Sri Guru Ram Das University of Health Sciences, Sri Amritsar

Department of Physiology

Guidelines for question paper as per the Medical Council of India, Competency Based Undergraduate Curriculum for Indian Medical Graduate.

Theory paper should include questions from core competencies and not from Non Core Competency

BLUEPRINT OF THEORY PAPER

Sr. No.	Type	Explanation	Topics	Distribution of marks as per weightage
1.	MCQ		**10 MCQs for Paper A** **10 MCQs for Paper B**	1 X 10 = 10 1 X 10 = 10
2.	Long essay question	1. The question should pose a Clinical/ Practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liners as questions. 2. Avoid giving one liners as questions. 3. The question stem should be structured and marking distribution should be provided. 4. Use action verbs from higher domains as given in this document.	**Paper A (Two Questions)** 1. Structured Question from core competency of Topics in Paper A. 2. Case based Question from - Thyroid disorders, Menstrual cycle and contraception, sleep physiology, hemiplegia. **Paper B (Two Questions)** 1. Structured Question from core competency of Topics in Paper B. 2. Case based Question from -	1 X 10= 10 1 X 10= 10 1 X 10= 10 1 X 10= 10

			Hypertension, Malabsorption syndrome, Bronchial Asthma/COPD.	
3.	Short Notes	These provide opportunity to sample a wider content, albeit in a short time. The questions should be task oriented rather than 'Write a short note on xxx'. Preferably use verbs (as per List attached) in framing questions and structure them as far as possible	**Paper A (8 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1 Marks for each part should be indicated separately **Paper B (8 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1 Marks for each part should be indicated separately	8 X 5 = 40 8 X 5 = 40
4.	Reasoning Questions	These provide excellent opportunities for testing integration, clinical reasoning and analytic ability of the student	**Paper A (3 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1 **Paper B (3 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1	3 X 5 = 15 3 X 5 = 15

5.	Applied Questions	Questions on applied aspect	**Paper A (3 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1 **Paper B (3 Questions)** From Core Competencies as per competency based undergraduate curriculum for the Indian Medical Graduate , VOLUME 1	3 X 5 = 15 3 X 5 = 15

Total Marks 200(Paper A- 100 marks, Paper B-100 marks)

Blueprinting in knowledge domain
(Representative example only. Actual figures may vary with the subject and phase)

Level	Topic A	Topic B	Topic C	Topic D	Total
Knowledge	1	2	1	1	5(20%)
Comprehension	1	1	1	2	5(20%)
Application	2	1	1	1	5(20%)
Analysis	1	1	2	2	6(24%)
Synthesis		1		1	2(8%)
Evaluation	1		1		2(8%)
Total	6(24%)	6(24%)	6(24%)	7(28%)	25(100%)

Verbs in various levels in Knowledge domain (Bloom's taxonomy)

Knowledge	Define, Describe, Draw, Find, Enumerate, Cite, Name, Identify, List, label, Match, Sequence, Write, State, Choose ,Indicate, isolate, Order, Recognize, Underline
Comprehension	Discuss, Conclude, Articulate, Associate, Estimate, Rearrange, Demonstrate understanding, Explain, Generalise, Identify, Illustrate, Interpret, Review, Summarise, Extrapolate, Update
Application	Apply, Choose, Compute, Modify, Solve, Prepare, Produce, Select, Show, Transfer, Use
Analysis	Analyse, Characterise, Classify, Compare, Contrast, Debate, Diagram, Differentiate, Distinguish, Relate, Categorise
Synthesis	Compose, Construct, Create, Verify, Determine, Design, Develop, Integrate, Organise, Plan, Produce, Propose, rewrite
Evaluation	Appraise, Assess, Conclude, Critic, Decide, Evaluate, judge, Justify, Predict, Prioritise, Prove, Rank

The question part of the MCQ (item) is called STEM; correct answer is called the KEY and the rest of the options are called DISTRACTORS.

Steps in writing:

1. Select the specific learning objectives which you want to test.
2. Write the stem, it should be self-explanatory and complete, avoid using terms like (NOT, EXPECT, NEVER, ALWAYS, SOMETIMES) in the stem, if the terms are being used they should be in UPPERCASE and **bold** letter.
3. Write unambiguous and unarguably the correct answer to the stem.
4. Select the most plausible alternatives and arrange them in the form of options.
5. Avoid window dressing of the stem. This means adding superfluous and unnecessary words which confuses the student.
6. Abbreviations should be avoided.
7. Options should be grammatically parallel to the key, and should be parallel and have the same relation to the stem.
8. When writing options, avoid duplications or making options all inclusive, e 1-6, 6-10 etc.
9. The options should be arranged in rank order, eg. 256, 266, 280, 290 and not 290, 266, 280, 256.
10. "All the above" and "None of the above" should be avoided as an option.

