The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

a) Vitamin…….. related to prothnompin time is:

i) A ii) D iii) E iv) K.

b) Rh negative mother:

i) Has 'D' antigen in blood. ii) May have antibody in blood.

iii) May develop Rh immunization during first pregnancy. iv) All the statements are incorrect.

c) The cells of 'packed cell volume' are:

i) White blood cells. ii) Red blood cells. iii) Platelets. iv) All of these.

d) Fouchet test is done to detect:

i) Bilirubin in urine. ii) Urobilinogen in urine. iii) Blood in urine. iv) Blood in stool.

e) % of Nacl in normal saline is:

i) 0.09 ii) 0.85 iii) 1.0 iv) 0.8

2. Write short notes on ***any four*** of the following: 4 x 5

a) Biochemical markers of myocardial infarction.

b) Complications of wound healing.

c) Metaplasia.

d) Differences between hyperemia and congestion.

e) ABO system of blood grouping.

3. Answer ***any one*** of the following :

a) Define thrombosis and embolism. What are the different types of embolism? What are the fates of a thrombus? 2+2+2+4

b) Define oedema. What are the differences between transudate and exudate? 2+8

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The West Bengal University of Health Sciences
1st BMLT Examination, 2016

Time: 3 hrs **Subject: Pathology & Microbiology** **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

5 x 1

1. Tick the correct answer :

a) Intact RBC is found in urine in :
i) Hematuria. ii) Hemoglobinuria. iii) Hemosiderinuria. iv) Hemolysis.

b) Calor, Rubor, Dolor , Tumor are the features of :
i) Necrosis. ii) Apoptosis. iii) Acute inflammation. iv) Chronic Inflammation.

c) Ascites is collection of fluid in :
i) Peritoneal cavity. ii) Pleural cavity. iii) Pericardial cavity. iv) Synovial cavity.

d) Healing of wound by same type of tissue is :
i) Repair. ii) Regeneration. iii) Remodelling. iv) All of these.

e) Microcytic hypochromic anaemia is due to deficiency of :
i) Vitamin B. ii) Vitamin C. iii) Folic acid. iv) None of these.

4 x 5

2. Write short notes on ***any four*** of the following:
a) Oral G.T.T.
b) Preparations of stool for microscopic examination.
c) Enterohepatic circulation of urobilinogen.
d) Granuloma.
e) Decompression sickness.

3. Answer ***any one*** of the following :

a) Define Healing. Describe briefly the difference between the Healing by primary intension & Healing by secondary intension? What are the complications of wound healing? 2+6+2

b) Define Necrosis. Describe briefly the different types of Necrosis with suitable examples. 2+8

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The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

10 x 1

1. Tick the correct answer :

a) Exudative pleural effusion is associated with :
   i) Bacterial pneumonia. ii) Congestive cardiac failure.
   iii) Cirrhosis of liver. v) None of the above.

b) Blood borne metastasis is seen in all except :
   i) Lung. ii) Liver. iii) Brain. iv) Heart.

c) Atrophy means :
   i) Increase in size of the cell. ii) Decrease in size of cell.
   iii) Increase in both size and number of cells. iv) Decrease in both size and number of cells.

d) Caseous necrosis is seen in :
   i) Fat embolism. ii) Thromboembolism.
   iii) Air embolism. iv) Amniotic fluid embolism.

e) Blood for an RBC count must be prepared from :
   i) Citrate blood. ii) EDTA blood. iii) Clotted blood. iv) None of these.

f) The clotting factor released from damaged tissue is :
   i) Prothrombin. ii) Tissue thromboplastin. iii) Fibrin. iv) Thrombin.

g) The most common cause of anaemia is :
   i) Atrophy. ii) Hyperplasia. iii) Metaplasia. iv) Dysplasia.

h) ESR estimation is done by :
   i) Wintrobe's tube. ii) Haemocytometer. iii) Colorimeter. iv) Test tube.

i) In blood bank blood is stored at :
   i) 4-5^{0}c. ii) 37^{0}c. iii) -20^{0}c. iv) 20^{0}c.

j) The white/yellowish appearance of PAS is caused by :
   i) RBC. ii) Neutrophil. iii) Basophil. iv) Eosinophil.

2. Write short notes on ***any two*** of the following: 2 x 5

a) Cardinal signs of inflammation. b) Laboratory diagnosis of myocardial infarction.

c) Morphological classification of anemia.

3. Answer ***any two*** of the following :

a) Define thrombosis. Describe briefly the pathogenesis of thrombosis? What are its possible fates? 2+5+3

b) Define Necrosis. Describe briefly the different types of Necrosis with suitable examples. 2+8

c) What is meant by jaundice? What is obstructive jaundice? Write down its causes. Briefly describe the laboratory diagnosis of jaundice. 1+1+2+6

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) Intact RBC in found is urine is:
i) Haematuria.. ii) Haemoglobinuria. iii) Hemosiderinuria iv) Haemolysis.

b) Caspases are involved in:
i) Apoptosis. ii) Pinocytosis. iii) Cell signaling. iv) Cell injury.

c) Diabetic foot is an example of :
i) Dry gangrene. ii) Wet gangrene. iii) Gas gangrene. iv) Necrotising inflammation.

d) Which is false about primary union?
i) Lead to linear scar. ii) Clean margins.
iii) Uninfected. iv) Exuberant granulation tissue to fill the gap.

e) Transudate differs for exudate in having the following except:
i) No inflammatory cells. ii) Low Glucose content.
iii) Low Protein content. iv) Low specific gravity.

f) In iron deficiency anaemia, TIBC is:
i) Low. ii) Normal. iii) High. iv) Borderline.

g) Erythropoietin is produced by:
i) Liver. ii) Lungs. iii) Bone marrow. iv) Kidney.

h) The most frequent site of venous thrombus is:
i) Brain. ii) Kidney. iii) Leg. iv) Heart.

i) If the lower esophagus shows columnar cell in change is:
i) Dysplasia. ii) Hyperplasia. iii) Metaplasia. iv) Careinomd.

j) Enzymatic digestion is the predominant event in the following lysis of necrosis :
i) Coagulative Necrosis. ii) Fat Necrosis.
iii) Liquefactive Necrosis. iv) Caseous Necrosis.

2. Write short notes on *any two* of the following: 2 x 5
a) Oral glucose tolerance test. b) Hashimoto's disease.
c) Difference between transudate & exudates.

3. Answer *any two* of the following :
a) Define shock. Discuss the different types of shock. Discuss the pathogenesis of septic shock. 2+4+4
b) Define hyperemia & congestion. What is the difference between them? What are the causes of cell injury? 4+3+3
c) How do you perform physical Exam of urine (Mention the normal & abnormal findings.)? How will you proceed for examination of urine? 6+4

P. T. O.

The West Bengal University of Health Sciences
1st BMLT November, 2019 Examination

2019

Subject: Pathology & Microbiology

Time: 3 hrs

Full Marks:

Use separate answer script for each group
Attempt all questions

Group – A

Tick the correct answer :

a) Metaplasia can occur in:
i) Squamous cells. ii) Columnar cells. iii) Connective tissues. iv) All of them.

b) Caseous nacrosis is seen in:
i) Myocardial infarction. ii) Necrosis in brain. iii) Tuberculosis. iv) CA Breast.

c) Cell death does not occur in:
i) Necrosis. ii) Steatosis. iii) Fixation. iv) Apoptosis.

d) Which of the following is a cell of chronic inflammation?
i) Macrophage. ii) Lymphocyte. iii) Plasma cell. iv) All of them.

e) Pyothorax means presence of what in pleural cavity?
i) Water. ii) Blood. iii) Air. iv) Pus.

f) Septic shock in caused by:
i) Exotoxin. ii) Endotoxin. iii) Ingested chemical. iv) Heart failure.

g) In Mantaux test, tuberculin is injected:
i) Subcutaneously. ii) Intradermally. iii) Intramuscularly. iv) Intravenously.

h) Protein in urine can be detected by:
i) Heat and Acetic acid test. ii) Heat and Nitric acid test.
iii) Heat and Sulphuric acid test. iv) Benedicts test.

i) A solution strength of which is known, is called:
i) Saturated solution. ii) Standard solution.
iii) Colloidal solution. iv) Normal solution.

j) Hb content of a single RBC is indicated by:
i) PCV. ii) MCV. iii) MCH. iv) None of them.

2. Write short notes on ***any two*** of the following:
a) Leishman's Stain.
b) Biochemical markers of myocardial infarction.
c) Morphological classification of anaemia.

3. Answer ***any two*** of the following :
a) Define infarction. What are the organs commonly suffer from infarction? What are the different types of infarction? 2+3+5
b) Name the organisms responsible for tuberculosis. How you will diagnose a case of tuberculosis of lung in the laboratory? 2+8
c) What is MCV? What are the parameters required for its calculation? Show with example how you calculate MCV. How you describe the RBC with different values of MCV. 2+2+3+3

P. T. O.

The West Bengal University of Health Sciences
1st BMLT February-March, 2021 Examination

Subject : General Pathology, Clinical Pathology and Haematology

Time: 3 hrs. **Full Marks: 100**

*Attempt **all** questions*

1. Tick the correct answer : 20 x 1

a) Exudative pleural effusion is associated with :
i) Bacterial pneumonia. ii) Congestive cardiac failure.
iii) Cirrhosis of liver. iv) None of these.

b) Atrophy can be caused by all except :
i) Disuse. ii) Degeneration. iii) Regeneration. iv) Pressure.

c) Hyperplasia can be seen in :
i) Brain. ii) Heart. iii) Skeletal muscle. iv) Breast.

d) Jaundice can be all except :
i) Pre-hepatic. ii) Post-hepatic. iii) Hepatic. iv) Cardiac.

e) Systemic effects of inflammation include all except :
i) Fever. ii) Raised ESR. iii) Leukocytosis. iv) All.

f) Atrophy means :
i) Increase in cell size. ii) Decrease in cell size.
iii) Increase in both size & number of cells. iv) Decrease in both size & number of cells.

g) Thrombocytopenia causes :
i) Prolonged bleeding time. ii) Prolonged clotting time.
iii) Increased prothrombin time. iv) Increased APTT.

h) Normal adult haemoglobin contains :
i) 2α & 2β chains. ii) 2β & 2δ chains. iii) 1α & 1μ chain. iv) None of the above.

i) Rothera's test is done for :
i) Ketonuria. ii) Oliguria. iii) Glycosuria. iv) None of these.

j) Benedict's test for sugar is :
i) Qualitative test. ii) Quantitative test.
iii) Semiquantitative test. iv) Specific test for glucose.

k) Anemia can be seen in deficiency in all except :
i) Iron. ii) Calcium. iii) Vit B12. iv) Folic acid.

l) Increased ESR is seen in all except :
i) Multiple Myeloma. ii) Anemia. iii) Polycythemia vera. iv) Tuberculosis.

m) Microcytosis means :
i) Increase in the size of RBC. ii) Decrease in the size of RBC.
iii) Change in the shape of RBC. iv) None of the above.

n) EDTA containing vacutainer cap is :
i) Red. ii) Yellow. iii) Purple. iv) Grey.

o) TSH is secreted from :
i) Thyroid. ii) Pituitary. iii) Kidney. iv) Adrenal gland.

p) Anticoagulant used in ESR determination :
i) 3.8% Na citrate: blood = 1:9. ii) 3.8% Na citrtre: blood = 1:4.
iii) 3.4% Na citrate: blood = 1:4. iv) 5.6% Na citrate: blood = 1:4.

q) Monocytosis can be found in :
i) Whooping cough. ii) Acute haemorrhage. iii) Burn. iv) Tuberculosis.

r) Haemoglobin production is regulated by :
i) LH. ii) FSH. iii) TSH. iv) Erythropoietin.

s) Toxic granules are present in :
i) Neutrophil. ii) Eosinophil. iii) Basophil. iv) Lymphocytes.

t) Macrocytic RBCs are found in all except :
i) Megaloblastic anemia. ii) Iron deficiency anemia.
iii) Myelodysplastic syndrome. iv) Liver disease.

5 x 2

2. Answer the following :
a) Define neoplasia. b) Causes of obstructive jaundice. c) Define granuloma.
d) Causes of thrombocytopenia e) Cardinal signs of acute inflammation.

6 x 5

3. Write short notes on ***any six*** of the following :
a) Laboratory diagnosis of myocardial infarction.
b) Abnormal constituents of urine.
c) Hb electrophoresis.
d) Total WBC count.
e) Laboratory diagnosis of jaundice.
f) Septic shock.
g) Hyperthyroidism.
h) Urine dipstick.

4. Answer ***any one*** of the following :
a) Write down morphological classification of anemia. Describe the laboratory investigations of Megaloblastic Anemia. 2+8

b) Define thrombosis. Describe briefly the pathogenesis of thrombosis. What are its possible fates? 2+5+3

5. Answer ***any two*** of the following :
a) Describe the different processes of urine collection & preservation. What do you mean by urinary cast? What are the different types of urinary casts? 5+2+8

b) Write down the composition of blood in details. Describe the important functions of blood & its components. 5+10

c) Define necrosis. Describe briefly the different types of necrosis with suitable examples. 2+10+3

The West Bengal University of Health Sciences
1st BMLT November - December, 2022 Examination

Subject : General Pathology, Clinical Pathology and Haematology

Time: 3 hrs. **Full Marks: 100**

Attempt all questions

1. Tick the correct answer : 20 x 1

a) Presence of bile pigment in urine sample can be determined by which method?
i) Benzidine test. ii) Benedict's test. iii) Rothera's test. iv) Fouchet's test.

b) SGPT also known as :
i) AST. ii) ALT. iii) ALP. iv) GT.

c) Pulmonary embolism is the cause of :
i) Acute cardiac failure. ii) Chronic cardiac failure.
iii) Infective endocarditis. iv) Angina pectoris.

d) Bence jones protein can be detected in :
i) Whole blood. ii) Serum. iii) Peritoneal fluid. iv) Urine.

e) Megaloblastic anemia is due to deficiency of :
i) Folic acid. ii) Iron. iii) Vitamin A. iv) Vitamin C.

f) Reticulocyte can be observed after staining with :
i) Leishman stain. ii) PAS stain. iii) New Methelene Blue. iv) Perl stain.

g) Platelet count is most important in :
i) Malaria. ii) Leishmania. iii) Tuberculosis. iv) Dengue.

h) Grave's disease is the result of :
i) Hyperthyroidism. ii) Hypothyroidism.
iii) Increase of Blood pressure. iv) Increase of blood sugar level.

i) Diabetes mellites is a disease of :
i) Liver. ii) Pancreas. iii) Blood. iv) Heart.

j) Hypoxia indicates :
i) Increase of pO_2. ii) Decrease of pO_2. iii) Decrease of pCO_2. iv) All of these.

k) Which is type of gangrene noticed in Diabetic foot?
i) Gas. ii) Dry. iii) Wet. iv) Internal.

l) The apoptosis is classified :
i) Accidental cell death. ii) Programmed cell death.
iii) Non-programmed cell death. iv) Mitotic cell death.

m) ESR estimation is done by which method?
i) Hemocytometer. ii) Test tube. iii) Wintrobe's tube. iv) Colorimeter.

n) CRP test is the indicator of :
i) Inflammation due to an infection. ii) Rheumatoid arthritis.
iii) Risk of heart disease. iv) All of these.

o) Chyluria makes the urine sample :
i) Color less. ii) Milky-white. iii) Yellow. iv) Brown.

p) Ammoniacal urine indicates :
i) UTI with *Proteus*. ii) UTI with *E. coli*.
iii) UTI with no specific bacteria. iv) None of these.

q) Which is not an example of mononuclear cell?
i) Macrophages. ii) Neutrophils. iii) Lymphocytes. iv) Plasma cells.

r) Haemoglobin electrophoresis is required :
   i) Intact RBC. ii) Haemolysate. iii) Blood serum. iv) Blood plasma.

s) Anaplasia is seen in :
   i) Benign tumor. ii) Malignant tumor. iii) Apoptosis. iv) Necrosis.

t) Arneth count indicates :
   i) Differential count of WBC.
   ii) Differential maturation of lymphocytes.
   iii) Differential count of lobes of neutrophils.
   iv) Differential count of B-lymphocytes + T-lymphocytes.

2. Answer the following : 5 x 2
   a) Application of Leishman stain.
   b) Use of Wintrobe's tube.
   c) Symptoms of obstructive jaundice.
   d) Write on the selection of blood vessel for the blood drawning.
   e) Application of Jamshidi needle.

3. Answer ***any six*** of the following : 6 x 5
   a) Systemic inflammatory response syndrome (SIRS).
   b) PCV
   c) Hyperthyroidism.
   d) Leukopenia.
   e) Oedema.
   f) Metastases.
   g) Cellular cast in urine.
   h) Phlebotomy.

