinum	
	*		Interstitial and infiltrative	
			pulmonary disease	
			Diffuse parenchymal lung disease	
			• Lung diseases due to systemic inflammatory disease	
1	8		Pulmonary eosinophilia and	
			vasculitides • Lung diseases due to irradiation and	
			drugs	
			Rare interstitial lung diseases	
			Occupational and environmental	
			lung disease	
			Occupational airway disease	
			<ul><li>Pneumoconiosis</li><li>Lung diseases due to organic dusts</li></ul>	
			• Asbestos-related lung and pleural	
			diseases	
			Occupational lung cancer	
			Pulmonary vascular disease	
			Pulmonary embolism	
			Pulmonary hypertension	
		Central Nervous		05
		System	• Presenting problems in neurological disease	05
		System	Headache and facial pain	
			Dizziness, blackouts and 'funny turns'	
			<ul><li>Status epilepticus</li></ul>	
			<ul><li>Coma</li><li>Delirium</li></ul>	
			> Amnesia	
	6	,	> Weakness	*
			<ul><li>Sensory disturbance</li><li>Abnormal movements</li></ul>	
			> Abnormal perceptions	



- > Altered balance and vertigo
- > Abnormal gait
- > Abnormal speech and language
- > Disturbance of smell
- > Visual disturbance and ocular abnormalities
- > Hearing disturbance
- Bulbar symptoms dysphagia and dysarthia
- Bladder, bowel and sexual disturbance
- > Personality change
- > Sleep disturbance
- Psychiatric disorder
- Headache syndrome
- Functional neurological disorder
- Epilepsy
- Vestibular disorders
- Disorders of sleep
- Movement disorders
- Ataxias
- Dystonia
- Hemi-fascial spasm
- Motor neuron disease
- Spinal muscular atrophy

#### Infections of the nervous system

- Meningitis
- Parenchymal viral infections
- Parenchymal bacterial infections
- Parenchymal parasitic infections
- Diseases caused by bacterial toxins
- Prion diseases

### Intracranial mass lesions and raised intracranial

#### pressure

- Raised intracranial pressure
- Brain tumors
- Paraneoplastic neurological disease



Sciences		<ul> <li>Production of bile, it's composition, function and its circulation</li> <li>Principles and assessment of liver function tests and it's interpretation</li> <li>Functional tests of liver, coagulation profile, albumin etc.</li> <li>Interpretation of data related to liver</li> </ul>	
Basic	Physiology	Hepato-Physiology	10
		<ul> <li>Diseases of muscle</li> <li>Muscular dystrophies</li> <li>Inherited metabolic myopathies</li> <li>Acquired myopathies</li> </ul>	
		- Bambert Baton myasaneme synareme	
		Myasthenia gravis     Lambert-Eaton myasthenic syndrome	
		Diseases of the neuromuscular junction	
		<ul> <li>Polyneuropathy</li> <li>Guillain-Barre syndrome</li> <li>Chronic polyneuropathy</li> <li>Brachial plexopathy</li> <li>Lumbosacral plexopathy</li> <li>Spinal root lesions</li> </ul>	
		<ul><li>Diseases of peripheral nerves</li><li>Entrapment neuropathy</li><li>Multifocal neuropathy</li></ul>	
		Disorders of the spine and spinal cord  Cervical spondylosis Lumber spondylosis Spinal cord compression Intrinsic diseases of the spinal cord	
	¥	Disorders of Cerebellar Function	
		<ul><li>Hydrocephalus</li><li>Idiopathic intracranial hypertension</li><li>Head injury</li></ul>	



function tests and diagnostic approach

• Hyperbilirubinemia, its implications and congenital hyperbilirubinemia

#### **Gastrointestinal Physiology**

- Digestion and absorption in GIT
- Regulation of gastrointestinal function
- Composition and function with regulation of saliva, gastric, pancreatic bile and intestinal sections
- Entero-endocrine system of GIT and its role in digestion
- Normal motility of stomach and intestine with its regulation
- Mechanism of defection
- Control of hunger, appetite and its regulation

