

BLUE PRINT

PAPER 1

HEMATOLOGY, CARDIO VASCULAR SYSYTEM, RESPIRATORY SYSTEM, RENAL PHYSIOLOGY, GASTRO
INTESTINAL SYSTEM & AETCOM

		NUMBER OF QUESTION X MARKS
ESSAY	CAN BE FROM ANY OF THE TOPICS	1X10 = 10
REASONING QUESTION	ONE FROM EACH TOPIC	5X03 = 15
APPLIED QUESTION	ONE FROM EACH TOPIC	4X05 = 20
SHORT NOTES	CAN BE FROM ANY OF THE TOPICS	6X05 = 30
AETCOM	FROM MODULE 1.2	1X05 = 05
MCQ	CAN BE FROM ANY OF THE TOPICS	20X1 = 20

MARKS ALLOCATION:

S.No	TOPIC	THEORY MARKS DISTRIBUTION	MCQ	TOTAL
1	HEMATOLOGY	18	5	23
2	CARDIO VASCULAR SYSYTEM	18	5	23
3	RESPIRATORY SYSTEM	13	4	17
4	GASTRO INTESTINAL SYSTEM	13	3	16
5	RENAL PHYSIOLOGY	13	3	16
6	AETCOM	5	-----	5

PAPER 2

GENERAL PHYSIOLOGY, MUSCLE & NERVE PHYSIOLOGY, ENDOCRINE PHYSIOLOGY, REPRODUCTIVE PHYSIOLOGY, NEUROPHYSIOLOGY, SPECIAL SENSES & AUTONOMOUS NERVOUS SYSTEM,

		NUMBER OF QUESTION X MARKS
ESSAY	CAN BE FROM ANY OF THE TOPICS	1X10 = 10
REASONING QUESTION	ONE FROM EACH TOPIC	5X03 = 15
APPLIED QUESTION	ONE FROM EACH TOPIC	4X05 = 20
SHORT NOTES	CAN BE FROM ANY OF THE TOPICS	6X05 = 30
AETCOM	FROM MODULE 1.3	1X05 = 05
MCQ	CAN BE FROM ANY OF THE TOPICS	20X1 = 20

MARKS ALLOCATION:

S.No	TOPIC	THEORY MARKS DISTRIBUTION	MCQ	TOTAL
1	GENERAL PHYSIOLOGY MUSCLE & NERVE PHYSIOLOGY	16	4	20
2	ENDOCRINE PHYSIOLOGY	20	3	23
3	REPRODUCTIVE PHYSIOLOGY	10	3	13
4	NEUROPHYSIOLOGY	29	10	39
5	SPECIAL SENSES			
6	AUTONOMOUS NERVOUS SYSTEM			
7	AETCOM	5	---	5

BLUE PRINT FOR PRACTICALS

S.No		MARKS	NUMBER	MARKS
1	SPOTTERS	2	15	30
2	CASE SHEET FORMAT / CASE STUDY	10	1	10
3	STATION 1	5	1 OSPE – RBC /WBC/BLOOD GROUPS 1 OSCE -- RESPIRATION	10
4	STATION 2	5	1 OSPE – DLC/BT & CT /HB 1 OSCE -- CVS	10
5	STATION 3	5	1 OSCE – BLOOD PRESSURE 1 OSCE – MOTOR SYSTEM/CRANIAL NERVE 1 TO 6	10
6	STATION 4	5	1 OSCE – GENERAL EXAMINATION/ GI SYSTEM 1 OSCE – SENSORY SYSTEM/ CRANIAL NERVES 7 OT 12	10
7	VIVA	5	4	20
	TOTAL			100

Essay:

(1*10 =10)

1. Define Erythropoiesis. Mention the places where it takes place. Explain the stages and role of various nutrients needed for erythropoiesis. Mention the sites of absorption of the ingredients. (2+3+4+1)

Reasoning questions:

(5*3 =15)

2. Neonates and infants defecate immediately after having mothers feed. Name & explain the reflex pathway.
3. Persons tend to bleed more when vessel is cut with sharp object rather when he falls down on rough surface. Mention & explain the reason behind above phenomenon.
4. Patient suffering from fever tend to have higher heart rate. What is the condition called and explain the physiological basis of it?
5. Babies delivered between 28 to 30 weeks of gestation in INDIA are kept in Neonatal Intensive care unit and given medicine for proper respiration to take place. What is the probable medicine given? Mention its composition, source and explain its role in normal respiration?
6. Proteins are not excreted into urine. Explain the reason and draw a neat diagram of related structure.