4. Answer ***any one*** of the following :
   a) Classify blood cells. Write a short note on "neutropenia" and its clinical significance". 5+5
   b) Classify anaemia. Which type of anaemia is most common in our country? How do you differentiate the different types of anaemia from a peripheral smear? 3+2+5

5. Answer ***any two*** of the following :
   a) Classify necrosis. Pathogenesis of coagulative necrosis. Write a brief note on Gangrene. 3+6+6
   b) Make a chart of colour indices of urine sample with its pathological significance. How will you qualitatively estimate the sugar in urine sample? 6+9
   c) Briefly describe the Oral glucose tolerance test and make the pathological significance of this test. Briefly describe the laboratory diagnosis of Thalassemia. 8+7

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The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination
Subject : General Pathology, Clinical Pathology and Haematology

Time: 3 hrs. **Full Marks: 100**

Attempt all questions

1. Tick the correct answer : 20 x 1

a) Deprivation of oxygen is :
i) Anoxia. ii) Hypoxia. iii) Asphyxia. iv) Necrosis.

b) Hyperplasia is seen in cells which are :
i) Capable of dividing. ii) Not capable of dividing. iii) Atrophic. iv) Degenerated.

c) In body builders muscles are :
i) Hyperplastic. ii) Atrophic. iii) Hypertrophic. iv) Degenerated.

d) Ascites is collection of fluid in :
i) Pleural cavity. ii) Joint space. iii) Peritoneal cavity. iv) All are correct.

e) Commonest cause of inflammation is :
i) Physical. ii) Chemical. iii) Immunological. iv) Microbiological

f) Healing of wound by same type of tissue is :
i) Repair. ii) Regeneration. iii) Degeneration. iv) Remodelling.

g) Normocytic normochromic anaemia is seen in :
i) Acute hemorrhage. ii) Iron deficiency.
iii) Chronic hemorrhage. iv) Vit B_{12} deficiency.

h) The cells of P.C.V. are :
i) WBC. ii) RBC. iii) Platelet. iv) All of them.

i) Which one of the following is not an abnormal hemoglobin?
i) HbC. ii) HbD. iii) HbE. iv) HbF.

j) For coagulation studies blood : citrate is :
i) 4:1. ii) 1:4. iii) 9:1. iv) 1:9.

k) Avarage hemoglobin content a single RBC is :
i) PCV. ii) MCV. iii) MCH. iv) None of them.

l) Leucopenia commonly occur due to decrease in number of :
i) Lymphocyte. ii) Neutrophil. iii) Basophil. iv) Monocyte.

m) Platelet count fluid is a solution of :
i) Ammonium carbonate. ii) Ammonium oxalate.
iii) Ammonium chloride. iv) Calcium oxalate.

n) For measurement of protein, best urine sample is :
i) 24 hrs urine. ii) Midday urine.
iii) Mid stream urine. iv) First morning sample of urine.

o) In chyluria appearance of urine is :
i) Milky white. ii) Cherry red. iii) Dark blue. iv) Light orange.

p) Presence of which of the following in urine is called cylindriuria?
i) Pus cell. ii) RBC. iii) Cast. iv) Crystal.

q) In Benedicts test blue colour may be changed to :
i) Green. ii) Yellow. iii) Brick red iv) All are correct.

r) Heat and acetic acid test is positive in :
i) Glycosuria. ii) Ketonuria. iii) Hemoglobinuria. iv) Albuminuria.

s) Low and fixed specific gravity of urine is :
i) 0011. ii) 1010. iii) 1001. iv) 1100.

t) With addition of acetic acid which crystal in urine get desolved with effervescence :
i) Calcium oxalate. ii) Tripple phosphate.
iii) Calcium carbonate. iv) Uric acid.

Time: 3 hr

2. Write very short notes on : 5 x 2
a) Classification of neoplasia.
b) Cellular changes in necrosis.
c) Inference of Rothera's test.
d) Reducing substances in urine.
e) Complications of venepuncture.

3. Answer ***any six*** of the following : 6 x 5
a) Cells of chronic inflammation.
b) Pathogenesis of septic shock.
c) Types of cell injury.
d) Urobilinogen and bile salts.
e) Plan for separation of different ketone bodies in urine.
f) RBC in urine.
g) Factors influencing sedimentation of RBC.
h) Estimation of hemoglobin by acid hematin method.

4. Answer ***any one*** of the following :
a) A 20 year old male came to OPD with yellow discolouration of eye. 5+5
i) Discuss the metabolism of the substance responsible for yellow discolouration.
ii) What are the differences between two forms of this substance?
b) A 40 year old male, smoker, complained of acute pain on left side of chest radiating to medial side of left arm. 2+8
i) What is the probable diagnosis?
ii) Discuss about bio-chemical markers of this condition.

5. Answer ***any two*** of the following :
a) Define acute inflammation. What are the cardinal signs of acute inflammation (Latin & English)? Explain the pathogenesis of the cardinal signs. 2+5+8
b) What are the stages of ESR? Discuss about the absolute values of red blood cell indices. 7+8
c) Enumerate the proteins those may be found in urine indicating their sources. Describe the procedure of estimation of total protein in urine. 7+8

2021

pathology

2) 5×2=10

a) The action of EDTA
b) Describe different ways which a cell can respond to non-lethal cell damage. Imp - Neoplasia
c) write the use of sodium citrate in the laboratory.
d) what are agranulocyte.
e) write in short types of Anemia. (2021)

3) 6×5=30

a) write the development of leucocytes.
b) Malaria blood examination.
c) Hyperplasia and Hypertrophy
d) Ascites and SAAG
e) what are the functions of blood?
f) How can you do Leishman's staining method?
g) what can Haemolytic Anaemia explain?
h) CSF in pyogenic meningitis.

4) a) Describe diagrammatically about WBC, DLC count. (5+5) 1×10=10
b) outline the causes and sequential events in inflammation.

5) a) Alcohol consumption can damage liver cells. In what different ways a cell can respond to such injuries which are not lethal? 2×15=30 (5+5)
b) A kidney cancer patient presented with a lung shadow in x-ray chest, what do you suspect? How tumors are spread to body?
c) Inflammation is beneficial process of our body. how do you justify?

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The West Bengal University of Health Sciences
1st BMLT August, 2025 Examination

Subject : General Pathology, Clinical Pathology and Haematology

Time: 3 hrs. **Full Marks: 100**

Attempt all questions 20 x 1

1. Tick the correct answer :

a) Which is a microcytic anemia?
i) Iron deficiency. ii) B12 deficiency. iii) Aplastic anemia. iv) Hemolytic anemia.

b) What does MCV measure?
i) Hemoglobin in plasma. ii) Size of RBC. iii) WBC count. iv) Shape of RBC.

c) Hb electrophoresis in Thalassaemia trait shows :
i) Increased HbA. ii) Increased HbF. iii) Increased HbC. iv) Normal Hb pattern.

d) Which adaptation is reversible with removal of stimulus?
i) Neoplasia. ii) Atrophy. iii) Dysplasia. iv) Metaplasia.

e) Which type of necrosis is seen in tuberculosis?
i) Coagulative. ii) Liquefactive. iii) Caseous. iv) Fibrinoid.

f) Which is a cardinal sign of inflammation?
i) Fever. ii) Vomiting. iii) Pain. iv) Cyanosis.

g) Platelets are derived from :
i) Erythrocytes. ii) Megakaryocytes. iii) Monocytes. iv) Myeloblasts.

h) Which chemical test is used to detect glucose in urine?
i) Biuret test. ii) Benedict's test. iii) Heat test. iv) Sulfosalicylic acid test.

i) Which urine pigment gives it the yellow color?
i) Biliverdin. ii) Hemoglobin. iii) Urochrome. iv) Myoglobin.

j) Which urinary cast is seen in acute glomerulonephritis?
i) Hyaline. ii) RBC cast. iii) Waxy. iv) Fatty.

k) Chyle in urine gives :
i) Red appearance. ii) Milky appearance. iii) Orange appearance. iv) Brown appearance.

l) Which anticoagulant is used for blood glucose estimation?
i) Heparin. ii) EDTA. iii) Sodium fluoride. iv) Sodium citrate.

m) Which type of jaundice occurs due to hemolysis?
i) Obstructive. ii) Pre-hepatic. iii) Hepatic. iv) Post-hepatic.

n) Unconjugated bilirubin is increased in :
i) Obstructive jaundice. ii) Hepatic jaundice.
iii) Hemolytic jaundice. iv) Dobin Johnson Syndrome.

o) Which test confirms microalbuminuria?
i) Dipstick. ii) Spot urine albumin/creatinine ratio.
iii) Urea test. iv) 24 hr urobilinogen.

p) Heparin acts by inhibiting :
i) Platelet function. ii) Thrombin. iii) Prothrombin. iv) Hemoglobin.

q) Which of the following is an example of hyperplasia?
i) LV hypertrophy. ii) Endometrial thickening.
iii) Smoking-related lung change. iv) Muscle wasting.

P. T. O.

r) Which lab test is used for ovarian cancer detection?
i) CEA. ii) PSA. iii) CA-125. iv) Calcitonin.

s) Ketone bodies in urine indicate :
i) Diabetes mellitus. ii) Hypertension. iii) Malaria. iv) Appendicitis.

t) Which reagent is used in Sahli's method of Hb estimation?
i) HCl (N/10). ii) NaCl. iii) Acetic acid. iv) Sodium hydroxide.

2. Write very short notes on : 5 x 2
a) What is septic shock?
b) Explain the significance of packed cell volume (PCV) in diagnosis of anemia.
c) Describe the significance of granular casts in urine examination.
d) Three common causes of acquired neutropenia.
e) Types of WBC with main function.

3. Answer ***any six*** of the following : 6 x 5
a) Pre-hepatic jaundice.
b) Pernicious anemia.
c) Cellular cast in urine
d) Glycosuria.
e) Describe the cellular changes that occur during the maturation of a proerythroblast into a mature erythrocyte.
f) Explain the difference between coagulative and liquefactive necrosis with respect to causes and tissue examples.
g) Explain the differences between primary and secondary thrombocytopenia with examples.
h) Detection and clinical significance of bile salts and bile pigments in urine.

4. Answer ***any one*** of the following :
a) What is thalassemia? Describe alpha and beta thalassemia in brief. 2+8
b) Describe the procedure for the physical examination of urine. Mention the normal and abnormal findings for color, clarity, volume, odor, pH, and specific gravity. 4+6

5. Answer ***any two*** of the following :
a) Write the vascular and cellular changes of inflammation. 15
b) Describe the diagnostic approach to a patient with suspected anemia :
i) History and clinical features. 3
ii) Role of CBC, RBC indices, and reticulocyte count. 6
iii) Additional tests: iron studies, B12/folate estimation, bone marrow examination. 6
c) Describe the chemical examination of urine for :
i) Protein – principle of heat and sulfosalicylic acid tests, causes of proteinuria. 5
ii) Sugar – Benedict's test, clinical significance, and limitations. 5
iii) Ketone bodies – tests used, conditions causing ketonuria. 5

The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination

Subject : Basics of Human Anatomy and Basics of Human Physiology

Time: 3 Hours **Full Marks: 100**

Anatomy

*Attempt **all** questions*

1. Choose the most appropriate option : 10 x 1

a) Cilliated columnar epithelium is present in :
i) Bile duct & esophagus. ii) Bronchioles & fallopian tubes.
iii) Urethra. iv) Tongue.

b) Heart beat orginates from :
i) SA node. ii) AV none. iii) Bundle of His. iv) Purkinje fibres.

c) Where can we find the pseudostratified epithelium?
i) Ureter. ii) Uterus. iii) Trachea. iv) Brain.

d) The 3rd omentum connects the stomach with _____:
i) Liver. ii) Transverse colon. iii) Spleen. iv) Kidney.

e) Lungs are enclosed within :
i) Perichondrium. ii) Periosteum. iii) Pleural membrane. iv) Pericardium

f) Daily requirement of vitamin D for an adult person is :
i) 1000 IU. ii) 5000 IU. iii) 100-300 IU. iv) 400-600 IU.

g) Who is not the member of paranasal air sinus group?
i) Frontal air sinus. ii) Mastoid air sinus.
iii) Maxillary air sinus. iv) Ethmoid air sinus.

h) Which of the following is correctly matched pair of an organ & muscles present in the organ?
i) Intestine – Striated & involuntary. ii) Heart – involuntary & unstriated smooth muscle.
iii) Thigh – striated & voluntary iv) Upper arm – smooth muscle & fusiform shape.

i) Own DNA is in :
i) Ribosome. ii) Mitochondria. iii) Centriole. iv) Golgi body.

j) Number of chromosome present in secondary oocyte is :
i) 44A + XY. ii) 44A + XX. iii) 22A + XX. iv) 22A + X.

2. Write short notes on ***any four*** of the following : 4 x 5

a) Supports of Uterus. b) Axillary lymph nodes & its importance.
c) Draw & Label nephron. d) Structure of ribosome.
e) Spermatogenesis. f) Basic diagram of neuron.

3. Answer ***any two*** from the following :

a) Classify epithelial tissue & write their situation. State the function of mitochondria. 6+4

b) Describe the "**heart**" under following headings : 2+3+5
i) What are its different chambers?
ii) Where you do find the anatomical base & clinical base of heart?
iii) Give an account of the interior of the right atrium with a diagram.

c) What is podocyte? State the anatomical position of kidney. Describe general arrangement of urinary system. 2+2+6

The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination

Subject : Basics of Human Anatomy and Basics of Human Physiology

Physiology

*Attempt **all** questions*

1. Tick the correct answer : 10 x 1

a) Which of the following endocrine gland is known as 'Master Gland'?
   i) Pineal gland. ii) Hypothalamus.
   iii) Pituitary. iv) Gonads.

b) Granulocytes are :
   i) Acidophils. ii) Lymphocytes. iii) Monocytes. iv) None of these.

c) Asphyxia occurs due to?
   i) Rise in level of CO_2. ii) Fall in level of CO_2.
   iii) Rise of O_2 level. iv) Fall in O_2 level.

d) Name the hormone which takes part in the release of FSH and LH from the anterior pituitary :
   i) Growth hormone. ii) GnRH. iii) Somatostatin. iv) TRH.

e) Name the gland that is located at the base of the throat, just inferior to the laryngeal prominence (Adam's apple) :
   i) Pituitary. ii) Pineal gland. iii) Hypothalamus. iv) Thyroid.

f) The clusters of cells in the pancreas that produce hormones are the :
   i) Nodules. ii) Islets of Langerhans.
   iii) Pancreatic medulla. iv) Pancreatic cortex.

g) The _____ is a network of tiny blood vessels located at the beginning of a nephron :
   i) Renal calyces. ii) Renal pyramid. iii) Bowman's capsule. iv) Glomerulus.

h) Complete digestion of food occurs in :
   i) Stomach. ii) Small Intestine. iii) Pancreas. iv) Large Intestine.

i) Trypsinogen is converted into active trypsin by the action of :
   i) Cholecystokinin. ii) Enterocrinin. iii) Enterokinase. iv) Secretin.

j) Volume of air left after maximum forceful expiration in human lung is :
   i) Total lung capacity. ii) Residual volume.
   iii) Vital capacity. iv) Tidal volume.

2. Write short notes on ***any four*** of the following : 4 x 5

a) What is the role of HCl in the stomach?
b) What do you mean by cardiac cycle?
c) Name the types of cells in the pancreas with their functions.
d) Describe the extrinsic mechanism of initiation of clotting.
e) Write mechanism of action of TSH.
f) What is Chloride Shift?

3. Answer ***any two*** from the following :

a) Describe the carriage of O_2 by haemoglobin. What is Bohr effect? 6+4
b) Describe the impulse conduction from SA node to Purkinje System. 10
c) What is counter current exchange mechanism? How does it work? What is its purpose? 3+5+2

The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination

Subject: General and Systemic Bacteriology

ime: 3 hrs **Full Marks: 100**

Attempt all questions

1. Answer the following questions : 20 x 1

a) Catalase positive, beta hemolytic staphylococcus :
   i) *S aureus.* ii) *S epidermidis.*
   iii) *S saprophytic.* iv) None.

b) In the case of neonatal meningitis, the etiologic bacteria was found to have properties of ß-hemolysis, bacitracin resistance, CAMP positive. Which of the following is the most likely causative agent?
   i) *S agalactiae.* ii) *Streptococci pneumonae.*
   iii) *Streptococci mutans.* iv) *Streptococci bovis.*

c) Majority of strains of Staphylococci are highly resistant to which of the following antibiotics?
   i) Cephalosporin ii) Clotrimazole
   iii) Amphotericin. iv) Penicillin.

d) Name the constituent found in the cell wall of gram-positive cocci :
   i) Lipopolysaccharide. ii) Teichoic acid. iii) Mycolic acid. iv) Endotoxins.

e) Which of the following is true?
   i) Nutrient broth is basal medium.
   ii) Addition of selective substances in a solid medium is called enrichment media
   iii) Agar has nutrient properties.
   iv) Chocolate medium is selective medium.

f) Which of the following is rich source of B vitamins?
   i) Yeast extract. ii) Beef extract. iii) Peptone. iv) Agar.

g) What is the concentration of agar in solid media?
   i) 3 to 4%. ii) 1.5 to 2 %. iii) 10 to 15.5 %. iv) 0.5 to 1%.

h) Which of the following is anaerobic medium?
   i) Robertson cooked-meat medium. ii) Nutrient agar.
   iii) Nutrient broth iv) Mac-conkey agar.

i) Which of these is exposed on the outer surface of a gram-negative bacterium?
   i) Braun lipoprotein. ii) O-antigen of lipopolysaccharide.
   iii) Polysaccharide portion of lipoteichoic acid. iv) Electron transport system components.

j) What is a cluster of polar flagella called?
   i) Peritrichous. ii) Monotrichous. iii) Amphitrichous. iv) Lophotrichous.

k) When rod shaped bacteria appears in pairs, it is known as?
   i) Diplobacilli. ii) Streptobacilli. iii) Diplococci. iv) Staphylococci.

l) Transport media for Streptococcus is :
   i) Pikes's media. ii) VR media. iii) Amies media. iv) Cary blair media.

m) Lancified classification is based in which of the following?
   i) M protein. ii) T protein. iii) Carbohydrate Ag. iv) None of the above.

n) Carrom coin appearance of colonies is seen for :
   i) S pyogens. ii) S agalactiae. iii) Viridans Streptococci. iv) S pneumonia.

o) Bacterial cell wall is made up of :
   i) Chitin. ii) Cellulose. iii) Peptidoglycan. iv) Dextran.

p) The bond present between NAG & NAM is :
   i) β 1,4 glycosidic bond. ii) β 1,6 glycosidic bond.
   iii) α 1,6 glycosidic bond. iv) α 1 glycosidic linkage.

q) Bacterial flagella is made up of :
   i) Flagellin. ii) Microtubules. iii) Spinin. iv) Tubulin.

r) Sterilization is done by autoclave consisting of exposure to steam about :
   i) 121^0C. ii) 131^0C. iii) 140^0C. iv) 110^0C.

s) The organisms which grow best above 20°C are called :
   i) Thermophillic. ii) Psychrophillic.
   iii) Mesophillic. iv) Thermoduric.