#### Renal Physiology

- Glomerulus, structure and its function
- Tubular function and its role in fluid and electrolyte balance
- Acid base balance in body and role of kidneys in its maintenance
- Regulation of Na and K ions in body
- Composition of Urine

#### Cardiovascular Physiology

- Physiology of electrical activity in heart
- Mechanism of production of heart sounds, their location, character and relationship with cardiac cycle
- Normal ECG, its waves and their interpretations
- Principles and methods of recording electrocardiographic leads and information obtained from ECG
- Physiology and abnormalities of apex beat
- Cardiac output, measurement, cardiac index and cardiac reserves



- Exercise tolerance tests and its interpretations
- Pathophysiology of cardiac failure, valvular heart diseases and hypertension
- Arterial blood pressure, its measurement and its regulation
- Characters of arterial and venous pulse
- Central venous pressure and its significance
- Cardiogenic shock and its mechanism
- Coronary, cerebral and pulmonary circulation and its regulation
- Cardiovascular homeostasis in health, exercise, hypertension and cardiac failure

#### **Blood-Physiology**

- Structure, production and functions and life cycle of red blood cells, white blood cells and platelets
- Structure, formation. function and life cycle of hemoglobin
- Blood volume and principles of its measurement
- Blood groups, blood transfusion and exchange transfusion
- Precautions and hazards of blood transfusions
- Plasma protein, their production and functions
- Diagnosis of various types of leukemias and disorders of anemia
- Normal values of hemoglobin, WBCs and various hormones in different age groups

Interpretation of complete blood picture, hematological changes in infectious and non-infectious diseases

Growth, Growth Hormone and Puberty



#### • Growth Hormone

- ➤ Physiological actions of growth hormone
- ➤ Indirect anabolic actions of Growth Hormone
- > Control of Growth Hormone Secretion
- Insulin Like Growth Factor Specific Properties

#### The Thyroid Gland

physiology and investigations

#### The Reproductive System

Physiology and investigations

#### The Parathyroid Glands

Physiology and investigations

#### The Adrenal Glands

Physiology and investigations

#### **Endocrine Pancreas**

- Insulin
  - Actions of Insulin
  - Peripheral uptake of Glucose
  - Metabolic Actions of Insulin:
    - ❖ Effects of Insulin on Carbohydrate metabolism
    - Effects of Insulin on Protein metabolism
    - Effects of Insulin on fat metabolism
  - Insulin effect on Potassium
  - Control of Insulin secretion
- Glucagon
  - Actions of Glucagon on:
    - Liver Glycogenolysis



3		<ul> <li>Liver Gluconeogenesis</li> <li>Liver Ketogenesis and Lipogenesis</li> <li>Ureagenesis</li> <li>Insulin secretion</li> <li>Lipolysis in Liver.</li> <li>Control of Glucagon Secretion</li> </ul> Central Nervous System <ul> <li>Physiology</li> <li>Cells of the nervous system</li> <li>Functional anatomy of the nervous system</li> </ul>	
		<ul> <li>Localizing lesions in the central nervous system</li> <li>Investigations of neurological disease</li> <li>Neuroimaging         Neurophysiological testing     </li> </ul>	
		<ul> <li>Respiratory System</li> <li>Imaging</li> <li>Endoscopic examination</li> <li>Microbiological investigations</li> <li>Immunological and serological tests</li> <li>Cytology and histopathology</li> </ul>	
	Pathology	Respiratory function testing  Hepato-Pathology	
,		<ul> <li>Mechanism of hepatic encephalopathy and theories of various toxins</li> <li>Mechanism of ascites development in cirrhosis of liver</li> <li>Portal hypertension and theories behind its progression</li> <li>Liver cirrhosis and its</li> </ul>	08



pathophysiology and histopathological features

- Copper induced injury and histopathological features in Wilson's disease
- Hepatic injury due to iron accumulation due to hemochromatosis