Applied questions:

(4*5=20)

7. A 35-year-old female complains of breathlessness, loss of appetite, apathy and easy fatigability. Examination of the patient revealed pallor, koilonychias, increased heart rate and systolic murmur.
 - a. What is the provisional diagnosis & give supporting points?
 - b. Classify the broad condition
8. Parents of a 5-year old girl had brought her to emergency in a –semi-conscious state. She had 7-8 episodes of loose motions and 4 episodes of vomiting in a day with intermittent abdomen pain. Previously she had some food from a street vendor.

On examination patient is drowsy, opening eyes only for painful stimuli. Pulse = 100/min, regular, low volume pulse, BP = 90/70 mmHg, temperature 100°F. Skin turgor is reduced; mouth and tongue are dry. Respiratory rate is 24/min and shallow.

 - a. Give your provisional diagnosis
 - b. Classify the broad condition
 - c. Name the reflexes operating in her body to keep her vital normal

9. Satish, 20-year-old, resident of Delhi, went for a 4-day trip to a hill station (2900 m height) in Himachal Pradesh. Few hours after reaching the hill station, he started to feel mental and physical fatigue, headache dizziness and nausea. His pulse rate 76 pulse per minute, Respiratory rate – 17 breaths per minute, Body temperature - 97⁰ F.
- Identify the condition based on the above findings.
 - Explain the physiological changes which prevent the above changes
10. A 43-year-old female complains of Yellowish discoloration of eyes since 7 days, Pain in right hypochondria which is radiating to right shoulder since seven days, Fever since two days
- What is your provisional diagnosis?
 - Explain normal circulation of the secretion affected
 - Mention other types of condition diagnosed above

Short notes questions

(7X05 = 35)

11. Explain cardiac cycle with neat diagram
12. Explain Short term regulation of blood pressure & mention its importance in daily activities
13. Explain oxygen hemoglobin dissociation curve
14. Explain the movements of intestine & importance
15. Explain counter current mechanism
16. Define Glomerular Filtration rate. Mention its normal value. Explain its regulation
17. Enumerate and describe professional qualities and roles of a physician

BLUEPRINT – PAPER - I
MCQ'S

1. A 60-year-old woman with chronic kidney disease presents with fatigue and pallor. Her laboratory tests show normocytic normochromic anaemia with a haemoglobin level of 9 g/dL. Erythropoietin levels are low. Which of the following is the most appropriate treatment for her anaemia?
 - a. Iron supplementation
 - b. Erythropoiesis-stimulating agent
 - c. Vitamin B12 supplementation
 - d. Folate supplementation
2. A 30-year-old woman presents with a persistent fungal infection that has not responded to standard antifungal treatments. Her medical history reveals frequent respiratory infections and a recent episode of shingles. Laboratory tests show a normal B-cell count but a markedly reduced CD8+ T-cell count. What is the most likely explanation for her symptoms?
 - a. Selective IgA Deficiency
 - b. Chronic Mucocutaneous Candidiasis
 - c. HIV Infection
 - d. Hyper-IgM Syndrome
3. A 30-year-old female presents with fatigue and dizziness. Her laboratory tests show a haemoglobin level of 10 g/dL and an MCV of 105fL. Peripheral blood smear reveals hyper segmented neutrophils. Which of the following deficiencies is most likely responsible for her condition?
 - a. Iron deficiency
 - b. Vitamin B12 deficiency
 - c. Folate deficiency
 - d. Erythropoietin deficiency
4. A 45-year-old male presents with fatigue, pallor, and shortness of breath on exertion. Laboratory tests reveal a haemoglobin level of 8 g/dL, mean corpuscular volume (MCV) of 70 fL, and low serum ferritin. Bone marrow biopsy shows decreased iron stores and increased erythroid precursors. Which of the following is the most likely cause of his anaemia?
 - a. Iron Deficiency anaemia
 - b. Vitamin B12 deficiency
 - c. Aplastic anaemia
 - d. Thalassemia