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Elek's gel preparation test is for :

i) Gonococcus. ii) Botulinum.
iii) Diphtheria. iv) Tetanus.

Answer the following questions : 5 x 2

a) What is selective media? Give two example of it.
b) Name two bacteria which are both catalase and oxidase positive.
c) Write down the classification of streptococcus.
d) Differentiate between Pasteurization & Sterilization.
e) Write down the biological control of following method of sterilization.
i) Ethylene oxide. ii) Filtration. iii) Hot air oven. iv) Autoclave.

3. Answer ***any six*** of the following : 6 x 5

a) Bacterial growth curve. b) Gram negative bacterial cell wall.
c) Coagulase test. d) VDRL test.
e) Cell membrane. f) Phenolic compound.
g) Transduction. h) Staphylococcal toxic shock syndrome.

4. Answer ***any one*** question :

a) A 4 years old boy developed severe watery diarrhea and vomiting. The stool collected has a rice water type of appearance. 1+1+1+3+4
i) What is your probable diagnosis?
ii) Write down the name of the causative agent.
iii) What are the transport media for that organism?
iv) Write down the pathogenesis responsible for the clinical condition.
v) How will you confirm the case in the laboratory?

b) A 25 year old heterosexual male came with history of dysuria and noted some 'pus like' drainage. His physical examination showed yellow urethral discharge and tenderness at the tip of penis. Examination of the urethral discharge revealed intracellular gram negative diplococci with plenty of pus cells. 1+1+3+5
i) What is your probable diagnosis?
ii) Write down the name of the causative agent.
iii) How will you confirm the case in the laboratory?

5. Answer ***any two*** questions :

a) A young adult female was admitted to the hospital with intense headache, abdominal discomfort for 5days.She had also developed fever which is remittent type with gradual rise in step ladder fashion. Her tongue was coated and mild splenomegaly was present. 1+1+5+8
i) What is your probable diagnosis?
ii) Write down the name of the causative agent.
iii) Write down the pathogenesis responsible for the clinical condition.
iv) How will you confirm the case in the laboratory?

b) A 55 year old male was admitted to the hospital with complaints of severe pain in the lateral aspect of his left calf & small amount of pus discharge from the ingrown hair. On physical examination, the local area was found to be red, warm, and tender. Gram stain showed gram positive cocci in clusters & culture on blood agar shows beta hemolytic colonies. 1+1+3+2+8
i) What is your probable diagnosis?
ii) Write down the name of the causative agent.
iii) List the infections caused by this organisms.
iv) List the virulence factor of this organism
v) How will you confirm the case in the laboratory?

c) A 4 year old girl from Bhubaneswar was brought to emergency room by her parents due to an acute onset of fever, neck rigidity and altered sensorium for past 2 days. Physical examination showed that her neck was passively flexed, her legs also flexed. Direct examination of the CSF showed gram negative, lanceolate shaped diplococci surrounded by a halo. 1+1+2+3+8
i) What is your probable diagnosis?
ii) Write down the name of the causative agent.
iii) List the virulence factor of this organism.
iv) How will you confirm the case in the laboratory?

The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination
Subject : General Pathology, Clinical Pathology and Haematology

Time: 3 hrs. **Full Marks: 100**

Attempt all questions

1. Tick the correct answer : 20 x 1

a) Deprivation of oxygen is :
i) Anoxia. ii) Hypoxia. iii) Asphyxia. iv) Necrosis.

b) Hyperplasia is seen in cells which are :
i) Capable of dividing. ii) Not capable of dividing. iii) Atrophic. iv) Degenerated.

c) In body builders muscles are :
i) Hyperplastic. ii) Atrophic. iii) Hypertrophic. iv) Degenerated.

d) Ascites is collection of fluid in :
i) Pleural cavity. ii) Joint space. iii) Peritoneal cavity. iv) All are correct.

e) Commonest cause of inflammation is :
i) Physical. ii) Chemical. iii) Immunological. iv) Microbiological

f) Healing of wound by same type of tissue is :
i) Repair. ii) Regeneration. iii) Degeneration. iv) Remodelling.

g) Normocytic normochromic anaemia is seen in :
i) Acute hemorrhage. ii) Iron deficiency.
iii) Chronic hemorrhage. iv) Vit B_{12} deficiency.

h) The cells of P.C.V. are :
i) WBC. ii) RBC. iii) Platelet. iv) All of them.

i) Which one of the following is not an abnormal hemoglobin?
i) HbC. ii) HbD. iii) HbE. iv) HbF.

j) For coagulation studies blood : citrate is :
i) 4:1. ii) 1:4. iii) 9:1. iv) 1:9.

k) Avarage hemoglobin content a single RBC is :
i) PCV. ii) MCV. iii) MCH. iv) None of them.

l) Leucopenia commonly occur due to decrease in number of :
i) Lymphocyte. ii) Neutrophil. iii) Basophil. iv) Monocyte.

m) Platelet count fluid is a solution of :
i) Ammonium carbonate. ii) Ammonium oxalate.
iii) Ammonium chloride. iv) Calcium oxalate.

n) For measurement of protein, best urine sample is :
i) 24 hrs urine. ii) Midday urine.
iii) Mid stream urine. iv) First morning sample of urine.

o) In chyluria appearance of urine is :
i) Milky white. ii) Cherry red. iii) Dark blue. iv) Light orange.

p) Presence of which of the following in urine is called cylindriuria?
i) Pus cell. ii) RBC. iii) Cast. iv) Crystal.

q) In Benedicts test blue colour may be changed to :
i) Green. ii) Yellow. iii) Brick red iv) All are correct.

r) Heat and acetic acid test is positive in :
i) Glycosuria. ii) Ketonuria. iii) Hemoglobinuria. iv) Albuminuria.

s) Low and fixed specific gravity of urine is :
i) 0011. ii) 1010. iii) 1001. iv) 1100.

t) With addition of acetic acid which crystal in urine get desolved with effervescence :
i) Calcium oxalate. ii) Tripple phosphate.
iii) Calcium carbonate. iv) Uric acid.

Time: 3 hr

2. Write very short notes on : 5 x 2
a) Classification of neoplasia.
b) Cellular changes in necrosis.
c) Inference of Rothera's test.
d) Reducing substances in urine.
e) Complications of venepuncture.

3. Answer ***any six*** of the following : 6 x 5
a) Cells of chronic inflammation.
b) Pathogenesis of septic shock.
c) Types of cell injury.
d) Urobilinogen and bile salts.
e) Plan for separation of different ketone bodies in urine.
f) RBC in urine.
g) Factors influencing sedimentation of RBC.
h) Estimation of hemoglobin by acid hematin method.

4. Answer ***any one*** of the following :
a) A 20 year old male came to OPD with yellow discolouration of eye. 5+5
i) Discuss the metabolism of the substance responsible for yellow discolouration.
ii) What are the differences between two forms of this substance?
b) A 40 year old male, smoker, complained of acute pain on left side of chest radiating to medial side of left arm. 2+8
i) What is the probable diagnosis?
ii) Discuss about bio-chemical markers of this condition.

5. Answer ***any two*** of the following :
a) Define acute inflammation. What are the cardinal signs of acute inflammation (Latin & English)? Explain the pathogenesis of the cardinal signs. 2+5+8
b) What are the stages of ESR? Discuss about the absolute values of red blood cell indices. 7+8
c) Enumerate the proteins those may be found in urine indicating their sources. Describe the procedure of estimation of total protein in urine. 7+8

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The West Bengal University of Health Sciences
1st BMLT September, 2023 Examination

Subject: Basic Biochemistry

Time: 3 hrs **Full Marks: 100**

Attempt all questions

1. Answer all questions : 20 x 1

a) Enzyme increases the rate of reaction :
   i) By increasing activation energy. ii) By lowering activation energy.
   iii) Remaining the activation energy same. iv) None of the above.

b) Double bond is absent in :
   i) MUFA. ii) PUFA. iii) Saturated fatty acid. iv) All of the above.

c) Which Nitrogenous base is absent in RNA :
   i) Adenine. ii) Thymine. iii) Guanine. iv) Uracil.

d) Example of lipid aggregate is :
   i) Fat. ii) Oil. iii) Wax. iv) Liposome.

e) Ketonemia is defined as :
   i) Presence of ketone body in urine. ii) Presence of ketone body in blood.
   iii) Absence of ketose in blood. iv) Absence of ketose in urine.

f) Example of globular protein is :
   i) Albumin. ii) Collagen. iii) Elastin. iv) Fibrinogen.

g) β-1,4 glycosidic bond is present in :
   i) Glucose. ii) Fructose. iii) Cellulose. iv) Glycogen.

h) Factor which do not affect fluorescence is :
   i) Structure. ii) Temperature. iii) pH. iv) Odour.

i) Fatty acid activation occurs in :
   i) Mitochondria. ii) Cytoplasm. iii) ER. iv) All of the above.

j) Cholesterol synthesis is inhibited by :
   i) Aspirin. ii) Ibuprofen. iii) Lovastatin. iv) Isoniazid.

k) In uncompetitive inhibition :
   i) Km decreases. ii) Km increases. iii) Vmax increases. iv) Vmax remain unchanged.

l) Which vitamin deficiency leads to microcytic anaemia?
   i) B3. ii) B5. iii) B7. iv) B6.

m) Example of essential fatty acid is :
   i) Palmitic acid. ii) Linoleic acid. iii) Stearic acid. iv) Myristic acid.

n) Molecular weight is defined by :
   i) Addition of atomic weight of a molecule.
   ii) Multiplication of atomic weight of a molecule.
   iii) Subtraction of atomic weight of a molecule.
   iv) None of the above.

o) The hormone calcitonin :
   i) Increases blood calcium. ii) Decreases bone calcium.
   iii) Increases bone calcium. iv) None of the above.

p) Zwitter ion property showed by :
   i) Fatty acid. ii) Amino acid. iii) Nucleic acid. iv) All of the above.

q) The anion liberated by ionization of an acid is called :
   i) Conjugate acid. ii) Amino acid. iii) Conjugate base. iv) Modified base.

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r) The cα-c bond in protein is called :
   i) Φ. ii) β. iii) Ψ. iv) ω.

s) Enzyme dehydrogenase belongs to the class :
   i) Transferase. ii) Dehydrogenase.
   iii) Hydrolase. iv) Oxidoreductase.

t) Diameter of B DNA is :
   i) 20 A. ii) 18 A. iii) 23 A. iv) 16 A.

2. Answer the following : 5 x 2
   a) What is competitive inhibition?
   b) Mention the principle of fluorimeter.
   c) Define nucleoside with example.
   d) Write down any two functions of vitamin B1.
   e) What is iron deficiency anaemia?

3. Write ***any six*** of the following : 6 x 5
   a) Write a short note on mutarotation
   b) Write down the differences between saturated and unsaturated fatty acid.
   c) Mention the sources and functions of calcium.
   d) Discuss the Ramachandran plot.
   e) Explain the role of bile in digestion of fat.
   f) Write down the principle and applications of colorimeter.
   g) Mention the properties of Lipid aggregates.
   h) Explain irreversible inhibition.

4. Answer ***any one*** of the following :
   a) Describe the Line-Weaver Burk double reciprocal plot. Discuss the induced fit model of enzyme action. 5+5
   b) Discuss the buffering action of bicarbonate and haemoglobin buffer. 5+5

5. Answer ***any two*** of the following :
   a) Mention the RDA, sources and functions of phosphorus. Discuss the factors promoting iron absorption. What is haemosiderosis? 8+5+2
   b) Discuss the symptoms biotin deficiency. Write down the RDA, sources and functions of vitamin B5. Mention some vitamins which act as coenzyme. 4+8+3
   c) Write a short note on Osazone formation. Discuss the digestion and absorption process of carbohydrate. 5+5+5

The West Bengal University of Health Sciences

1st BMLT Examination, 2011

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

   a) Diaphragm is supplied by which nerve :
      i) Vagus. ii) Phrenic. iii) Intercostal. iv) None.

   b) C.S.F is drawn from the vertebral canal at :
      i) Between L_1 & L_2. ii) Between L_2 & L_3. iii) Between L_3 & L_4. iv) None.

   c) Antibody are available form which W.B.C.
      i) Lymphocyte. ii) Neutrophil. iii) Eosinophil. iv) Basophil.

   d) Bruner's glands are found in which of the following :
      i) Stomach. ii) Duodenum. iii) Jejunum. iv) Ilium.

   e) Cruciate ligament are found in which joint ?
      i) Ankle. ii) Elbow. iii) Knee. iv) Hip.

2. Write short note on ***any four*** of the following : 4 x 5

   a) Hamstring muscles. b) Bile. c) Conducting system of Heart.
   d) Function of Stomach. e) Composition and function of C.S.F.

3. Answer ***any one*** of the following : 1 x 10

   a) Describe knee joint on following points :
      i) Structure. ii) Ligaments attached. iii) Muscle responsible for movements.

   c) Describe the different stages of development of R.B.C.

Group – B

4. Tick the correct answer : 5 x 1

   a) Pituitary gland is found in which cavity: i) Oral cavity. ii) Nasal.
      iii) Cranial. iv) Abdominal.

   b) Blood ph is : i) 5.2. ii) 6.7. iii) 4.7. iv) 7.4.

   c) Gland having duct are called : i) Endocrcne. ii) Exoerine. iii) Holocrane. iv) Apocrene.

   d) Oxygenated blood is found in : i) Pulmonary artery. ii) Pulmonary Vein.
      iii) Rt Atrium. iv) Rt. Ventricle.

   e) Which organ produces Insulin : i) Liver. ii) Stomach. iii) Thyroid. iv) Pancreas.

5. Write short note on ***any four*** of the following : 4 x 5

   a) T.C. and D.C. b) Quadriceps. c) Elbow joints. d) Nephron. e) Root of Left lungs.

6. Answer ***any one*** of the following : 1 x 10

   a) Describe the composition of Blood.
   b) Describe stomach on following points :
      i) Structure. ii) Function. iii) Blood supply.

Group-B

Tick the correct answer :

a) Rod shaped bacteria forming chains is known as:
   i) Streptococcus. ii) Staphylococcus.
   iii) Streptobacilli. iv) None of these.

b) Which gas is used for the fumigation of operation theatres?
   i) Formaldehyde gas. ii) Hydrogen gas. iii) Nitrogen gas. iv) None of these.

c) Definition of an antiseptic:
   i) Chemicals that prevent infection and damage living tissues.
   ii) Chemicals that prevent infection without damaging living tissues.
   iii) Chemicals that prevent infection on non- living tissues.
   iv) Chemicals that can only kill present infection on animal housing.

d) What is virioid?
   i) DNA without protein coat. ii) RNA without protein coat.
   iii) RNA with protein coat. iv) DNA with protein coat.

e) Which of the following organisms are acid fast?
   i) Mycobacterium Tuberculosis. ii) Vibrio Cholerae.
   iii) E. coli. iv) Staphylococcus.

f) Gamma radiation can be used for Sterilization of:
   i) Plastic syringe. ii) Catheter. iii) Swab. iv) All of the above.

g) Bacteria which can grow at temp. between 25° C and 40° C are known as:
   i) Mesophilic. ii) Psychrophilic. iii) Thermophilic. iv) Acidophilic.

h) The method of sterilization by steaming at 100° C for 20 minutes on three successive days is known as:
   i) Inspissations. ii) Tyndallization. iii) Pasteurization. iv) None of these.

i) Biological control used in hot air oven is the spore of:
   i) Bacillus stearothermophilus. ii) Clostridium perfringens.
   iii) Bacillus cereus. iv) Clostridium tetani.

j) Koch's postulates are satisfied by all bacteria except:
   i) Staphylococcus aureus. ii) Mycobacterium leprae.
   iii) Clostridium tetani. iv) Escherichia coli.

5. Write short notes on *any two* of the following : 2

   a) Bacterial acid fast staining procedure.
   b) S.O.P. of autoclave.
   c) Bacterial Spore.

6. Answer *any one* of the following :
   a) Describe bacterial growth curve. How continuous culture of bacteria is maintained.
   b) Describe different culture media used in bacteriological laboratory.