#### **Gastrointestinal Pathology**

- Peptic ulcer disease pathophysiology and histopathology
- Pathophysiology of celiac disease, inflammatory bowel disease
- Stool complete examination and interpretation of its abnormalities
- Laboratory workup for chronic diarrhea including breath tests

#### Renal Pathology

- Glomerulonephritis. types and diagnosis
- Acute tubular necrosis
- Proteinuria, mechanism, interpretations
- Acid base disorders
- Renal biopsy, indications and interpretations

Urine complete examination and its interpretations of abnormalities

#### Cardiovascular Pathology

- Etiology, pathogenesis, classification and clinical manifestations of:
  - > Edema
  - Thrombosis: Coronary, cerebral and peripheral
  - Embolism
  - Infarction
  - Coronary atherosclerosis, pathogenesis, risk factors and



	histopathology  Etiology, classification, pathogenesis and clinical manifestations of shock  Compensatory mechanisms of shock  Difference of arterial and venous thrombosis  Hemato-Pathology  Peripheral blood smear, blood indices and their interpretations in different hematological disorders	
Pharmacology	<ul> <li>Hepato-Pharmacology</li> <li>Anti-viral drugs for hepatitis B and C</li> <li>Drugs used in Wilson's disease, hemochromatosis</li> <li>Vasoactive drugs used for variceal bleeding</li> <li>Role of diuretics in ascites due to cirrhosis</li> </ul>	12
	<ul> <li>Gastrointestinal Pharmacology</li> <li>Proton pump inhibitors, mechanism of action, indications and side effects</li> <li>Prokinetic drugs, mechanism of action, indication and side effects</li> <li>Laxatives, types, mechanism of action, indications and side effects</li> <li>Anti helminthic drugs, indications and side effects</li> <li>Anti emetic drugs, indications and side effects</li> <li>Anti tumor necrosis factors (TNF) drugs for inflammatory bowel disease, mechanism of action, indications, pre-requisite for initiating treatment, monitoring and resistance</li> </ul>	n
	<ul><li>Renal Pharmacology</li><li>Diuretics, indications, side effects</li></ul>	



Nephrotoxic drugs, monitoring and dose adjustment

#### Cardiovascular Pharmacology

- Indications, mechanism of action, dose and side effects of:
  - > Anti arrhythmic drugs
  - > Anti ischemic drugs
  - Anti platelet drugs
  - Anti-coagulant drugs
  - Thrombolytic drugs

Anti-hypertensive drugs

#### Hemato-Pharmacology

- Mechanism of action, indications, side effects and monitoring of
- Anti-platelet drugs
- Anticoagulation drugs Thrombolytic drugs

# Central Nervous System Pharmacology

- Sedative-Hypnotic-Anxiolytic Drugs
  - Benzodiazepines
  - Barbiturates
- Drugs used for Depression
  - Selective Serotonin Reuptake Inhibitors
  - > Tricyclic Antidepressants
- Drugs used in Parkinsonism
  - > Levodopa
  - ➤ Tolcapone and Entacapone

#### Drugs used in Schizophrenia

- Typical Antipsychotics (D-2 Blockers)
- Atypical Antipsychotics (5HY-2 Blockers)
- Anticonvulsants
  - > Phenytoin
    - Uses
    - Side-effects



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- > Carbamazepine
  - Uses
  - Side-effects
  - Teratogenicity
- Valproic Acid
  - Uses
  - Side-effects
  - Teratogenicity
- Opioid Analgesics
  - > Morphine
    - Uses
    - \* Toxicity

Antidote: Naloxone

#### Antimicrobial Pharmacology

- Anti-Bacterial Agents
  - Bacteriocidals
  - Bacteriostatics
  - Synergy
  - Resistance
- Anti-Tubercular Agents
  - Treatment duration
  - Side-Effects of different Anti-Tubercular Agents
- Anti-Viral Agents
  - Uses and Side effects
- Treatment of HIV/AIDS
- Anti-Fungal Agents
- Anti-Protozoal Agents Drugs used in Malaria