5. A 16-year-old boy is involved in a traffic accident and suffers a serious injury with internal bleeding requiring a blood transfusion. His blood is typed and it is seen to be AB Rh negative. What type of blood can he receive? A. Any blood type
- A-, B-, AB- or 0-
 - A-, B- or AB+
 - Only A- or B-
 - Only A-
6. A 35-year-old male presents with burning epigastric pain that occurs 2 hours after meals and is relieved by eating or taking antacids. On examination, he is afebrile, and abdominal palpation reveals mild epigastric tenderness. What is the most likely diagnosis?
- Acute gastritis
 - Peptic ulcer disease
 - Gallbladder disease
 - Irritable bowel syndrome
7. A 3-year-old boy presents with chronic constipation, abdominal distension, and poor weight gain. His parents report that he has had difficulty with bowel movements since birth, often requiring enemas. A barium enema shows a transition zone in the distal colon. What is the most likely diagnosis?
- Hirschsprung disease
 - Functional constipation
 - Celiac disease
 - Intussusception
8. A 30-year-old male presents with progressive difficulty swallowing both solids and liquids for the past 6 months. He also complains of regurgitation of undigested food, especially at night. On examination, he is not in distress. A barium swallow reveals a "bird-beak" appearance at the lower esophagus. What is the most likely diagnosis?
- Gastroesophageal reflux disease (GERD)
 - Achalasia cardia
 - Peptic ulcer disease
 - Esophagitis
9. A 55-year-old female presents to the emergency department with complaints of lightheadedness, dizziness and syncope. She states that she is having trouble climbing the stairs at home. On leading questions, she denies chest pain, cough or other symptoms. Vital recordings were in normal limits. ECG shows PR interval of 0.22 sec. What is the probable diagnosis?
- 1-degree heart block
 - 2-degree heart block
 - Wolff-Parkinson-White (WPW) Syndrome
 - Wenckebach phenomenon

10. A 68-year-old obese male patient was brought to emergency by ambulance. He complained of sharp, stabbing pain in the center of the chest and discomfort in the left shoulder. He had a previous history of episodes of chest discomfort which he described as chest heaviness. Moderate to heavy exertion were the aggravating factors, mild dyspnoea, & palpitation. ECG shows T wave inversion in V5, V6 & V7
- Acute Myocardial Infarction
 - Sprain of left Shoulder
 - Cervical spondylosis
 - Gastritis
11. A 70-year-old male patient was brought to emergency by ambulance. He complained of sharp, stabbing pain in whole of the chest, sweating. On examination his right radial artery pulse was felt but not the left. What is probable diagnosis? Person is known smoker
- Acute Myocardial Infarction
 - Gastritis
 - Dissecting aortic aneurysm
 - Muscular pain
12. Trained Athletes have lower pulse rate when compared to ordinary public, yet they have more endurance & less blood pressure when compared to them because of following reason except
- High stroke volume
 - Increase ventricular mass
 - High blood pressure
 - Normal blood pressure
13. A patient with a traumatic brain injury experiences increased intracranial pressure, leading to cerebral ischemia. Which reflex mechanism responds to the decrease in cerebral perfusion pressure by increasing systemic blood pressure?
- Brainbridge reflex
 - CNS ischemic response
 - Baroreceptor reflex
 - Chemoreceptor reflex
14. A 40-year-old male presents to the emergency department with a complaint of severe left-sided flank pain radiating to lower abdomen, occasion to testicles that began suddenly 3 hours ago. The pain radiates to his groin and is associated with nausea and vomiting. No history of fever or similar history in the past. Urine examination reveals plenty of RBC & proteins. What is most probable diagnosis?
- Urinary tract infection
 - Gastritis
 - Pancreatitis
 - Renal stones obstruction (renal colic)