Group – B

4. Answer all questions : 10 x 1

a) Human are unable to digest:
   i) Starch. ii) Complex Carbohydrates. iii) Cellulose. iv) Denatured Protein.

b) Which one is a reducing sugar:
   i) Glucose. ii) Mannose. iii) Sucrose. iv) Ribose.

c) Phosphodiester bond can be seen in:
   i) Protein. ii) Nucleic acid. iii) Lipid. iv) Carbohydrates.

d) Hydroxyl group containing amino acid is:
   i) Lysine. ii) Tryptophan. iii) Cystine. iv) Threonine.

e) β (1→3) glycosidic bond can be seen in:
   i) Hyaluronic acid. ii) Cellulose. iii) Chitin. iv) Sucrose.

f) The protein part of enzyme is known as:
   i) Holoenzyme. ii) Isoenzyme. iii) Apoenzyme. iv) Coenzyme.

g) The nitrogenous base present in lecithin:
   i) Choline. ii) Ethanolamine. iii) Inositol. iv) Serine.

h) The functionally active from of Vitamin D:
   i) Cholecalciferol. ii) Ergocalciferol. iii) Dehydrocholesterol. iv) Cacitriol.

i) Golgi complex plays a major role in:
   i) Protein synthesis.
   ii) Glycosylation of lipids and proteins.
   iii) Removal of sulfate from the carbohydrate moiety of glycolipids.
   iv) Formation of secondary lysosomes.

j) _____ is the structural protein.
   i) Hemoglobin. ii) Lecithin. iii) Collagen. iv) Insulin.

5. Answer *any two* of the following :

a) Describe about freeze fracture technique and importance of membrane fluidity. 3+2

b) Describe the biochemical functions, daily requirements, sources and deficiency manifestation of Vitamin E. 1+1+1+2

c) Write how a non- reducing sugar differs from a reducing one. Write the osazone test. Give an example of heteropolysaccharide. 2+2+1

6. Answer *any two* question :

a) Write short note on: 5+5
   i) Beta- pleated sheet. ii) Enzyme inhibition.

b) Discuss biological importance of saturation and unsaturated fatty acids. Add a note on the functions of cholesterol. What are the names of the phospholipids that produces second messenger in hormonal action? 5+4+1

c) Briefly describe the DNA structure proposed by Watson and Crick. Compare the properties among A- DNA, B- DNA and Z-DNA. 6+4

The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) There are three lobes in :
i) Left Lung. ii) Right Lung. iii) Liver. iv) None of these.

b) Head of Pancreas is related to :
i) Duodenum. ii) Liver. iii) Spleen. iv) Stomach.

c) Pulmonary Artery carries blood from :
i) Heart to lungs. ii) Heart to body. iii) Lungs to heart. iv) Body to heart.

d) Tendon connects :
i) Bone to bone. ii) Bone to Muscle.
iii) Muscle to Muscle. iv) Brain to Spinal Cord.

e) Longest part of gastro-intestinal tract is :
i) Small intestine. ii) Oesophagus. iii) Large Intestine. iv) Stomach.

f) Ptyalin is responsible for splitting of :
i) Amylase or starch. ii) Peptide or amino acid. iii) Glycerol or fat. iv) None of these.

g) Antibodies are available from which WBC?
i) Eosinophil. ii) Basophil. iii) Lymphocyte iv) Neutrophil.

h) Colour of Bead is present in :
i) Kidney. ii) Eye. iii) Testis. iv) Thymosin.

i) Porta hepatis is situated at :
i) Lung. ii) Brain. iii) Liver. iv) Kidney.

j) Blood flows from the right ventricle of the heart into which of the following structures?
i) Inferior vena cava. ii) Left ventricle.
iii) Pulmonary arteries. iv) Pulmonary vein.

2. Write short note on ***any two*** of the following : 2 x 5

a) Chambers of the Heart. b) Neuron. c) Different phases of cardiac cycle.

3. Answer ***any two*** of the following :

a) Enumerate the anatomical lobes of liver. What is Portal triad? What are the parts and functions of gall bladder? How is Common Bile duct formed? 2+3+2+2+1

b) Describe in brief the alveolocapillary membrane. Enumerate the factors which affect the diffusion of gases across this membrane? How are oxygen and carbon dioxide transported in blood? 10

c) Classify joints. Give account of the basic structure of synovial joint. What is epiphysis? 3+5+2

P. T. O.

Group – B

4. Tick the correct answer : 10 x 1

a) Serum amylase level increases in :
   i) Acute pancreatitis. ii) Liver cirrhosis. iii) Osteomalacia. iv) Myocardial infarction.

b) Hypernatremia means :
   i) Increased sodium level in blood. ii) Increase of acetyl CoA.
   iii) Increased nitrogen level in blood. iv) None of these.

c) The normal osmolality of plasma is :
   i) 270-285 milliomoles/kg. ii) 285-295 milliomoles/kg.
   iii) 290-300 milliomoles/kg. iv) 300-350 milliomoles/kg.

d) When O_2 supply is inadequate, pyruvate is converted to :
   i) Phosphopyruvate. ii) Acetyl CoA. iii) Lactate. iv) Alanine.

e) An example of fibrous protein is :
   i) Collagen. ii) Albumin. iii) Casein. iv) Globulin.

f) Compounds having the same structural formula but differing in spatial configuration are known as :
   i) Stereoisomers. ii) Anomers. iii) Optical isomers. iv) Epimers.

g) In proteins the α-helix and β-pleated sheet are examples of :
   i) Primary structure. ii) Secondary structure.
   iii) Tertiary structure. iv) Quaternary structure.

h) Ketone bodies are formed in :
   i) Liver. ii) Heart. iii) Kidney. iv) Intestine.

i) Oxidation of fatty acids occurs :
   i) In the cytosol. ii) Acute pancreatitis.
   iii) In the matrix of mitochondria. iv) On the microsomes.

j) The following is an enzyme required for glycolysis.
   i) Pyruvate Kinase. ii) Pyruvate carboxylase.
   iii) Glucose-6-phosphatase. iv) Glycerokinase.

5. Write short note on ***any two*** of the following : 2 x 5

a) Classification of lipoproteins.

b) Transamination and transmethylation.

c) Energy rich biological compounds.

6. Answer ***any one*** of the following :

a) What is the normal fasting blood glucose level? Why does it need to be regulated? Describe the various mechanisms of its regulation. 1+3+6

b) Discuss about diagnostic value of serum enzyme : 5+5
   i) CPK. ii) Alkaline phosphatase.

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) Maximum k^+ ion concentration is seen in which GI Secretion:
i) Saliva. ii) Colonic. iii) Gastric. iv) Jejunum.

b) Skin blood flow is decreased by:
i) Dopamine. ii) Isoprenaline. iii) Noradrenaline. iv) Acetylcholine.

c) Digestion of disaccharides occurs at:
i) Mouth. ii) Stomach. iii) Small Intestine. iv) Large Intestine.

d) Which of the following is passively absorbed in gut:
i) Glucose. ii) Lipids. iii) Fructiose. iv) Amino-acids.

e) Main enzyme involved in digestion of fatty food:
i) Lingual lipase. ii) Gastric lipase. iii) Pancreatic lipase. iv) Phospholipase.

f) Cardiac output equal to:
i) Stroke volume X Blood pressure. ii) Stroke volume X Heart rate.
iii) Heart rate X cardiac index. iv) None of these above.

g) The heart lies specifically in the space:
i) Thoracic cavity. ii) Mediastinum. iii) Abdominal cavity. iv) Pleural cavity.

h) Hip joint is an example of:
i) Ball & socket joint. ii) Hinge joint. iii) Fibrous joint. iv) Condylar joint.

i) Which is a heme protein?
i) Hemoglobin. ii) Catalase. iii) Cytochrome. iv) All of these.

j) There are three lobes in:
i) Left lung. ii) Right lung. iii) Liver. iv) None of these.

2. Write short note on *any two* of the following : 2 x 5
a) Brain. b) Liver. c) Hypertension.

3. Answer *any two* of the following :
a) Draw & label Neurons. Write down the name of cranial nerve. Write down the composition of Salivary juice. 3+3+4
b) Define cardiac output. Write down the factors regulate blood pressure. What is Cardiac index? 2+6+2
c) Describe the Structure of skin with suitable diagram. Discuss the functions of skin. 6+4

P. T. O.

Group – B

4. Tick the correct answer : (6)

a) Glucose-6 phosphate enzyme is present cell's:
i) Cytoplasm. ii) Mitochondria. iii) Nucleus. iv) Endoplasmic reticulum.

b) Carnitine, used in long chain fatty acid transport is a type of:
i) Peripheral protein. ii) Integral protein. iii) Lipo protein. iv) Polypeptide.

c) The net gain of ATP molecules in glycolysis :
i) 4 ii) 2 iii) 5 iv) 10

d) Biuret positive test colour developed;
i) Red. ii) Bright red. iii) Blue. iv) Violet or pink.

e) The most predominant anion in extracellular fluids:
i) Cl^- ii) HCO_3^- iii) HPO_4^- iv) Protein.

f) SGOT level predominantly increases in:
i) Acute pancreatitis. ii) Live cirrhosis. iii) Suppurative parotitis.
iv) Myocardial infarction.

g) Metabolic acidosis is associated with:
i) Renal failure. ii) Severe vomiting. iii) Hypokalemia. iv) Anemia.

h) Ninhydrin reaction with amino acid gives colour:
i) Bright red. ii) Blue. iii) Violet. iv) Pink.

i) Name the compound with the standard free energy:
i) ATP. ii) Phosphocreatine. iii) Cyclic AMP. iv) Phosphoenol pyruvate.

j) The hormone that lowers cAMP concentration in liver cells is:
i) Glucagon. ii) Insulin. iii) Epinephrine. iv) Thyroxine.

5. Write short note on *any two* of the following : 2 x 5

(4) a) Metabolic disorders related to urea cycle.

(2) b) Diagnostic value of serum enzyme alkaline phosphatase.

c) Acidosis.

6. Answer *any one* of the following :

a) Describe the role of blood buffers in the acid-base balance. What is respiratory acidosis? 8+2

b) Describe the process of gluconeogenesis. What is proteinuria? 9+1

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The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

   a) Reserve pacemaker is :
   i) Avnode; ii) S.A node; iii) Bundle of HIS; iv) Tricuspid valve.

   b) Which is called ball and socket joint:
   i) Ankle joint. ii) Shoulder joint. iii) Carpal joint. iv) Elbow joint.

   c) Blood group antibodies occur in:
   i) RBC. ii) Eosinophils. iii) Plasma. iv) Basophils.

   d) The breakdown of proteins begins with secretion of the:
   i) Salivary glands. ii) Stomach. iii) Pancreas. iv) Small intestine.

   e) The eranial nerve which supply the heart is :
   i) Trigeminal nerve. ii) Vagus nerve. iii) Abducent nerve. iv) Trochlear nerve.

2. Write short note on ***any four*** of the following : 4 x 5
   a) Cardiac cycle. b) Anaemia. c) Neurons. d) Gastric juice. e) Grave's disease.

3. Answer ***any one*** of the following : 1 x 10
   a) Describe the functions of liver.
   b) Write the different types of bones with examples.

Group – B

4. Tick the correct answer : 5 x 1

   a) Rate limiting enzyme of glycolysis is :
   i) Citrate synthase. ii) Isomerase. iii) Phosphofructokinase. iv) Lactate dehydrogenase.

   b) Good cholesterol is:
   i) HDL. ii) LDL. iii) VLDL. iv) IDL.

   c) The dietary sources of Biotin in animal:
   i) Muscle. ii) Brain. iii) Liver. iv) Pancreas.

   d) Hexokinase enzyme is found in:
   i) Kidney. ii) All tissues. iii) Lymph node. iv) Bone marrow.

   e) Which is the end product of protein catabolism?
   i) Uric acid. ii) Urea. iii) Creatine. iv) Glucose.

5. Write short note on ***any four*** of the following : 4 x 5
   a) Glycogenolysis. b) Lipoproteins. c) Clinical importance of electrolyte balance.
   d) Name two fat soluble vitamins and state their functions.
   e) Describe transamination reaction with proper example.

6. Answer ***any one*** of the following :
   a) Describe the steps of TCA cycle. How many ATP are formed per turn TCA cycle? 9+1
   b) Write about regulation of blood sugar level in carbohydrate metabolism. Define atherosclerosis. 8+2

Group – B

5 x 1

4. Tick (✓) the correct answer :

a) In Von Neumann computer, program is assumed to be :

i) In main memory and data is on secondary storage.

ii) On secondary storage and data is also on secondary storage.

iii) In main memory and data is also in main memory.

iv) None.

b) DDL stands for :

i) Data Dictionary Language.

ii) Dictionary Defined Language.

iii) Data Defined Language.

iv) Data Definition Language.

c) A CPU instruction normally contains :

i) No Address.

ii) One address reference.

iii) Maximum of 3 address references.

iv) None.

d) The entity integrity rule requires that :

i) That all entries are unique.

ii) A part of a key may be null.

iii) Duplicate object values are allowed.

iv) None.

e) The "first generation" of computers used :

i) Gearsx.

ii) Vacuum Tubes.

iii) Transistors.

iv) No electricity, Mechanical.

5. Write short notes on ***any four*** of the following :

a) Basic properties of modern computer. 5

b) Write short notes on MAN & LAN. 2½ +2½

c) What is thrashing? Define dynamic loading. 2½ +2½

d) Define computer virus? Give two examples. What do you mean by IP address? 2+1+2

e) Define DBMS? What is the main task of DBA? 2+3

6. Answer ***any one*** of the following :

a) Describe some general uses of the internet. Write a short note on virtual memory and text editing. 5+5

b) What is output device? Give example. Briefly discuss on CRT monitor. 2+1+7

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) Maximum k^+ ion concentration is seen in which GI Secretion:
i) Saliva. ii) Colonic. iii) Gastric. iv) Jejunum.

b) Skin blood flow is decreased by:
i) Dopamine. ii) Isoprenaline. iii) Noradrenaline. iv) Acetylcholine.

c) Digestion of disaccharides occurs at:
i) Mouth. ii) Stomach. iii) Small Intestine. iv) Large Intestine.

d) Which of the following is passively absorbed in gut:
i) Glucose. ii) Lipids. iii) Fructiose. iv) Amino-acids.

e) Main enzyme involved in digestion of fatty food:
i) Lingual lipase. ii) Gastric lipase. iii) Pancreatic lipase. iv) Phospholipase.

f) Cardiac output equal to:
i) Stroke volume X Blood pressure. ii) Stroke volume X Heart rate.
iii) Heart rate X cardiac index. iv) None of these above.

g) The heart lies specifically in the space:
i) Thoracic cavity. ii) Mediastinum. iii) Abdominal cavity. iv) Pleural cavity.

h) Hip joint is an example of:
i) Ball & socket joint. ii) Hinge joint. iii) Fibrous joint. iv) Condylar joint.

i) Which is a heme protein?
i) Hemoglobin. ii) Catalase. iii) Cytochrome. iv) All of these.

j) There are three lobes in:
i) Left lung. ii) Right lung. iii) Liver. iv) None of these.

2. Write short note on *any two* of the following : 2 x 5
a) Brain. b) Liver. c) Hypertension.

3. Answer *any two* of the following :
a) Draw & label Neurons. Write down the name of cranial nerve. Write down the composition of Salivary juice. 3+3+4
b) Define cardiac output. Write down the factors regulate blood pressure. What is Cardiac index? 2+6+2
c) Describe the Structure of skin with suitable diagram. Discuss the functions of skin. 6+4

P. T. O.

Group – B

4. Tick the correct answer : (10)

a) Glucose-6 phosphate enzyme is present cell's:
i) Cytoplasm. ii) Mitochondria. iii) Nucleus. iv) Endoplasmic reticulum.

b) Carnitine, used in long chain fatty acid transport is a type of:
i) Peripheral protein. ii) Integral protein. iii) Lipo protein. iv) Polypeptide.

c) The net gain of ATP molecules in glycolysis :
i) 4 ii) 2 iii) 5 iv) 10

d) Biuret positive test colour developed;
i) Red. ii) Bright red. iii) Blue. iv) Violet or pink.

e) The most predominant anion in extracellular fluids:
i) Cl^- ii) HCO_3^- iii) HPO_4^- iv) Protein.

f) SGOT level predominantly increases in:
i) Acute pancreatitis. ii) Live cirrhosis. iii) Suppurative parotitis.
iv) Myocardial infarction.

g) Metabolic acidosis is associated with:
i) Renal failure. ii) Severe vomiting. iii) Hypokalemia. iv) Anemia.

h) Ninhydrin reaction with amino acid gives colour:
i) Bright red. ii) Blue. iii) Violet. iv) Pink.

i) Name the compound with the standard free energy:
i) ATP. ii) Phosphocreatine. iii) Cyclic AMP. iv) Phosphoenol pyruvate.

j) The hormone that lowers cAMP concentration in liver cells is:
i) Glucagon. ii) Insulin. iii) Epinephrine. iv) Thyroxine.

5. Write short note on *any two* of the following : 2 x 5

(4) a) Metabolic disorders related to urea cycle.

(2) b) Diagnostic value of serum enzyme alkaline phosphatase.

c) Acidosis.