### Respiratory Pharmacology

#### Asthma & COPD

- First Line treatment for Asthma and COPD
- Beta Receptor Agonists; their contraindication, bronchodilator reversibility test (albuterol): role and mechanism
- Muscarinic Antagonists; their role and side effects
- Methacholine Challenge Test; its mechanism



- Glucocorticoids; their role and long-term use, side-effects.
- Antileukotrienes

#### Eicosanoid Pharmacology

- Anti-Inflammatory Drugs
- DMARDS
- Drugs used for treatment of Gout
- Glucocorticoids
  - > Synthetic Glucocorticoids and their potency, side effects, contraindications. Long-term use and withdrawal.

#### Drugs used in Diabetes

- First Line treatment for Type 1 and 2 Diabetes Mellitus
- Sulfonylureas; Mechanism, Side effects and Complications.
- Biguanides;
- Thiazolidinediones;
- Agents Affecting GLP-1;
   Exenatide and Sitagliptin
   SGLT-2 Inhibitors;
   Mechanism and
   Contraindications (In recurrent UTIs)

#### Reproductive Pharmacology

- Oral Contraceptives; Benefits other than contraception, side-effects and drug interaction and Contraindications.
- Androgens; Use and Abuse.
   Androgen Antagonists: Use in BPH, Prostate Cancer and Male pattern baldness.

#### Thyroid Pharmacology

Role of Thyroid Peroxidase

- Thioamides
  - > Propylthiouracil; role and



	safety during pregnancy  Methimazole: role and safety during pregnancy  Iodide; Role in thyroidectomy and during thyrotoxicosis  Propranolol; effect on peripheral conversion of T4 to T3, effect on symptoms of hyperthyroidism	
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Prof Tahir Siddique (Chairperson)

Professor of Medicine

Principal

Nawaz Sharif Medical College

Gujrat

### 2. Clinical Examination-----

9	Sr.#	Content of TOACS	Observed Stations	Marks
icine	1.	<ul> <li>Instrument: Identification, indications for use, steps of use</li> <li>Nasogastric tube</li> <li>Endotracheal tube</li> <li>Laryngeal Mask Airway</li> <li>Oropharyngeal or nasopharyngeal airway</li> <li>Laryngoscope</li> <li>Fundoscope</li> <li>Foley's catheter</li> <li>Lumbar puncture needle</li> <li>Pleural biopsy needle</li> <li>Liver/renal biopsy needle</li> </ul>	1	10
Med	Drugs: Indications for use, Dose, Side effects		1	10
Principals of General Medicine	3.	<ul> <li>Counselling station:         <ul> <li>Breaking bad news</li> <li>Patient with chronic hepatitis B, C</li> <li>Diabetic patient</li> <li>Patient with hypertension</li> <li>Patient with diagnosis of malignancy</li> </ul> </li> <li>Use of inhaler device</li> </ul>	1	10
cipa	4.	<ul><li>◆ Clinical examination</li><li>➢ GIT</li></ul>	1	10
Prin	5.	• Clinical examination > CVS	1	10
	6.	<ul><li>◆ Clinical examination</li><li>➤ Respiratory system</li></ul>	1	10
	7.	<ul><li>◆ Clinical examination</li><li>➤ CNS</li></ul>	1	10
	8+ <b>7</b> .	<ul> <li>X-rays chest/ abdomen: Description, identification of abnormalities and differential diagnosis</li> <li>ECG: Description, identification of abnormality, treatment plan</li> </ul>	2	10



t <b>9</b> .	<ul> <li>10. Basic life support/Advanced cardiac life support</li> <li>11. Stable/ Unstable bradyarrythmia</li> <li>12. Stable/Unstable tachyarrhythmia</li> <li>13. Cardiac arrest</li> <li>Return of spontaneous circulation</li> </ul>	1	10
Total		10	100

The candidate scoring 60% marks shall be declared pass in clinical examination.

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