15. A 65 old male patient came to emergency department with a chief complaint of unable to pass urine since early morning. On examination distention of lower abdomen present, tenderness present in supra pubic region. The clinician has done per rectal examination for diagnosis. Most probable diagnosis
- Benign prostrate hyper trophy**
 - Urinary tract infection
 - Renal stones obstruction
 - Impacted stools
16. A 22-year-old female presents with a history of prolonged vomiting for the past three days. Her laboratory tests show a pH of 7.48, PaCO₂ of 48mmHg, and HCO₃⁻ of 34mEq/L. What is the most likely acid-base disorder?
- Metabolic acidosis
 - Metabolic alkalosis**
 - Respiratory acidosis
 - Respiratory alkalosis
17. During a physical exam, a physician hears wheezing upon auscultation of a patient's chest. Which of the following conditions is likely to cause increased airway resistance?
- Pulmonary fibrosis
 - Chronic obstructive pulmonary disease (COPD)**
 - Pulmonary embolism
 - Normal lung function
18. A 65-year-old male with a history of chronic obstructive pulmonary disease (COPD) presents with worsening shortness of breath and fatigue. Arterial blood gas analysis shows a pH of 7.30, PaCO₂ 55mmHg, and PaO₂ of 60mmHg. Which of the following best explains the decreased oxygen affinity of hemoglobin in this patient?
- Increased 2,3-bisphosphoglycerate (2,3-BPG) levels
 - Decreased carbon dioxide levels
 - Increased hydrogen ion concentration**
 - Decreased temperature
19. A mountaineer experiences difficulty breathing and fatigue while climbing to high altitudes. What physiological adaptation occurs in response to hypoxic hypoxia at high altitudes?
- Increased oxygen delivery to tissues
 - Decreased respiratory rate and depth
 - Enhanced production of red blood cells**
 - Expansion of lung volume
20. A swimmer experiences sudden submersion in water and subsequent loss of consciousness. What is the most likely cause of death in this scenario?
- Drowning**
 - Asthma exacerbation
 - COPD exacerbation
 - Hypoxia

Marks division in above question paper

TOPIC	THEORY MARKS DISTRIBUTION	E	R	A	SN	MCQ'S	AETCOM	TOTAL
HEMATOLOGY	18	10	3	5		5		23
CARDIO VASCULAR SYSYTEM	18		3	5	10	5		23
RESPIRATORY SYSTEM	13		3	5	5	4		17
GASTRO INTESTINAL SYSTEM	13		3	5	5	3		16
RENAL PHYSIOLOGY	13		3		10	3		16
AETCOM	5						5	5

Essay:

(1*10 =10)

1. What are the functional divisions of cerebellum? What are the various cells of cerebellum & explain its circuit? Mention the functions of cerebellum and explain cerebellar lesions

(2+4+2+2)

Reasoning questions:

(5*3 =15)

2. During the outbreak of cholera in west Bengal a doctor call Dilip Mahalanabis treated successfully with simple combination of water salt & sugar.
 - a. Explain the physiology behind it and name it.
 - b. Also mention the other place where it takes place.
3. Testis are placed outside the abdomen for temperature control.
 - a. What mechanism & structure maintains uniform temperature irrespective of outside temperature.
 - b. At what other places in the body does this takes place?
4. A 37-year old male patient was brought to emergency outpatient department with pain in chest radiating to left arm and left little finger. On examination the treating doctor finds the patient has myocardial infarction.
 - a. What is the phenomenon of pain radiating from chest to left little finger called?
 - b. Explain the possible theories for the above phenomenon with other examples.
 - c. Trace the pain pathway
5. Celebrities and Army officers look younger even in their sixties without wrinkles on their faces. It is said that they injection regularly.
 - a. What probable injection are they advised?
 - b. Explain the physiological basis behind it with a neat and labelled supporting diagram
6. People diagnosed with hypothyroidism are advised to take thyroxine tablets early morning. Explain the physiology basis of it & action of thyroid hormones

Applied questions:

(4*5=20)

7. A 50 years male complain of increase in hunger, thirst and frequency of urination for past 3 months.
His pulse is 84 /min, BP 140/90 mmHg, Fasting plasma glucose 200 mg/dL, Blood urea - 24 mg/dL & Plasma creatinine - 1.2 mg/Dl
 - a. What is your provisional diagnosis?
 - b. Identify the hormone abnormality.
 - c. Mention its source & Explain the physiological action of the hormone

8. A 65-year-old male presents with difficulty in initiating movements has shuffling gait. On examination, you observe pill-rolling, tremors, bradykinesia, and rigidity. He also exhibits mask like face
- What is the most likely diagnosis?
 - Explain the physiology basis of the above condition along with a neat & labelled diagram
9. A 13yr old girl came to general outpatient department with chief complaint of headache since last 3 weeks. The physician examined her and sent her to ophthalmology outpatient department after find out that she was finding difficult to read when she sits in last bench of class and find easy to read when she sits in first bench.
- Identify the vision abnormality
 - Mention other possible vision abnormalities and explain them
 - What lens would be prescribed by the ophthalmologist to the girl & why?
10. Explain why a couple must not have unprotected sex till 3 to 4 months after vasectomy?