6. Answer *any one* of the following :

a) Describe the role of blood buffers in the acid-base balance. What is respiratory acidosis? 8+2

b) Describe the process of gluconeogenesis. What is proteinuria? 9+1

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: General Lab Methodology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the following questions : 10 x 1

a) Molar solution means :
   i) One gram equivalent weight dissolved in one liter.
   ii) One gram molecular weight dissolved in one liter.
   iii) One formula weight dissolved in one liter.
   iv) None of the above.

b) Anticoagulant used for Hematological examination is :
   i) EDTA. ii) Sodium Citrate. iii) Heparin. iv) Sodium fluoride.

c) The glassware used for ESR :
   i) Wintrobe'S tube. ii) Westergren tube. iii) Capillary tube. iv) None of these.

d) Generally tourniquet is not used for the blood collection of:
   i) Na^+ test. ii) K^+ test. iii) Ca^+ test. iv) Mg^{++} test.

e) Normal saline is equal to :
   i) 0.9% Nacl. ii) 9% Nacl. iii) 0.09% Nacl. iv) None of these.

f) The metallic ion responsible for coagulation is :
   i) Ca^{++}. ii) Mg^{++}. iii) Na^+. iv) K^+.

g) The body fluids are collected for disposal is :
   i) Red plastic bag. ii) Yellow plastic bag.
   iii) Black plastic bag. iv) Puncture proof container.

h) The normal body temperature is equal to :
   i) 37^0 C. ii) 42^0 C. iii) 8^0 C. iv) 18^0 C.

i) HPLC stands for:
   i) High performance liquid chromatography. ii) High protein layer chromatography.
   iii) High performance layer chromatography. iv) None of these.

j) Folin Wu tube is used for quantitative estimation of :
   i) Bilirubin. ii) Uric acid. iii) Urea. iv) Glucose.

2. Answer *any two* of the following : 2 x 5

a) Role of anticoagulants during sample collection.

b) Concept of universal precaution about Bio-Hazard.

c) Abnormal constituents of urine.

P. T. O.

3. Answer *any two* question : 2 x 1

a) Write the different types of bio-safety level in laboratory.

b) Write shortly about the laboratory accidents & their first aid.

c) Write briefly about venous blood sample collection from patient advice to final patient care.

Group – B

4. Answer all questions : 10 x 1

a) Bitot's spot is observed in case of_____ deficiency.

i) Vit A. ii) Vit C. iii) Vit K. iv) Pantothenic acid.

b) Hexokinase is an example of _____ type of enzyme.

i) Ligase. ii) Oxidoreductase. iii) Hydrolase. iv) Transferase.

c) The daily requirement of Vit C in adult human body is:

i) 40 mg. ii) 25 mg. iii) 80 mg. iv) 10 mg.

d) Cells in hypertonic solution will:

i) Swell & burst. ii) Dehydrate. iii) Haemolyse. iv) Not be effected.

e) Monomer of cellulose is:

i) Lactose. ii) Maltose. iii) Glucose. iv) Fructose.

f) Pellagra is caused due to:

i) Niacin. ii) Vit-B2. iii) Vit-B12. iv) None of these.

g) Thymine base is present in _____ RNA.

i) Transfer. ii) Messenger. iii) Ribosomal. iv) None of these.

h) Erythrocytic fragility is seen due to deficiency of:

i) Vit C. ii) Vit E. iii) Vit D. iv) Folic acid.

i) Normal body pH of human is in the range of:

i) 7.0-7.3 ii) 7.35-7.45 iii) 6.8-7.3 iv) 7.8-8.8

j) Chemical structure of lipids consists of:

i) Glycerol + Fatty acids. ii) Glycerol + Amino acids.

iii) Glucose + Fatty acids. iv) Fructose + Nitrogen.

5. Answer *any two* of the following : 2 x 5

a) Draw a diagram showing the five steps of the urea cyde, giving the name of the substrates, products & enzymes required for each steps.

b) Compare the structure of A-DNA, B-DNA & Z-DNA.

c) Write about Saponification of fat molecules.

6. Answer *any one* question :

a) "Gluconeogenesis is just not reverse of Glycolysis". Explain. 10

b) Vit B12 Pernicious anemia is caused by which vitamin deficiency? Mention the dietary requirement, dietary sources & metabolic function of this vitamin. 1+2+7

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) Intact RBC in found is urine is:
i) Haematuria.. ii) Haemoglobinuria. iii) Hemosiderinuria iv) Haemolysis.

b) Caspases are involved in:
i) Apoptosis. ii) Pinocytosis. iii) Cell signaling. iv) Cell injury.

c) Diabetic foot is an example of :
i) Dry gangrene. ii) Wet gangrene. iii) Gas gangrene. iv) Necrotising inflammation.

d) Which is false about primary union?
i) Lead to linear scar. ii) Clean margins.
iii) Uninfected. iv) Exuberant granulation tissue to fill the gap.

e) Transudate differs for exudate in having the following except:
i) No inflammatory cells. ii) Low Glucose content.
iii) Low Protein content. iv) Low specific gravity.

f) In iron deficiency anaemia, TIBC is:
i) Low. ii) Normal. iii) High. iv) Borderline.

g) Erythropoietin is produced by:
i) Liver. ii) Lungs. iii) Bone marrow. iv) Kidney.

h) The most frequent site of venous thrombus is:
i) Brain. ii) Kidney. iii) Leg. iv) Heart.

i) If the lower esophagus shows columnar cell in change is:
i) Dysplasia. ii) Hyperplasia. iii) Metaplasia. iv) Careinomd.

j) Enzymatic digestion is the predominant event in the following lysis of necrosis :
i) Coagulative Necrosis. ii) Fat Necrosis.
iii) Liquefactive Necrosis. iv) Caseous Necrosis.

2. Write short notes on *any two* of the following: 2 x 5
a) Oral glucose tolerance test.
b) Hashimoto's disease.
c) Difference between transudate & exudates.

3. Answer *any two* of the following :
a) Define shock. Discuss the different types of shock. Discuss the pathogenesis of septic shock. 2+4+4
b) Define hyperemia & congestion. What is the difference between them? What are the causes of cell injury? 4+3+3
c) How do you perform physical Exam of urine (Mention the normal & abnormal findings.)? How will you proceed for examination of urine? 6+4

P. T. O.

Group-B

4. Tick the correct answer :

a) Peptone water is a :
i) Basal medium. ii) Enriched medium.
iii) Selective medium. iv) Enrichment medium.

b) Bacterial cell wall is made up of :
i) Chitin. ii) Cellulose. iii) Dextrin. iv) Peptidoglycan.

c) Viruses that attack bacteria are called:
i) Lysophage. ii) Virophage. iii) Bacteriophage. iv) None of these.

d) Human Immunodeficiency Virus is a:
i) DNA virus. ii) RNA virus.
iii) Both DNA & RNA virus. iv) None of these.

e) Koch's postulates are satisfied by all the following bacteria except:
i) Mycobacterium tuberculosis. ii) Treponema pallidum.
iii) Salmonella typhi. iv) Pneumococcus.

f) Best method of sterilization of glasswares is by:
i) Autoclave. ii) Hot air oven. iii) Water bath. iv) Inspissator.

g) A cluster of polar flagella is called:
i) Lopotrichous. ii) Amphitrichous. iii) Monotrichous. iv) Peritrichous.

h) Organisms that grow best above 45^0 are:
i) Mesophilic. ii) Psychrophilic. iii) Thermophilic. iv) Thermoduric.

i) Which scientist discovered penicillin :
i) Edward Jenner. ii) Robert Koch.
iii) Alexander Flemming. iv) Paul Ehrlich.

j) Colonies with fried egg appearance seen in :
i) Pseudomonas. ii) Mycoplasma. iii) Bordetella. iv) Haemophilus.

5. Write short notes on ***any two*** of the following : 2 x 5

a) Gaseous disinfectants. b) McIntosh –Filde's Jar. c) Cell wall of Gram negative bacteria.

6. Answer ***any one*** of the following :

a) Enumerate the different methods of transfer of genetic materials in bacteria. Describe any one method along with diagrams. 3+7

b) Define sterilization. How does it differ from disinfection? Describe the principle of working of an autoclave along with controls used. 2+2+6

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The West Bengal University of Health Sciences
1st BMLT Examination, 2018

Subject: Medical Lab Fundamentals

Time: 3 hrs **Full Marks: 70**

Attempt all questions

1. Tick (✓) the correct answer : 20 x 1

a) 3D structure of protein can be elucidated by using:
   i) Spectrophotometer. ii) Electron Microscope.
   iii) X-ray crystallography. iv) ELISA.

b) Electrophoretic separation of protein is most commonly performed in:
   i) Capillary electrophoresis. ii) Native PAGE. iii) Agarose Gel. iv) SDS-PAGE.

c) The resolving power of an electron microscope is:
   i) $1A^0$. ii) $10\ A^0$. iii) $100\ A^0$. iv) $1000\ A^0$.

d) Mobile phase & Stationary phase is used in the following technique:
   i) Spectroscopy. ii) Microscopy. iii) Chromatography. iv) Centrifugation.

e) UV-visible spectroscopy is:
   i) Absorption spectroscopy. ii) Emission spectroscopy.
   iii) Nuclear spectroscopy. iv) All of the above.

f) Which of the following microscope is used to observe flagellary movement:
   i) Compound microscope. ii) Electron microscope.
   iii) Phase contrast microscope. iv) Fluorescence microscope.

g) Ninhydrin is used in:
   i) Centrifugation. ii) Fluorescent microscopy.
   iii) Chromatography. iv) Ultracentrifuge.

h) A technique which separates charged particles using electric field is:
   i) Hydrolysis. ii) Electrophoresis.
   iii) Ion-exchange chromatography. iv) None of these.

i) In agarose gel electrophoresis, DNA is moved towards the:
   i) Cathode. ii) Anode. iii) DNA doesn't move. iv) None of these.

j) In case of centrifugation RPM stands for:
   i) Radiation per minute. ii) Run per minute.
   iii) Revolutions per minute. iv) None of these.

k) DBMS allow data manipulation through primitive operations which can be grouped to form :
   i) Data transaction. ii) Software system.
   iii) Hardware system. iv) None of the above.

l) The electrodes used in pH measurement have which of the following internal resistance :
   i) Very low resistance. ii) Moderate resistance.
   iii) Very high resistance. iv) No resistance.

P. T. O.

m) In chromatographic separation which of the following indices is most appropriate for the quantitative identification of a substance:

i) Relative Retention factor (Rrel). ii) Retention factor (Rf).
iii) Retention time. iv) Resolution.

n) In the equation $A = \sum bc$ what quantity is represented by $\sum$?

i) Absorbtivity. ii) Molar absorbtivity. iii) Path length. iv) None of these.

o) The pipette with a bulged-out portion in the middle is a:

i) Mohr's pipette. ii) Pasture pipette.
iii) Serological pipette. iv) Volumetric pipette.

p) Chromatography with solid stationary phase is called:

i) Circle Chromatography. ii) Square Chromatography.
iii) Solid Chromatography. iv) Adsorption Chromatography.

q) Resin used in :

i) HPLC. ii) TLC. iii) Ion-exchange chromatography. iv) Paper chromatography.

r) Weights in a weight box kept to a ratio of:

i) 5:2:2:1. ii) 3:2:2:3. iii) 2:2:1:4. iv) 4:3:2:1.

s) In Electrophoresis EtBr is mixed with:

i) DNA. ii) RNA. iii) Electrophoresis buffer. iv) Protein.

t) TLC is a technique where the stationary phase is:

i) Silica gel. ii) Water. iii) Alcohol. iv) None of these.

2. Write short notes on ***any four*** of the following : 4 x 5

a) Classify chromatographic techniques according to the mobile & stationary phase.

b) How can a standard curve be drawn during the determination of unknown concentration of a sample by colorimetric method.

c) Define UV-visible Spectroscopy? State the Lambert- beer's law. Which spectroscopy is used to measure Vitamin-D in diagnostic laboratory? 1+3+1

d) Write a short note of Ion exchange chromatography.

e) What is spectrum? Write down the components of spectrophotometer.

f) What is the application of microscope in pathological laboratory?

3. Answer ***any three*** from the following :

a) Briefly discuss about different types of microscope & their application.

b) What is sedimentation coefficient? Write a short note on different types of rotors used in centrifugation.

c) Established relation between RCF & RPM. What is sedimentation coefficient?

d) Discuss about Ion selective electrodes with diagram.

e) Write short note on Incubator & hot air oven & its applications.

The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A 10 x 1

1. Tick the correct answer :

a) There are three lobes in :
i) Left Lung. ii) Right Lung. iii) Liver. iv) None of these.

b) Head of Pancreas is related to :
i) Duodenum. ii) Liver. iii) Spleen. iv) Stomach.

c) Pulmonary Artery carries blood from :
i) Heart to lungs. ii) Heart to body. iii) Lungs to heart. iv) Body to heart.

d) Tendon connects :
i) Bone to bone. ii) Bone to Muscle.
iii) Muscle to Muscle. iv) Brain to Spinal Cord.

e) Longest part of gastro-intestinal tract is :
i) Small intestine. ii) Oesophagus. iii) Large Intestine. iv) Stomach.

f) Ptyalin is responsible for splitting of :
i) Amylase or starch. ii) Peptide or amino acid. iii) Glycerol or fat. iv) None of these.

g) Antibodies are available from which WBC?
i) Eosinophil. ii) Basophil. iii) Lymphocyte iv) Neutrophil.

h) Column of Bertin is present in :
i) Kidney. ii) Eye. iii) Testis. iv) Thymosin.

i) Porta hepatis is situated at :
i) Lung. ii) Brain. iii) Liver. iv) Kidney.

j) Blood flows from the right ventricle of the heart into which of the following structures?
i) Inferior vena cava. ii) Left ventricle.
iii) Pulmonary arteries. iv) Pulmonary vein.

2. Write short note on *any two* of the following : 2 x 5
a) Chambers of the Heart. b) Neuron. c) Different phases of cardiac cycle.

3. Answer *any two* of the following :
a) Enumerate the anatomical lobes of liver. What is Portal triad? What are the parts and functions of gall bladder? How is Common Bile duct formed? 2+3+2+2+1

b) Describe in brief the alveolocapillary membrane. Enumerate the factors which affect the diffusion of gases across this membrane? How are oxygen and carbon dioxide transported in blood? 10

c) Classify joints. Give account of the basic structure of synovial joint. What is epiphysis? 3+5+2

P. T. O.

Group – B

10 x 1

4. Tick the correct answer :

a) Serum amylase level increases in :
i) Acute pancreatitis. ii) Liver cirrhosis. iii) Osteomalacia. iv) Myocardial infarction.

b) Hypernatremia means :
i) Increased sodium level in blood. ii) Increase of acetyl CoA.
iii) Increased nitrogen level in blood. iv) None of these.

c) The normal osmolality of plasma is :
i) 270-285 milliomoles/kg. ii) 285-295 milliomoles/kg.
iii) 290-300 milliomoles/kg. iv) 300-350 milliomoles/kg.

d) When O_2 supply is inadequate, pyruvate is converted to :
i) Phosphopyruvate. ii) Acetyl CoA. iii) Lactate. iv) Alanine.

e) An example of fibrous protein is :
i) Collagen. ii) Albumin. iii) Casein. iv) Globulin.

f) Compounds having the same structural formula but differing in spatial configuration are known as :
i) Stereoisomers. ii) Anomers. iii) Optical isomers. iv) Epimers.

g) In proteins the α-helix and β-pleated sheet are examples of :
i) Primary structure. ii) Secondary structure.
iii) Tertiary structure. iv) Quaternary structure.

h) Ketone bodies are formed in :
i) Liver. ii) Heart. iii) Kidney. iv) Intestine.

i) Oxidation of fatty acids occurs :
i) In the cytosol. ii) Acute pancreatitis.
iii) In the matrix of mitochondria. iv) On the microsomes.

j) The following is an enzyme required for glycolysis.
i) Pyruvate Kinase. ii) Pyruvate carboxylase.
iii) Glucose-6-phosphatase. iv) Glycerokinase.

5. Write short note on ***any two*** of the following : 2 x 5

a) Classification of lipoproteins.

b) Transamination and transmethylation.

c) Energy rich biological compounds.

6. Answer ***any one*** of the following :

a) What is the normal fasting blood glucose level? Why does it need to be regulated? Describe the various mechanisms of its regulation. 1+3+6

b) Discuss about diagnostic value of serum enzyme : 5+5
i) CPK. ii) Alkaline phosphatase.

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The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: General Lab Methodology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the following questions : 10 x 1

a) Water bath temperature varies between :
   i) 34°c-35°c. ii) 35°c-36°c. iii) 36°c-38°c. iv) 38°c-40°c.

b) HEPA filter full form is :
   i) High Effective Particulate Air. ii) High Efficiency Particulate Air.
   iii) High efficiency processed air. iv) High Efficiency Processed Air.

c) AMR full form is :
   i) Analytical Managment Range. ii) Analytical Material Range.
   iii) Analytical Measurement Range. iv) None of the above.

d) Moles of solute means :
   i) Moles of solute×liters of solution. ii) Molar mass solute×liters of solution.
   iii) Molarity×volume. iv) Moles of solute×grams of solute.

e) Aliquot means :
   i) Amount of heterogenous material. ii) Amount of homogenous material
   iii) Amount of specimen material. iv) Amount of sample material.

f) The most essential glassware required for Titration is :
   i) Wintrobe tube. ii) Westergren tube. iii) Burret. iv) Glass bottle.

g) One gmequivalent weight of a chemical dissolve in 1litre of a solution is called :
   i) Normal solution. ii) Molar solution. iii) Formal solution. iv) Buffer solution.

h) For blood gas analysis the sample required :
   i) Venous blood. ii) Capillary blood. iii) Arterial blood. iv) All of these.

i) The anticoagulent used for P-time estimation :
   i) EDTA. ii) Heparin. iii) Sodium fluoride. iv) Sodium citrate.

j) For Medical Negligence the time limit for filling a complaint under CPA is :
   i) Two years. ii) Five years. iii) Eight years. iv) Ten years.