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Theory Paper A		Theory Paper B	
Topics	**Marks Distribution**	**Topics**	**Marks Distribution**
General Physiology	10	CVS	24
Nerve & Muscle Physiology	10	Hematology	24
Nervous System and Special senses	40	Excretory System	15
Endocrine	25	Gatrointestinal	16
Reproductive Physiology	15	Respiratory	16
		Integrated Physiology	5
Total	**100**	**Total**	**100**

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Maximum Marks : 100 **MBBS 1st Professional Examination** Time : 3 Hours

Subject- Physiology

Paper-A

Note: 1. Attempt all questions. Illustrate your answer with suitable diagrams where applicable.
2. Question No. 1 (MCQ) to be attempted on OMR Sheet (Time: 15 Min.)
3. Question No. 2-6 to be attempted on separate answer book (Time: 2:45 Min.)

QP Code: MB20603

1. Multiple Choice Questions(MCQs) : [10x1=10]

A. Value of which of the following is considered as unit of Excitability.
a. Rheobase
b. Chronaxie
c. Utilization Time
d. Refractory Period

B. Resting membrane potential is close to the iso – electrical Potential for
a. Na^+
b. K^+
c. Ca^{2+}
d. Cl^-

C. After ovulation the oocyte is in the preparation of
a. Mitotic Division
b. Implantation
c. First Meiotic division
d. Second meiotic division

D. Which part of ovary in mammals acts as an endocrine gland after ovulation ?
a. Graffian follicle
b. Stroma
c. Corpus albicans
d. Corpus Luteum

E. The most important response to the stimulation of β – adrenergic receptors is :
a. Cerebral Vasodilatation
b. Splanchnic vasoconstriction
c. Decreased Blood Sugar
d. Increased cardiac activity

F. Tremors of Parkinson's disease disappears during activity because of :
a. Damping effect
b. Increased muscle blood flow
c. Can be inhibited voluntarily
d. Diverted attention

G. Gibbs – Donnan effect is seen on the distribution of :
a. Diffusible ions
b. Non diffusible ions
c. Only protein ions
d. Osmotically Active particles

H. What provides most of the energy that is used to maintain a normal resting membrane potential of about 70 mv inside the nerve.
a. The Chloride pump
b. The Sodium potassium pump
c. The calcium pump
d. Diffusion of Chloride ions

I. **Which structure undergoes cyclical changes during Menstrual cycle**
   a. Endometrium Only
   b. Endometrium and Myometrium only
   c. Endometrium and Perimetrium only
   d. Endometrium , myometrium & Perimetrium

J. **Testosterone secreation from leydig cell is under control of**
   a. FSH
   b. LH
   c. Androgen
   d. Estrogen

2. Give brief account of connections and functions of cerebellum. Discuss the pathophysiologic basis of cerebellar ataxia and tremor. [3+4+3=10]

3. **Read the following findings and answer the questions.** [5x2=10]

History :-

A 50 year old housewife complains of progressive weight gain of 56 kg in 1 year, fatique, slight memory loss , slow speech, dry skin , constipation and cold intolerance

Physical Examination

Vital signs include a temperature of 96.8° F pulse 58/min and regulate BP 140/100mm Hg. She is moderately obese and speaks slowly and has a puffy face, with pale, cool, dry and thick skin. The thyroid gland's slightly enlarged firm and nodular, mobile and not tender. The deep tendon reflex time is delayed.

Lab Investigations

a. CBC and differentiate WBC are normal
b. Serum T4 concentration is 3.8mg/dl.
c. Refrence value is 4.5- 12.5Mg/ml)
d. Serum TSH is 23mg/ml (Reference value is .2-3.5 mg/ml)
e. Serum cholestrol is 255 mg/dl (Reference value : <240mg/dl)

Based on the above case , answer the following questions:

a. What is likely diagnosis?
b. What are the symptoms that made you consider that diagnosis?
c. What physical findings supported the diagnosis
d. Which lab data supported the diagnosis?
e. What are the treatment options for this patient?

4. **Reasoning Questions:** [3x5=15]
   a. How Jendrassik manoeuvre helps to ellicit deep tendon Reflexes? If lesion is at spinal segment L1 what will be response at the knee jerk.
   b. Why there is Decrease olfaction if a person suffers from common cold? Also make flow diagram of olfactory pathway
   c. Why Lactation is a natural contraceptive and amenorrhoea is observed during lactation.