Short notes questions

(7*5=35)

- Define action potential. Draw a neat & labelled diagram of it & explain the causes of the phases.
- Define sarcomere. Explain mechanism of skeletal muscle contraction with supporting diagram.
- Explain The Synthesis, Secretion & Mechanism of Action of Thyroid Hormones
- List the hormones secreted by anterior pituitary gland & explain the action of growth hormones
- Explain the phases of menstrual cycle, along with structural and hormonal changes with supporting diagram
- With the help of diagram explain upper & lower motor neuron lesion. Mention the differences between them
- In a doctor patient relationship, what are duties & rights of a patient?

MCQ'S

1. A 30-year-old woman is diagnosed with cystic fibrosis, a condition known to affect the transport of chloride ions across epithelial cell membranes. Which of the following best describes the type of transport involved in moving chloride ions in this condition?
 - a. Passive transport
 - b. Active transport**
 - c. Osmosis
 - d. Facilitated diffusion
2. A researcher is studying the uptake of glucose in intestinal epithelial cells. She notes that glucose is absorbed against its concentration gradient in conjunction with sodium ions. Which of the following best describes this type of transport?
 - a. Primary active transport
 - b. Secondary active transport**
 - c. Simple diffusion
 - d. Facilitated diffusion
3. A researcher is studying the effects of a new drug on cancer cells. The drug is found to activate caspases leading to cell death in cancer cells. Which of the following processes is most likely being induced by this drug?
 - a. Necrosis
 - b. Apoptosis**
 - c. Autophagy
 - d. Senescence
4. A 25-year-old woman presents with fluctuating muscle weakness, particularly noticeable in the evenings. She reports difficulty in keeping her eyelids open and experiences double vision. On examination there is ptosis and weakness of extraocular muscles. Which of the following is most likely diagnosis?
 - a) Myasthenia gravis**
 - b) Multiple sclerosis
 - c) Guillain-Barré syndrome
 - d) Lambert – Eaton Myasthenic syndrome
5. A 45-year-old male presents with muscle weakness and fatigue. Laboratory tests reveal hypokalemia. The physician suspects a disorder affecting the active transport of potassium ions across cell membranes. Which of the following transport mechanisms is most likely impaired in this patient?
 - a. Sodium-potassium pump**
 - b. Facilitated diffusion
 - c. Simple diffusion
 - d. Endocytosis

6. A 12 yr. old child presents with short stature delayed skeletal maturation and proportionate body parts. The child's parents are of average height. Which of the following conditions is most likely responsible for the child's presentation? Based on the scenario, what is the most likely diagnosis for the child's condition?
- a. Acromegaly
 - b. Gigantism
 - c. Dwarfism**
 - d. Hypothyroidism
7. A 45yr old adult presents with enlargement of hands feet and facial features. The patient reports a gradual increase in shoe and ring size over past few years. Imaging studies reveal a pituitary adenoma. Which of the following conditions is most likely causing patient's symptoms?
- a. Dwarfism
 - b. Gigantism
 - c. Acromegaly**
 - d. Hypopituitarism
8. A 9yr old child presents with accelerated growth increased height and advanced bone age. The child parents are both of average height. Which of the following conditions is considered as diagnosis?
- a. Hypothyroidism
 - b. Cushing syndrome
 - c. Gigantism**
 - d. Dwarfism
9. A 45 yrs. old female presents with weight gain fatigue and cold intolerance. Lab test revealed elevated TSH levels and low free T4 levels. What is the most likely diagnosis?
- a. Hyperthyroidism
 - b. Graves disease
 - c. Hashimotos thyroiditis
 - d. Hypothyroidism**
10. A 30 yr old male presents with weight loss palpitations and tremors. Lab test reveals low TSH levels and elevated free T4 levels. What is the most likely diagnosis?
- a. Hypothyroidism
 - b. Hashimotos thyroiditis
 - c. Hyperthyroidism**
 - d. Thyroid storm