2. Answer ***any two*** of the following : 2 x 5

a) Write a short note about hemolysis and lipemia. b) Importance of labeling of a test sample.

c) Principles of storage of chemicals used in laboratory.

3. Answer *any two* question :

a) Write a brief idea about packing infections substances for transport. Write a short note about confidentiality of reports. 5+5

b) Define biosafety. What are the types of biosafety level of laboratory? Write and discuss each level of laboratory. 2+2+6

c) Briefly discuss about the glassware uses in the laboratory and their application. 10

Group – B

4. Answer all questions : 10 x 1

a) Plasma membranes

i) Contain relatively few protein molecules.

ii) Contain many carbohydrate molecules.

iii) Are freely permeable to electrolytes but not to proteins.

iv) Have variable protein and lipid molecules depending on their location in the cell.

b) Enzymes cannot alter the _____ of the reaction :

i) Activation energy. ii) Equilibrium constant.

iii) Free energy. iv) None of the above.

c) Benedict's test is done to detect :

i) Reducing sugar. ii) Disaccharide. iii) Acetyldehyde. iv) Polysaccharide.

d) Pyruvate carboxylase is a _____ type of enzyme :

i) Ligase. ii) Liase. iii) Hydrolase. iv) Isomerase.

e) Beri-beri is caused due to the absence of :

i) Vit C. ii) Vit B1. iii) Vit B2. iv) Folate.

f) Pepsin is a _____ type of enzyme.

i) Ligase. ii) Liase. iii) Hydrolase. iv) Transferase.

g) Micelle is an example of :

i) Lipoproteins. ii) Lipoamino acids. iii) Lipid aggregates. iv) Glycolipids.

h) The pitch of ZDNA is :

i) 3.4 nm. ii) 4.5 nm. iii) 3.6 nm. iv) 2.8 nm.

i) _____ is an optically inactive aminoacid.

i) Glycine. ii) Phenylalanine. iii) Aspartic acid. iv) None of these.

j) Thymine base is present in _____ RNA:

i) Transfer. ii) Messenger. iii) Ribosomal. iv) None of these.

5. Answer *any two* of the following : 2 x 5

a) Different types of RNAs.

b) Write a short note on - Lipoprotein.

c) Distinguish between integral protein and peripheral protein.

6. Answer *any one* question :

a) Describe the double helical structure of DNA with a suitable diagram. What is nucleoside? Give an example of it. 7+1+1+1

b) What is molarity and normality? Differentiate between stock solution and working solution for biochemical analysis. How laboratory accidents can be prevented? 2+2+3+3

The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 10 x 1

a) Exudative pleural effusion is associated with :
i) Bacterial pneumonia. ii) Congestive cardiac failure.
iii) Cirrhosis of liver. v) None of the above.

b) Blood borne metastasis is seen in all except :
i) Lung. ii) Liver. iii) Brain. iv) Heart.

c) Atrophy means :
i) Increase in size of the cell. ii) Decrease in size of cell.
iii) Increase in both size and number of cells. iv) Decrease in both size and number of cells.

d) Caseous necrosis is seen in :
i) Fat embolism. ii) Thromboembolism.
iii) Air embolism. iv) Amniotic fluid embolism.

e) Blood for an RBC count must be prepared from :
i) Citrate blood. ii) EDTA blood. iii) Clotted blood. iv) None of these.

f) The clotting factor released from damaged tissue is :
i) Prothrombin. ii) Tissue thromboplastin. iii) Fibrin. iv) Thrombin.

g) The most common cause of anaemia is :
i) Atrophy. ii) Hyperplasia. iii) Metaplasia. iv) Dysplasia.

h) ESR estimation is done by :
i) Wintrobe's tube. ii) Haemocytometer. iii) Colorimeter. iv) Test tube.

i) In blood bank blood is stored at :
i) 4-5^{0}c. ii) 37^{0}c. iii) -20^{0}c. iv) 20^{0}c.

j) The white/yellowish appearance of PAS is caused by :
i) RBC. ii) Neutrophil. iii) Basophil. iv) Eosinophil.

2. Write short notes on ***any two*** of the following: 2 x 5

a) Cardinal signs of inflammation. b) Laboratory diagnosis of myocardial infarction.
c) Morphological classification of anemia.

3. Answer ***any two*** of the following :

a) Define thrombosis. Describe briefly the pathogenesis of thrombosis? What are its possible fates? 2+5+3

b) Define Necrosis. Describe briefly the different types of Necrosis with suitable examples. 2+8

c) What is meant by jaundice? What is obstructive jaundice? Write down its causes. Briefly describe the laboratory diagnosis of jaundice. 1+1+2+6

Group-B

10 x 1

4. Tick the correct answer :

a) The method of sterilization by steaming at 100^0C for 20 minutes on three successive days is known as :
i) Enriched media. ii) Enrichment media. iii) Selective media. iv) Simple media.

b) Biological control used in hot air oven is the spore of:
i) Bacillus stearothermophilus. ii) Clostridium perfringens.
iii) Bacillus cereus. iv) Clostridium tetani.

c) Koch's postulates are satisfied by all bacteria except:
i) Staphylococcus aureus. ii) Mycobacterium leprae.
iii) Clostridium tetani. iv) Escherichia coli.

d) Definition of an antiseptic:
i) Definition of an antiseptic.
ii) Chemicals that prevent infection without damaging living tissues.
iii) Chemicals that can prevent infection on non-living tissues.
iv) Chemicals that can only kill or prevent infection on animal housing.

e) Hfr strain devoted as :
i) High frequency of recombination. ii) Higher form of recombination.
iii) Highest form of recombination. iv) Heavy frequency of recombination.

f) Rod shaped bacteria forming chams is known as :
i) Steptococci. ii) Staphylococcus. iii) Strepto bacilli. iv) None of these.

g) Which gas is used for the fumigation of operation theatres :
i) Formal dehyde gas. ii) Hydrogen gas. iii) Nitrogen gas. iv) None of these.

h) Definition of an antiseptic :
i) Chemicals that prevent infection and damage living tissues.
ii) Chemicals that prevent infection without damaging living tissues.
iii) Chemicals that can prevent infection on non-living tissues.
iv) Chemicals that can only kill on present infection on animal housing.

i) What is virioid ?
i) DNA without protein coat. ii) RNA without protein coat.
iii) RNA with protein coat. iv) DNA with protein coat.

j) Which of the following organisms are acid fast :
i) Mycobacterium Tuberculosis. ii) Vibrio Cholerae.
iii) E. coli. iv) Staphylococcus.

5. Write short notes on ***any two*** of the following : 2 x 5

a) Describe bacterial acid fast staining procedure. b) Write down the S.O.P of autoclave.
c) Bacterial Spore.

6. Answer ***any one*** of the following :

a) Describe bacterial growth curve. How continuous culture of bacteria is maintained. 3+7

b) Describe different culture media used in bacteriological laboratory. 10

The West Bengal University of Health Sciences
1st BMLT Examination, 2017

Subject: Medical Lab Fundamentals

Time: 3 hrs **Full Marks: 70**

Attempt all questions

1. Tick (✓) the correct answer : 20 x 1

a) The resolving power of an electron microscope is :
   i) $1A^0$. ii) $10 A^0$. iii) $100 A^0$. iv) $1000 A^0$.

b) Mobile phase and Stationary phase is used in the following technique :
   i) Spectroscopy. ii) Microscopy. iii) Chromatography. iv) Centrifugation.

c) Which of the following microscope is used to observe flagellary movement ?
   i) Compound microscope. ii) Electron microscope.
   iii) Phase contrast microscope. iv) Fluorescence Microscope.

d) Which light is used in fluorescence microscopy?
   i) Infrared Light. ii) Ultraviolet Light. iii) White light. iv) Sunlight.

e) The spectral range of visible spectrophotometer is :
   i) 200nm-400nm. ii) 400nm-5600nm. iii) 800nm-3500nm. iv) 3500nm-5600nm.

f) In agarose gel electrophoresis, DNA is moved towards the :
   i) Cathode. ii) Anode. iii) DNA doesn't move. iv) None of these.

g) pH of a solution is dependent on :
   i) Pressure. ii) Volume. iii) Mass. iv) Temperature.

h) TLC is a technique where the stationary phase is :
   i) Silica gel. ii) Water. iii) Alcohol. I v) None of these.

i) Ninhydrin is used in :
   i) Centrifugation. ii) Fluorescent Microscopy.
   iii) Chromatography. iv) Ultracentrifuge.

j) Highest temperature can be achieved in laboratory water bath is :
   i) 100°c. ii) 120°c. iii) 140 °c. iv) 150°c.

k) The resolving power of an electron microscope is :
   i) $1A^0$. ii) $10 A^0$. iii) $100 A^0$. iv) $1000 A^0$.

l) Which kind of chromatography is useful to separate volatile substances?
   i) Paper chromatography. ii) Gas liquid chromatography.
   iii) Thin layer chromatography. iv) Ion-exchange chromatography.

m) Which of the following light is suitable for getting maximum resolution in microscope?
   i) Red. ii) Green. iii) Blue. iv) Orange.

n) Microcentrifuge has a capacity of :
   i) Upto 6000 rpm. ii) Upto 50,000 rpm. iii) Upto 12000 rpm. iv) Upto 25,000.

P. T. O.

o) What is rpm?

i) Rotation Per Minute. ii) Revolution Per Minute.

iii) Rate Per Minute. iv) Revolve Per Minute.

p) Which of the following statements is correct?

i) Infrared radiation has a shorter wavelength than visible light.

ii) Microwave radiation possesses more energy than infrared radiation.

iii) Infrared radiation has a lower wavenumber than visible light.

iv) Ultraviolet radiation has a longer wavelength than infrared radiation.

q) Paper chromatography separates molecules according to their :

i) Molecular size. ii) Polarity. iii) Solubility. iv) Matrix.

r) What is sodium dodecyl sulphate?

i) Buffer. ii) Indicator. iii) Solvent. iv) Detergent.

s) Object can be magnified under electron microscope about :

i) 350, 000 times. ii) 250, 000 times. iii) 300, 000 times. iv) 450, 000 times.

t) Full forms of TEM is :

i) Transmission electron microscope. ii) Transmission emitted microscope.

iii) Transmission electron.

2. Write short notes on *any four* of the following : 4 x 5

a) Factors affecting sedimentation velocity.

b) Define UV-visible spectroscopy. State the Lambert Beers Law. Which spectroscopy is used to measure vitamin D in laboratory?

c) Ion-exchange chromatography.

d) Briefly discuss about the working principle of SDS-PAGE.

e) Working principle of pH meter.

f) Working principle of ion selective electrode.

3. Answer *any three* from the following :

a) Write down the principle of centrifugation. Mention the different types of centrifugation. What is standard sedimentation coefficient? Differentiate between centripetal force and centrifugal force. 3+3+2+2

b) Briefly discuss about HPLC. State its applications. 6+4

c) Briefly describe about www. Write different advantages of Internet. What is Browser? Briefly describe about - Internet Protocol. 3+2+2+3

d) Briefly discuss about DBMS. What is an operating system? Why it is necessary for a computer? 5+2+3

e) Classify chromatographic technic according to the mobile and stationary phases. 10

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The West Bengal University of Health Sciences
1st BMLT Examination, 2016

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

5 x 1

1. Tick the correct answer :
   a) Lipase is an enzyme for digestion of :
      i) Fat. ii) Carbohydrate. iii) Protein. iv) All of these.
   b) Destruction of Occipital lobe causes :
      i) Hearing loss. ii) Vision loss. iii) Balance loss. iv) Both i) and ii).
   c) Residual volume of lung is :
      i) 500 ml. ii) 1200 ml. iii) 2200 ml. iv) 5500 ml.
   d) Elbow joint is :
      i) Hinge joint. ii) Ball and socket joint. iii) Pivot joint. iv) Plane joint.
   e) The substrate for enzyme Amylase for digestion is :
      i) Fat. ii) Protein. iii) Carbohydrate (starch). iv) Fructose.

4 x 5

2. Write short note on ***any four*** of the following :
   a) Nephron. b) Brain. c) Reproductive organ in male and female.
   d) Vertebrae. e) Bronchial tree with mechanism of breathing.

3. Answer ***any one*** of the following :
   a) Name the coagulation factor, intrinsic pathway of coagulation, causes of haemophilia. 4+4+2
   b) Describe structure and function of Pancreas, describe in brief muscle contraction. 3+3+4

Group – B

5 x 1

4. Tick the correct answer :
   a) Which Vitamin deficiency leads to night blindness?
      i) Vitamin-K. ii) Vitamin-A. iii) Vitamin-E. iv) Vitamin-C.
   b) Decreased potassium concentration leads to :
      i) Hypokalemia. ii) Polycythemia. iii) Hypocalcemia. iv) Hyponatremia.
   c) The major end product of nitrogen metabolism in human is :
      i) Uric acid. ii) Urea. iii) Ammonia. iv) None of these.
   d) Oxidation of fatty acids occurs at :
      i) Cytoplasm. ii) Mitochondria. iii) Nucleus. iv) Both i) and ii).
   e) Ketosis occurs due to high rate of oxidation of :
      i) Amino acids. ii) Fatty acids. iii) Lactic acids. iv) Pyruvic acids.

4 x 5

5. Write short note on ***any four*** of the following :
   a) Glycolysis. b) ETC. c) Obesity.
   d) β-oxidation of fatty acids. e) Atherosclerosis.

6. Answer ***any one*** of the following :
   a) Describe the sources, daily requirements, functions and deficiency symptoms of Vitamin C. 2+1+4+3
   b) Gluconeogenesis & its importance. 10

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The West Bengal University of Health Sciences
1st BMLT Examination, 2016

Subject: Cell Biology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the following questions : 5 x 1

a) Lysosome are the reservoirs of :

i) Hydrolytic Enzyme. ii) Oxidative Enzyme.

iii) Secretory Glycoprotein. iv) RNA & Protein.

b) The most abundant Lipid in cell membrane is :

i) Cutin. ii) Glycolipid. iii) Steroid. iv) Phospholipid.

c) Name of RNA containing Oncovirus :

i) Hepatitis B virus. ii) Epstein –Barr virus.

iii) Papilloma virus. iv) None of the above.

d) Sarcoma is related to the cause of :

i) Connective & muscular tissue. ii) Epithelial tissue. iii) Bone. iv) Adipose tissue.

e) Which of the following is correct statement? In animal :

i) Concentration of sodium is high inside the cell than outside.

ii) Concentration of calcium is high inside the cell than outside.

iii) Concentration of potassium is high inside the cell than outside.

iv) Concentration of magnesium is high inside the cell than outside.

2. Answer ***any four*** of the following : 4 x 5

a) Therapeutic use of stem cell.

b) Angiogenesis.

c) Cell-cycle check points.

d) Define protein glycosylation? Write a functions of RER with diagram. 2+3

e) Write any one example of a membrane fluidity of a plasma membrane with their explanation. What are differences between embryonic & adult stem cells? 3+2

3. Answer ***any one*** question :

a) Define second messenger? Write a brief idea about G-protein signalling? Why are G-protein called seven transmembrane protein. 2+6+2

b) Describe specificity, saturation and competition in case of a carrier mediated transport system. 3+4+3

P. T. O.

Group – B

5 x 1

4. Answer all questions :

a) Which of the following is a disaccharide?

i) Galactose. ii) Fructose. iii) Lactose. iv) Ribose.

b) Which of the following is true for globulin?

i) It is soluble in distilled water.
ii) It is soluble in distilled water but insoluble in diluted salt solution.
iii) It is insoluble in distilled water but soluble in diluted salt solution.
iv) It is not found in serum.

c) Most of the enzymes which are present in the cell have the highest activity at pH :

i) 2. ii) 4. iii) 6. iv) 7.

d) In conversion of lactate to pyruvate NAD acts as a/an :

i) Isoenzyme. ii) Enzyme. iii) Co-enzyme. iv) Anti-enzyme.

e) Which of the following is purine base?

i) Cytosine. ii) Uracil. iii) Guanine. iv) Thymine.

4 x 5

5. Answer ***any four*** of the following :

a) What are lipoproteins? Mention their distributions and function. 1+(2+2)

b) Mention Michealis Menten equation and convert it into Lineweaver-Burk type equation.

c) Describe the process of initiation of replication in E.coli.

d) Write notes on enzyme inhibition.

e) Describe briefly the chemical components of a cell.

6. Answer ***any one*** question :

a) What is autocatalytic splicing? Give an account of formation of spliceosome and its role in splicing. 2+8

2 x 5

b) Write short note on ***any two*** of the following :

i) Semi-discontinuous DNA replication. ii) Charging of tRNA.

iii) Watson and crick helical DNA structure.

The West Bengal University of Health Sciences
1st BMLT Examination, 2016

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

5 x 1

1. Tick the correct answer :

a) Intact RBC is found in urine in :
i) Hematuria. ii) Hemoglobinuria. iii) Hemosiderinuria. iv) Hemolysis.

b) Calor, Rubor, Dolor , Tumor are the features of :
i) Necrosis. ii) Apoptosis. iii) Acute inflammation. iv) Chronic Inflammation.

c) Ascites is collection of fluid in :
i) Peritoneal cavity. ii) Pleural cavity. iii) Pericardial cavity. iv) Synovial cavity.

d) Healing of wound by same type of tissue is :
i) Repair. ii) Regeneration. iii) Remodelling. iv) All of these.

e) Microcytic hypochromic anaemia is due to deficiency of :
i) Vitamin B. ii) Vitamin C. iii) Folic acid. iv) None of these.