5. **Write short notes on:** [8 x 5=40]
   a. Differentiate between absolute and relative refractory period.
   b. Compare Acromegaly and Gigantism
   c. Define upper Motor Neuron. What are features of UMN Lesion?
   d. Discuss Hypocalcaemic Tetany
   e. List and explain indicators of ovulation.
   f. Compare primary active and secondary active transport.
   g. Draw diagram of visual pathway showing effects of Lesions
   h. Name the site of lesion and reflexes present in decerebrate cat

6. **Short notes on (Applied Questions):** [3x5=15]
   a. Referred Pain
   b. ECG changes in acute M.I
   c. Myasthenia gravis

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Maximum Marks : 100 **MBBS 1st Professional Examination** Time : 3 Hours

Subject- Physiology

Paper-B

Note: 1. Attempt all questions. Illustrate your answer with suitable diagrams where applicable.
2. Question No. 1 (MCQ) to be attempted on OMR Sheet (Time: 15 Min.)
3. Question No. 2-6 to be attempted on separate answer book (Time: 2:45 Min.)

QP Code: MB20604

1. Multiple Choice Questions (MCQs) : [10x1=10]

A. Temporary Haemostatic plug is converted into definitive plug by:
a. Platetes
b. ATP
c. Fibrin
d. Serotonin

B. A reliable screening test for platelet function is
a. Clotting Time
b. Prothrombin time
c. Thrombin Time
d. Clot Retraction Time

C. Colonic fluid loss in chronic diarrhoea results in
a. Prenicious anaemia
b. Dehydration
c. Hypotension
d. Severe hypokalemia

D. The para sympathetic supply of distal colon is
a. Pelvic nerve
b. Vagus nerve
c. Lesser splanchnic nerve
d. Pudendal nerve

E. Vital capacity is decreased but timed vital capacity is normal in
a. Bronchial Asthma
b. Scoliosis
c. Chronic Bronchitis
d. Respiratory Muscle weakness

F. Constriction of blood vessel following injury is due to
a. Anoxia
b. Serotonin
c. Endothelin
d. Prosta Cyclin

G. Neonatal Jaundice
a. Is always fatal
b. Normally appears on2nd or 3rd day of life
c. Is pathological condition

H. The absorptive surface area of small intestine is over
a. $2.8m^2$
b. $250m^2$
c. $7m^2$
d. $50m^2$

I. **Baro receptor reflexes**
   a. Correct only fall in BP
   b. Help to control BP from rising extremely high or falling extremely low
   c. Operate between 60-150 mmHg range of mean BP
   d. Can correct $11/12^{th}$ fall in BP

J. **Post prandial alkaline tide is caused by**
   a. Rise in HC_{O3}^- in systemic blood Ph following a meal
   b. Loss of HC_{O3}^- in urine
   c. Depressed breathing
   d. Rise in alveolar pC_{O2}

2. Define Erythropoiesis. Describe the various stages of Erythropoiesis. Describe the factors regulating it. [2+4+4=10]

3. **Read the following paragraph**

History :

A 60 year old male patient came to our OPD with C/O breathlessness for last five years and cough with sputum production for last five years. He was a chronic smoker last 30 years. He was symptomatic for most of the months but symptoms used to increase during winter. Initially he was breathless during doing heavy work only but now he feels breathlessness even during routine work also. His sputum was white coloured, purulent in consistency about 100 ml/day

General Physical Examination

He was having Tachypnea and tachy cardia. His BP was normal

Examination of respiratory system

Revealed bilateral hyper inflated chest with widened intercostal spaces and hyper resonating note on percussion. Chest auscultation revealed bilateral wheezes scattered all over lung field. Routine investigations were in normal range. Spirometery result showed mild obstructive pattern FEV1/FVC ratio < .61 with no significant reversibility in FEV1

Based on the above clinical condition answer the following questions:

   a. What may be the breathlessness in this patient
   b. What may be cause of increased respiratory rate in this patient?
   c. What is the cause of hyperresonating percussion note?
   d. What is significance of FEV1/FVC ratio?
   e. What is cause of expiratory wheeze in this patient?

4. **Reasoning Questions:** [3x5=15]
   a. High protein diet increases the capacity of the kidney to concentrate the urine.
   b. Removal of which part of small intestine will produce greater degree of Mal absorption What is the role of dietary fiber
   c. Blood Clotting is abnormal in individual with vit K deficiency

5. **Write the short notes on:** [8x5=40]
   a. Outline role of kidney in regulation of P^H
   b. Explain long term control of blood pressure
   c. Define and classify immunity
   d. Discuss heterometric regulation of stroke volume
   e. Discuss the humoral and neural mechanism for control of Gastric juice secretion
   f. Compare windkessel vessels and resistance vessels
   g. Discuss 1^{st} and 2^{nd} heart sound
   h. Describe Micturition Reflex and draw cystometrogram

6. **Short notes on (Applied Questions):** [3x5=15]
   a. Cushing Reflex
   b. Sleep Apnoea Syndrome
   c. Outline pathophysiology of fever