11. A 40yr old man employed as road construction worker for nearly 20 yrs went to his clinician to report that he recently began to notice difficulty in hearing during normal conversations. A weber test showed that sound is from vibrating tuning fork was localized to right ear. A schwabach test showed that bone conduction was below normal. A rhinne test showed that both air and bone conduction were abnormal but air conduction lasted longer than bone conduction. The diagnosis was
- Conduction deafness in right ear
 - Sensorial deafness in right ear
 - Conduction deafness in left ear
 - d. Sensorineural deafness in left ear**
12. A medical student is studying autonomic ganglia she studied the effects of two drugs on the activity of post ganglionic neuron. Drug A induced an EPSP in post ganglionic neuron and Drug B blocked EPSP produced by electrical stimulation of preganglionic nerve. Drug A and B might be the following drugs respectively
- Glutamate and Glycine
 - Nicotine and Atropine
 - Strychnine and Atenolol
 - d. Nicotine and trimethaphan**
13. A patient complaint that he burnt his hand on his portable heater but did not feel the stimulus. The patient also notes that he has difficulty using either hand. Note that the patient has no response to pin -prick of skin of either hand, arm, shoulder, & bilateral wasting of intrinsic hand muscles. The doctor suspects patient has
- Syringomyelia
 - b. Multiple Sclerosis**
 - Poliomyelitis
 - Brown -Sequerd Syndrome
14. Patient has suffered trauma to the spinal cord during a period of spinal shock. What might you expect to observe in the patient?
- Hyperactive reflexes below the lesion
 - b. Flaccid weakness below the lesion**
 - A spastic bladder
 - A clasp – knife reflex
15. During a medical examination a doctor taps the knee of a patient and the leg jerks involuntary. Which aspect of the reticular formation is involved in this reflex activity?
- Sensory pathway
 - Autonomic control
 - c. Descending motor pathways**
 - Ascending Sensory pathways

16. A 45-year-old man with the BMI 32kg/m² complains of snoring, morning headaches and excessive day time sleepiness. He has a history of hypertension and type 2 diabetes. His wife reports that he often stops breathing for a few seconds during sleep and then gasps for air. What is the most likely type of sleep apnea affecting this man?
- a. **Obstructive sleep apnea (OSA)**
 - b. Central sleep apnea (CSA)
 - c. Mixed sleep apnea (MSA)
 - d. Cheyne stokes breathing (CSB)
17. A 6-month old baby is placed in prone position when the baby 's head is turned to one side the arm & leg on that side extend while the opposite side flexes. What reflex is being exhibited by the baby in this situation?
- a. Tonic labyrinthine reflex
 - b. Neck righting reflex
 - c. **Tonic neck reflex**
 - d. Labyrinthine reflex
18. A 65-year-old woman was diagnosed with dry age related macula degeneration with a foveal sparing scotoma. The fovea of eye
- a. Has a lowest light threshold
 - b. Contains only red & green cones
 - c. **Is the region of highest visual acuity?**
 - d. Contains only rods
19. A 40-year-old man employed as a road construction worker for nearly 20 years went to his clinician to report that he recently began to notice difficulty hearing during normal conversations. A weber test showed that sound from a vibrating tuning fork was localised to the right ear. A Schwabach test showed that bone conduction was below normal. A Rinne's test showed that both air & bone conduction was abnormal but air conduction lasted longer than bone conduction. The diagnosis was:
- a. Conduction deafness in the right ear
 - b. Sensorial Deafness in right ear
 - c. Conduction deafness in left ear
 - d. **Sensorineural deafness in left ear**
20. Which nerve is primary responsible for transmitting the taste sensation from the posterior 1/3rd of the tongue.
- a. Facial nerve (CN VII)
 - b. **Glossopharyngeal nerve (CN IX)**
 - c. Trigeminal nerve (CN V)
 - d. Vagus nerve (CN X)

Marks division in above question paper

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GENERAL PHYSIOLOGY MUSCLE & NERVE PHYSIOLOGY	16		6		10	4		20
ENDOCRINE PHYSIOLOGY	20		3	5	10	5		23
REPRODUCTIVE PHYSIOLOGY	10		3	5	5			13
NEUROPHYSIOLOGY, SPECIAL SENSES & AUTONOMOUS NERVOUS SYSTEM	29	10	3	10	5	11		39
AETCOM	5						5	5