4 x 5

2. Write short notes on ***any four*** of the following:
a) Oral G.T.T.
b) Preparations of stool for microscopic examination.
c) Enterohepatic circulation of urobilinogen.
d) Granuloma.
e) Decompression sickness.

3. Answer ***any one*** of the following :
a) Define Healing. Describe briefly the difference between the Healing by primary intension & Healing by secondary intension? What are the complications of wound healing? 2+6+2

b) Define Necrosis. Describe briefly the different types of Necrosis with suitable examples. 2+8

P. T. O.

Group-B

4. Tick the correct answer : 5 x 1

a) Blood agar media is an example of :

i) Enriched media. ii) Enrichment media. iii) Selective media. iv) Simple media.

b) Glutaraldehyde is used for sterilization of :

i) Cystoscope. ii) Endoscopes. iii) Bronchoscopes. iv) All of these.

c) Transmission of a portion of DNA from one bacterium to another by a bacteriophage is known as :

i) Transformation. ii) Transduction.

iii) Conjugation. iv) All of the above.

d) Red heat is used for sterilization of :

i) Inoculating wire & loops. ii) Soiled dressings.

iii) All glass syringes. iv) Glass slides.

e) The period between inoculation of bacteria in a culture medium & beginning of multiplication is known as :

i) Log phase. ii) Lag phase.

iii) Decline phase. iv) Stationary phase.

5. Write short notes on ***any four*** of the following : 4 x 5

a) Peptidoglycan structure. b) Plasmid.

c) Different types of culture media. d) Fluid Sterilization.

e) Photosynthetic Bacteria.

6. Answer ***any one*** of the following :

a) Name the various methods of gene transfer in bacteria. Discuss any one of them. 3+7

b) Draw a labeled diagram of bacterial cell. Describe the structure of Gram negative bacterial cell wall. 5+5

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The West Bengal University of Health Sciences
1st BMLT Examination, 2016

Subject: Medical Lab Fundamentals & Basic Computer Skills

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick(✓) the correct answer : 5 x 1

a) Which light is used in fluorescence microscopy?
   i) Infrared light. ii) Ultraviolet light.
   iii) White light. iv) Sunlight.

b) A technique which separates charged particles using electric field is.
   i) Hydrolysis. ii) Electrophoresis. iii) Protein synthesis. iv) Protein denaturing.

c) Unit of radioactivity is :
   i) Dalton. ii) Bohr. iii) Becquerel. iv) All of these.

d) Radioisotopes emit :
   i) α-rays. ii) β-rays. iii) *x-rays*. iv) None of these.

e) In agarose gel electrophoresis, DNA is moved towards the :
   i) Cathode. ii) Anode.
   iii) DNA doesn't move. iv) None of these.

2. Write short notes on ***any four*** of the following : 4 x 5
   a) Thin Layer Chromatography.
   b) Autoclave.
   c) Electronic transmission theory in UV visible spectrometry.
   d) Fluorescence Microscopy and its application.
   e) Auto-Radiography.

3. Answer ***any one*** from the following :
   a) What is Scintillation Counter? How you will measure radioactivity with a Scintillation Counter? 3+7

   b) Write down the working principle and application of gel electrophoresis. 5+5

Group – B

4. Tick (✓) the correct answer : 5 x 1

a) In Von Neumann computer, program is assumed to be :

i) In main memory and data is on secondary storage.

ii) On secondary storage and data is also on secondary storage.

iii) In main memory and data is also in main memory.

iv) None.

b) DDL stands for :

i) Data Dictionary Language. ii) Dictionary Defined Language.

iii) Data Defined Language. iv) Data Definition Language.

c) A CPU instruction normally contains :

i) No Address. ii) One address reference.

iii) Maximum of 3 address references. iv) None.

d) The entity integrity rule requires that :

i) That all entries are unique. ii) A part of a key may be null.

iii) Duplicate object values are allowed. iv) None.

e) The "first generation" of computers used :

i) Gearsx. ii) Vacuum Tubes.

iii) Transistors. iv) No electricity, Mechanical.

5. Write short notes on ***any four*** of the following :

a) Basic properties of modern computer. 5

b) Write short notes on MAN & LAN. 2½ +2½

c) What is thrashing? Define dynamic loading. 2½ +2½

d) Define computer virus? Give two examples. What do you mean by IP address? 2+1+2

e) Define DBMS? What is the main task of DBA? 2+3

6. Answer ***any one*** of the following :

a) Describe some general uses of the internet. Write a short note on virtual memory and text editing. 5+5

b) What is output device? Give example. Briefly discuss on CRT monitor. 2+1+7

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The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

   a) Reserve pacemaker is :
   i) Avnode; ii) S.A node; iii) Bundle of HIS; iv) Tricuspid valve.

   b) Which is called ball and socket joint:
   i) Ankle joint. ii) Shoulder joint. iii) Carpal joint. iv) Elbow joint.

   c) Blood group antibodies occur in:
   i) RBC. ii) Eosinophils. iii) Plasma. iv) Basophils.

   d) The breakdown of proteins begins with secretion of the:
   i) Salivary glands. ii) Stomach. iii) Pancreas. iv) Small intestine.

   e) The eranial nerve which supply the heart is :
   i) Trigeminal nerve. ii) Vagus nerve. iii) Abducent nerve. iv) Trochlear nerve.

2. Write short note on ***any four*** of the following : 4 x 5
   a) Cardiac cycle. b) Anaemia. c) Neurons. d) Gastric juice. e) Grave's disease.

3. Answer ***any one*** of the following : 1 x 10
   a) Describe the functions of liver.
   b) Write the different types of bones with examples.

Group – B

4. Tick the correct answer : 5 x 1

   a) Rate limiting enzyme of glycolysis is :
   i) Citrate synthase. ii) Isomerase. iii) Phosphofructokinase. iv) Lactate dehydrogenase.

   b) Good cholesterol is:
   i) HDL. ii) LDL. iii) VLDL. iv) IDL.

   c) The dietary sources of Biotin in animal:
   i) Muscle. ii) Brain. iii) Liver. iv) Pancreas.

   d) Hexokinase enzyme is found in:
   i) Kidney. ii) All tissues. iii) Lymph node. iv) Bone marrow.

   e) Which is the end product of protein catabolism?
   i) Uric acid. ii) Urea. iii) Creatine. iv) Glucose.

5. Write short note on ***any four*** of the following : 4 x 5
   a) Glycogenolysis. b) Lipoproteins. c) Clinical importance of electrolyte balance.
   d) Name two fat soluble vitamins and state their functions.
   e) Describe transamination reaction with proper example.

6. Answer ***any one*** of the following :
   a) Describe the steps of TCA cycle. How many ATP are formed per turn TCA cycle? 9+1
   b) Write about regulation of blood sugar level in carbohydrate metabolism. Define atherosclerosis. 8+2

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The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Cell Biology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the following questions : 5 x 1

a) Which of the following are all present in bacterial cells?

i) Mitochondria, cell membrane, DNA, cytoplasm.

ii) Nucleus, cell membrane, mitochondria cytoplasm.

iii) Ribosome, cell membrane, DNA, cytoplasm.

iv) None of the above.

b) Following is an example of Base analog agent:
i) 5 Bromouracil. ii) AZT. iii) Methylmethane sulfonate. iv) Both A&B.

c) Following is a chemical factor causing angiogenesis:
i) FGT. ii) MMP.
iii) Both. iv) None.

d) Which of the following cell do not possess nucleus:
i) Epithelial cell. ii) Mature RBC. iii) B-cells. iv) T- cells.

e) Telomerase is present in:
i) Germ cells. ii) Embryonic stem cells. iii) Both i & ii. iv) None of these.

2. Answer ***any four*** of the following : 4 x 5

a) Briefly discuss the structure and function of different parts of Nucleus.

b) Differentiate between intracellular and cell surface receptor. How cAMP helps to induce tanscription?

c) State the characteristics of a cancer cell. What is metastasis?

d) Briefly discuss the lysogenic cell cycle of bacteriophage.

e) Briefly describe the structure of ATP synthase in mitochondria. What is endomembrane system?

3. Answer ***any one*** question :

a) Name two phospholipids present in cell membrane? Define symport and antiport. Why phospholipids are called amphipathic molecule? Give a brief account of fluid mosaic model of cell membrane. 1+2+2+5

b) Describe JAK-STAT pathway of cell signaling. Describe how G protein receptor helps in cell signaling. Describe steroid and thyroid hormone signaling with diagram. 3+3+4

P. T. O.

Group – B

4. Answer all questions : 5 x 1

a) For which of the following tRNA is responsible:

i) Replicaiton. ii) Transcription. iii) Translation. iv) All of the above.

b) During transcription RNA polymerase binds with:

i) Promoter.

ii) Operator.

iii) Cap Site.

iv) Regulator.

c) Which of the following statements about enzymes or their function is true :

i) Enzymes do not alter the overall change in free energy for a reaction.

ii) Enzymes are proteins whose three-dimensional form is key to their function.

iii) Enzymes speed up reactions by lowering activation energy.

iv) All of the above.

d) Triacylglycerols are :

i) Soluble in water. ii) Insoluble in water.

iii) Soluble in water at elevated temperature. iv) Partially soluble in water.

e) Which mutagen causes T-T dimer?

i) 5 Bromouracil ii) UV light.

iii) Nitrous acid. iv) Acridine orange.

5. Answer ***any four*** of the following : 4 x 5

a) Differentiate between Rho dependent and Rho independent modes of termination of transcription.

b) Explain semi – conservative mode of DNA replication with diagram.

c) Define allosteric regulation of enzymes. Illustrate with suitable example.

d) Write the hydrolysis product of starch and lactose with structure.

e) "Genetic material of virus is nucleic acid"-illustrate an experiment in favour of the statement.

6. Answer ***any one*** question :

a) Explain the role of tRNA during translation. How DNA polymerase differ in prokaryotic and eukaryotic cell? 5+5

b) Write short note on ***any two*** of the following : 2 x 5

i) Watson Crick Model of DNA. ii) mRNA editing. iii) RNA polymerase.

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The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. *Tick the correct answer :* 5 x 1

   a) Vitamin..... related to prothnompin time is:

   i) A ii) D iii) E iv) K.

   b) Rh negative mother:

   i) Has 'D' antigen in blood. ii) May have antibody in blood.

   iii) May develop Rh immunization during first pregnancy. iv) All the statements are incorrect.

   c) The cells of 'packed cell volume' are:

   i) White blood cells. ii) Red blood cells. iii) Platelets. iv) All of these.

   d) Fouchet test is done to detect:

   i) Bilirubin in urine. ii) Urobilinogen in urine. iii) Blood in urine. iv) Blood in stool.

   e) % of Nacl in normal saline is:

   i) 0.09 ii) 0.85 iii) 1.0 iv) 0.8

2. Write short notes on ***any four*** of the following: 4 x 5

   a) Biochemical markers of myocardial infarction.

   b) Complications of wound healing.

   c) Metaplasia.

   d) Differences between hyperemia and congestion.

   e) ABO system of blood grouping.

3. Answer ***any one*** of the following :

   a) Define thrombosis and embolism. What are the different types of embolism? What are the fates of a thrombus? 2+2+2+4

   b) Define oedema. What are the differences between transudate and exudate? 2+8

P.T.O.

Group-B

4. Tick the correct answer : 5 x 1

a) Generation time of E. Coli is :

i) 20 seconds. ii) 20 minutes. iii) 20 hours. iv) 20 days.

b) Lipopolysaccharide is a major constituent of cell wall in:

i) Gram positive bacteria. ii) Gram negative bacteria.

iii) Fungi. iv) Protozoa.

c) Chinese letter arrangement is characteristic of :

i) Mycobacteriam tuberculosis. ii) Bacillus anthacis.

iii) Corynebacteriam diphtheria. iv) Clostridium tetani.

d) Acquisition of naked DNA by a bacterium from its environment is known as:

i) Transformation. ii) Transduction.

iii) Conjugation. iv) Mutation.

e) Mac Conkey agar media is an example of :

i) Transport media. ii) Differential media.

iii) Enriched media iv) Enrichment media.

5. Write short notes on ***any four*** of the following : 4 x 5

a) Grains stain. b) Hot air oven.

c) Enriched media. d) Koch's postulates.

e) Transduction.

6. Answer ***any one*** of the following : 10

a) Methods to isolate bacteria in pure culture from clinical specimens.

b) Draw and describe bacterial growth curve.

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The West Bengal University of Health Sciences
1st BMLT Examination, 2015

Subject: Medical Lab Fundamentals & Basic Computer Skills

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick(✓) the correct answer : 5 x 1

a) Electrophoretic separation of proteins is most commonly performed in :
i) Capillary electrophoresis ii) Native PAGE.
iii) Agarase Gel. iv) SDS – PAGE.

b) Oil is used in Microscopy to change the difference of _____ between glass and air.
i) Reflection. ii) Refraction. iii) Interference. iv) All.

c) 'Mobile phase' and 'Stationary phase' is used in the following technique:
i) Spectroscopy. ii) Microscopy. iii) Chromatography. iv) Centrifugation.

d) Range of P^H in alkaline solution is:
i) 1-4. ii) 8-14. iii) 7.1-14. iv) 5-9.

e) The other name of vibrational spectroscopy is :
i) NMR. ii) IR. iii) UV-visible. iv) Raman.

2. Write short notes on ***any four*** of the following : 4 x 5
a) Discontinuous Electrophoresis.
b) Scanning Electron Microscope.
c) Paper Chromatography.
d) What is Elasting scattering? Differentiate among Raman and Rayleigh scattering.
e) What is chemical shift value? How does it change according to the chemical environment in NMR spectroscopy?

3. Answer ***any one*** from the following :
a) What is Radio Isotope? How it is used in Medical Field? Write short notes on scintillation counter. 2+3+5
b) Write down the working principle and application of a colorimeter. 10

P.T.O

Group – B

4. Tick (✓) the correct answer : 5 x 1

a) All of the following are examples of real security and privacy risks EXCEPT:

i) Viruses. ii) Hackers. iii) Spam. iv) Identity theft.

b) What does HTTP stand for?

i) Head Tail Transfer Protocol. ii) Hypertext Transfer Protocol.

iii) Hypertext Transfer Plotter. iv) Hypertext Trnasfer Plot.

c) _____ Controls the way in which the computer system functions and provides a means by which users can interact with the computer:

i) The operating system. ii) The mother board.

iii) The platform. iv) Application software.

d) "Plotters" is an example of :

i) Input. ii) Output.

iii) Both i) & ii). iv) None of the above

e) W^3 is define as:

i) Set of rules. ii) Series of services interconnected through hypertext.

iii) Internet service digital network. iv) None of the above

5. Write short notes on ***any four*** of the following : 4 x 5

a) Write a note on compiler.

b) Explain network topology.

c) Explain wide area network (WAN).

d) What is seek time and latency time? Give an example of web browser.

e) Define the data abstraction. Define the various type of BUS.

6. Answer ***any one*** of the following :

a) What is machine level and high level language and what do you mean by assemble language? 10

b) Difference between SRAM and DRAM. Write the full form of URL. Describe URL with example. Define virtual memory. Give an example of search engine. 3+1+3+2+1

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The West Bengal University of Health Sciences
1st BMLT Examination, 2013

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs. **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

a) The shaft of bone is called :
i) Epiphysis. ii) Diaphysis. iii) Cartilage. iv) Periosteum.

b) Which of the following secrets amylase?
i) Mouth ii) Liver. iii) Pancrease iv) Gastric mucosa.

c) Vein start from the medial side of the hand is called :
i) Basalic vein. ii) Cephalic vein. iii) Median cubital vein. iv) Saphanus vein.

d) Formation of RBC is known as :
i) Erythropoiesis. ii) Glycogenesis. iii) Leucocytogenesis. iv) Lipogenesis.

e) The largest living human cell of the body is :
i) Ovum. ii) Sperm. iii) Monocytes. iv) Lymphocytes.

2. Write short note on ***any four*** of the following : 4 x 5
a) Function of bones. b) Cushing's syndrome. c) Hypoglycaemia.
d) Arterial supply of stomach and function of fundus. e) Blood Buffers.

3. Answer ***any one*** of the following : 1 x 10
a) Describe the structure and function of Kidneys.
b) What is respiration? Write down the different parts of respiratory system. Discuss their functions.

Group – B

4. Tick the correct answer : 5 x 1

a) Triglycerides belong to the class of :
i) Simple Lipids. ii) Compound Lipids. iii) Derived Lipids. iv) Miscellaneous Lipids.

b) Pellagra develops due to deficiency of the vitamin :
i) Thiamine. ii) Biotin. iii) Niacin. iv) Riboflavin.

c) For estimation of Lipid profile :
i) EDTA blood is collected. ii) Citrated blood is collected.
iii) Blood collected in fluoride vial. iv) Blood collected in without any anticoagulant.

d) Blood glucose estimation is performed by :
i) Colorimetric method. ii) Titration method.
iii) Fluorimetric method. iv) Turbidometric method.

e) Tryptophan is :
i) Non-essential amino acid. ii) Essential amino acid.
iii) Charged amino acid. iv) Basic amino acid.

5. Write short note on ***any four*** of the following : 4 x 5
a) Ketone bodies. b) Plasma proteins. c) Glycosuria.
d) Bear-Lambert law. e) Oxidative deamination.

6. Answer ***any one*** of the following : 1 x 10
a) HMP shunt-pathway and its importance. b) Urea cycle and its importance.

The West Bengal University of Health Sciences
1st BMLT Examination, 2013

Subject: Cell Biology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

a) Which of the following are all present in animal cells?
   i) Mitochondria, cell membrane, cell wall, cytoplasm.
   ii) Nucleus, cell membrane, mitochondria cytoplasm.
   iii) Vacuole, cell membrane, nucleus, mitochondria.
   iv) None of the above.

b) Which of the combination of histone proteins form octamer?
   i) H_1, H_2a, H_2b, H_4. ii) H_2a, H_2b, H_3, H_4. iii) H_1, H_2a, H_3, H_4. iv) None of these.

c) Which of the following is not true of the nuclear envelope?
   i) The nuclear envelope is exactly like other cellular membranes.
   ii) The nuclear envelope separates the genetic material from the cytoplasm.
   iii) The nuclear envelope is a pair of concentric membranes.
   iv) The nuclear envelope is studded with pores.

d) Give example of Gram positive bacteria :
   i) E Coli. ii) Vibrio sp. iii) Pseudomonas sp. iv) S. aureus.

e) What cell organelle is responsible for the preduction of CP-DNA?
   i) Chloroplast. ii) Nucleus. iii) Vesicle. iv) Mitochondria.

2. Answer ***any four*** of the following : 4 x 5

a) Briefly discuss the shape, genome, structure and pathogenecity of E. Coli.

b) What are cell signaling and mention its function? State the different types of signaling.

c) State differences between prokaryotic and Eukaryotic cells.

d) Write the stages of cancer screening and therapy.

e) Write short notes on :
   i) Mitochondria. ii) Nucleus.

3. Answer ***any one*** question :

a) Define totipotency. What is stem cell? Write its features. Write a note on different types of stem cells. 2+2+2+4

b) Write short notes on : 10
   i) Life cycle of bacteriophage. ii) Viroids.
   iii) Endoplasmic Reticulum. iv) Mycoplasma.

Group – B

4. Tick the correct answer : 5 x 1

a) Translation takes place in :

i) Cytoplasm. ii) Mitochondria. iii) Nucleus. iv) None of these.

b) Sucrose is an example of :

i) Reducing sugar. ii) Non reducing sugar.

iii) Monosaccharide. iv) None of the above.

c) Which form of DNA is present in human :

i) A-form. ii) Z-form. iii) B-form. iv) None of these.

d) Neoglucogenesis is the process of :

i) Formation of glucose from non carbohydrate source. ii) Breakdown of glycogen.

iii) Formation of glycogen. iv) None of the above.

e) Is sterol present in the following organism :

i) E. Coli. ii) Mycoplasma. iii) Clamydia. iv) Rickettsia.

5. Answer ***any four*** of the following :

a) Is RNA primer required for replication? If yes, why? Write the activity of helicase and ligase in prokaryotic DNA replication. 2+3

b) Write down the different classes of enzymes according to their function, with appropriate examples. 5

c) Write down the different types of protein structure? Explain secondary structure of protein. 3+2

d) Define Disaccharides with examples. 5

e) Define shine-Delgnano sequence. What are the different types of mutation? 5

6. Answer ***any one*** question :

a) Define central Dogma. Explain post translational modification in details. 3+7

b) Write short note on ***any two*** : 2 x 5

i) tRNA structure. ii) mRNA surveillance.

iii) Genetic code. iv) Lipoproteins.

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The West Bengal University of Health Sciences
1st BMLT Examination, 2013

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

   a) Bleeding time is done to assess;

   i) Platelet count ii) Coagulation time iii) None iv) Both.

   b) Anticoagulant used for determination of ESR is

   i) 3.8% Na citrate: blood=1:4 ii) 3.8% Na citrate: blood=1:9

   iii) 3.8% Na citrate: blood =4:1 iv) 3.8% Na citrate: blood=1:1

   c) Blood bag contains :

   i) CPDA 1 ii) EDTA iii) Heparin iv) ACD 4

   d) What is needed for haemoglobin electrophoresis :

   i) Haemolysate ii) Patient's RBC iii) Patient's serum iv) Buffy coat.

   e) Universal anticoagulant is :

   i) EDTA ii) CPDA iii) Double oxalate iv) Tri sodium citrate.

2. Write short notes on ***any four*** of the following : 4 x 5

   a) Improved Neaubauers chamber. b) Bleeding time. c) PT.

   d) Reticulocyte count. e) Packed cell volume.

3. Answer ***any one*** of the following :

   a) Define Necrosis. What are features of a necrotic cell? Give a brief description of different type of necrosis with suitable examples. 2+4+4

   b) Define Inflammation. Write down the general features, classification and systemic effects of inflammation. 2+8

Group-B

4. Tick the correct answer : 5 x 1

   a) Casoni's test is done for the diagnosis of :

   i) Typhoid fever ii) Hydatid disease iii) Cysticercosis iv) Diphyllobothriasis

   b) Pointed articles are sterilized by :

   i) Radiation ii) Chemical agent iii) Autoclave iv) Hot air oven

   c) Throat swab for Diptheria culture is done on :

   i) Nutrient agar slop ii) Mac Conkey's Agarslop iii) Loeftter's slop iv) S.S. Agar plate.

   d) Media used for the differentiation of two organism :

   i) Endo Agar ii) Potato Dextrose Agar iii) Eosin Methylene Blue agar iv) Mac conkey agar.

   e) Microscope is invented by :

   i) Robert Koch ii) Pasteur iii) Jennor iv) Lewenhock

5. Write short notes on ***any four*** of the following : 4 x 5

   a) Sterilization. b) Generation time. c) Peptidoglycan layer.

   d) Flagella. e) Bacterial Nutrition.

6. Answer ***any one*** of the following :

   a) Write down the principles and use of Autoclave. 10

   b) i) Pasteurization. ii) Antiseptic and disinfectants. 5+5

The West Bengal University of Health Sciences
1st BMLT Examination, 2013

Subject: Medical Lab Fundamentals & Basic Computer Skills

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick(✓) the correct answer : 5 x 1

a) Chromatography is used to :
i) Add new sample ii) Separate the molecules from a mixture
iii) Determine the concentration of a sample iv) Determine the structure of molecule.

b) The other name of electronic spectroscopy is :
i) IR ii) Roman iii) UV-VIS iv) NMR

c) The spectral range of visible spectrophotometer is :
i) 200 nm-400 nm ii) 400 nm-5600 nm iii) 800 nm-3500 nm iv) 3500nm-5600nm

d) The phenomena of fluorescence and phosphorescence are the result of :
i) Electronic transition ii) Vibrational transition
iii) Rotational transition iv) Nuclear transition

e) Which of the following microscope is used to observe flagellary movement :
i) Compound microscope ii) Electron microscope
iii) Phase contrast microscope iv) Fluorescence microscope.

2. Write short notes on ***any four*** of the following : 4 x 5

a) Differentiate between centripetal force and centrifugal force. Mention the different types of centrifugation.
b) Write down the mathematical expression of Wose, Wose, Ev, v and Zeropoint energy.
c) Define chromophore and 'Auxochrome with proper example.
d) How does the chemical shift value change according to the chemical environment in NMR spectroscopy?
e) What do you mean by Resolution and Resolving Power of a microscope? Write down the different parts of a compound microscope.

3. Answer ***any one*** from the following :

a) Write down the working principle of electronic spectroscopy what are the applications of electronic spectroscopy. 6+4
b) Briefly discuss the Ion exchange chromatography. State its application. 6+4

Group – B

4. Tick (✓) the correct answer : 5 x 1

a) DBMS allows data manipulation through primitive operations which can be grouped to form :
i) Data transaction ii) Software system iii) Hardware system iv) None of the above

b) The Backspace Key :
i) Move forward 1 space at a time ii) Move backward 1 space at a time
iii) Erase one word at a time iv) Erase two words at a time v) All of the above.

c) When formatted number does not fit within a cell it displays :
i) ##### ii) # DIVIO iii) # DIVI@ iv) None of the above

d) A computer's main memory is called :
i) Database ii) Computer memory c) RAM d) None of the above

e) Which one of the following is not an electronic computer :
i) IBMPC ii) ENIAC iii) PC DOS iv) IBM 1620

5. Write short notes on ***any four*** of the following :

a) What is software? How many types of software are there? Write the difference between them. 2+2+1
b) What is RAM and ROM? Briefly describe about virtual memory. 2+3
c) What is computer virus? "Hence X is virus free"- if yes, then explain. 2+3
d) Write difference between web and internate. Write advantages and disadvantages of internate. What is email ? Write the nature of email address. What is facebook? 1+1+1+1+1
e) What is search engine? How it work – explain with example. What are basics of LINUX, WINDOWS? 2+1+2

6. Answer ***any one*** of the following :

a) What is hyperlink? Explain with example. What is Browser? Write difference between IP and TCP/IP. 2+2+2+4
b) What is memory segmentation? How it works? Define swapping. Write full form of WAN, DBMS, ASCII, Q-BASIC. 2+2+2+4

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The West Bengal University of Health Sciences
1st BMLT Examination, 2012

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1
   a) Longest bone of the body :
      i) Tibia. ii) Fibula. iii) Femur. iv) Humerus.
   b) Amount of Urine output per day :
      i) 150 ml. ii) 1500 ml. iii) 1000 ml. iv) 750 ml.
   c) Life span of RBC :
      i) One day. ii) 72 hours. iii) 120 days. iv) 1 month.
   d) Which cranial nerve supply the heart :
      i) Glossopharyngeal. ii) Vagus. iii) Trigeminal. iv) Facial.
   e) Insulin is secreted from :
      i) Liver. ii) Stomach. iii) Pancreas. iv) Pitutary.

2. Write short note on ***any four*** of the following : 4 x 5
   a) Kidney. b) Synovial joint. c) Neurone.
   d) Differential count. e) Medial cubital vein.

3. Answer ***any one*** of the following : 1 x 10
   a) Describe the structure and function of liver.
   b) What are the source of digestive juice which take part in the process of digestion.

Group – B

4. Tick the correct answer : 5 x 1
   a) Sodium fluoride is added to blood collection vial to prevent :
      i) Glycogenesis. ii) Gluconeogenesis.
      iii) Glycolysis. iv) HMP Shunt pathway.
   b) Cholesterol is a : i) Simple Lipid. ii) Compound Lipid.
      iii) Derived Lipid. iv) Miscellaneous Lipid.
   c) Vitamin that helps in coagulation of blood :
      i) Vitamin A. ii) Vitamin K. iii) Vitamin C. iv) Vitamin B_6.
   d) A high blood urea level is called : i) Hyperammonemia. ii) Hyperuricemia.
      iii) Uremia. iv) Hyperglycemia.
   e) Glucokinase enzyme is present in : i) Liver. ii) Muscle. iii) Kidney. iv) Brain.

5. Write short note on ***any four*** of the following : 4 x 5
   a) Benedict's test. b) Oral glucose tolerance test. c) Essential amino acids.
   d) Biuret reaction. e) Scurvy.

6. Answer ***any one*** of the following : 1 x 10
   a) Transamination reaction. b) Glycogenolysis.

The West Bengal University of Health Sciences.

1st Year BMLT Practical Examination – 2012.

Sub: - Anatomy & Physiology, and Biochemistry

Time: Max. 6 hrs. **Full Marks:** 60 (30 + 30)

Group – A (Anatomy & Physiology)

1. How do you identify femur? 5
2. What are the methods of blood pressure measurement? 5
3. How does clinically radial pulse measure? 5
4. Viva - Voce 10
5. Practical Note Book 5

Group: - B (Biochemistry)

1). You are supplied an unknown solution marked 'A'. Identify what type of carbohydrate or what type of protein present in this sample?
[Write answer as columns (experiment, observation and inference) and give a conclusion related to your findings.] 5

2). From supplied serum sample marked 'PR'. Calorometrically estimate the amount of total protein present in 100 ml. of the sample , by binret method , solution. [Write method and calculation] 5

3). Determine the strength in normality of an unknown strong base, marked 'B'. Titrate with a standard known strong acid (0.1 N HCL) which are supplied to you . [Write procedure , observation and calculation] 5

4). Viva – Voce . 10

5). Practical Note Book. 5

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The West Bengal University of Health Sciences
1st BMLT Examination, 2012

Subject: Cell Biology & Biological Chemistry

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group – A 5 x 1

1. Answer the following :

a) Hormone receptors :
   i) Have a high affinity for their natural Ligand.
   ii) Are always linked to G proteins.
   iii) Are lipids.
   iv) Are always Located in the plasma membrane of their target cells.

b) What second messenger has been implicated in blood pressure regulation?
   i) CAMP. ii) NO. iii) CO. iv) IP_3.

c) What cell organelle is responsible for the production of ATP?
   i) Chloroplast. ii) Nucleus. iii) Vesicle. iv) Mitochondria.

d) Which of the following statements about histones is not true?
   i) Histones are very similar between species.
   ii) Histones have many basic amino acids.
   iii) Histones are rich in lysine and arginine.
   iv) Each histone has one single gene that codes for it.

e) G protein activation :
   i) Leads to changes in gene expression.
   ii) Always causes an increase in cyclic AMP.
   iii) Leads to the generation of second messengers.
   iv) Always results in a decrease in cyclic AMP.

4 x 5

2. Answer ***any four*** of the following :
   a) Briefly discuss the structure and function of chloroplast.
   b) Describe the structure and function of Endoplasmic Reticulum.
   c) Describe the fluid-mosaic model of plasma membrane.
   d) Write the stages of cancer screening and therapy.
   e) What are bacteriophages? Draw and discuss the structure of T_2 bacteriophages.

P. T. O.

3. Answer ***any one*** question: 4+6

a) What are cell signaling and mention its function? Explain G protein signaling.

b) Give some examples of Gram negative bacteria. Explain E. Coli with particular reference to its shape, pathogenecity and genome structure. 2+8

Group – B 5 x 1

4. Answer the following :

a) Triacylglycerol are :

i) Soluble in water.
ii) Insoluble in water.
iii) Soluble in water at elevated temparature.
iv) Partially soluble in water.

b) Just like DNA polymerase. RNA polymerase performs a template directed synthesis in the :

i) $3' \rightarrow 5'$ direction.
ii) $5' \rightarrow 3'$ direction.
iii) $5' \rightarrow 5'$ direction.
iv) $3' \rightarrow 3'$ direction.

c) The Disaccharide is :

i) Glucose. ii) Lactose. iii) Glycogen. iv) Starch.

d) Glycolysis is process of :

i) Formation of pyruvate or Lactate from glucose.
ii) Breakdown of glycogen.
iii) Formation of glucose.
iv) Formation of Succinyl CoA.

e) Human is unable to digest :

i) Starch. ii) Complex Carbohydrates. iii) Denatured proteins. iv) Cellulose.

5. Answer ***any four*** of the following :

a) Write short note on : 2 x 2½

i) Mutation. ii) mRNA–Surveillance.

b) Write the hydrolysis product of starch and Lactose with structure. 5

c) Explain the role of tRNA during translation. 5

d) Write a short notes on Glycosaminoglycans (GAGS). 5

e) Explain the following terms in the context of RNA structure. 2 x 2½

i) Poly A tail. ii) Cap.

6. Answer ***any one*** question :

a) How DNA was established as the genetic material? Explain semi-conservative mode of DNA replication with diagram. 6+4

b) Classify amino acids with suitable examples. Genetic code is triplet – Explain. 7+3

The West Bengal University of Health Sciences
1st BMLT Examination, 2012

Subject: Pathology & Microbiology

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

1. Answer the following : 5 x 1

a) Bence Jones protein is detected in :
i) Urine. ii) Serum. iii) Whole blood. iv) Sputum.

b) ESR estimation is done by :
i) Wintrobe's tube. ii) Heamocytometer. iii) Colorimeter. iv) Test tube.

c) Fixative used for electron microscopy is :
i) CCl_4. ii) Absolute alcohol. iii) Acetone. iv) Glutaraldehyde.

d) Routinely used dehydrating fluid for tissue in histopathology is :
i) 10% Formalin. ii) 40% formalin. iii) Absolute alcohol. iv) Xylene.

e) In Blood Bank blood is stored at :
i) $4\text{-}6^0$c. ii) 37^0c. iii) 20^0c. iv) -20^0c

2. Write short notes on ***any four*** of the following : 4 x 5

a) Red Cell Indices. b) Anticoagulants. c) Manual method of platelet count.
d) Necrosis. e) Healing by first intention.

3. Answer ***any one*** question:

a) What is meant by jaundice? Classify jaundice. Give the laboratory diagnosis of jaundice briefly. 1+3+6

b) What should be the fasting and post- prandial glucose level for diagnosis of diabetes? Name two metabolic complications of diabetes. Give the laboratory diagnosis of uncomplicated diabetes. 3+2+5

Group – B

4. Answer the following : 5 x 1

a) Pseudohyphae may be demonstrated in :
i) Cryptococcus. ii) Candida. iii) Dermatophyte. iv) Rhinosporidium.

b) Acid fast staining is done for identification of :
i) Bacterial spore. ii) Nocardia.
iii) Clostridium perfringens. iv) Mycobacterium tuberculosis.

c) Streptococcus can be demonstrated by :

i) Albert's stain. ii) Zeihl Neelson stain.

iii) Gram's stain. iv) All of these.

d) Microscopy was invented by :

i) Leeuwenhoek. ii) Robert Koch. iii) Pasteur. iv) Jenner.

e) Specimen collected for urine culture is :

i) Freshly collected urine. ii) First voided urine in the morning.

iii) Sample collected through suprapubic puncture. iv) Catheter collected urine.

5. Write short notes on ***any four*** of the following : 4 x 5

a) Preparation of blood agar.

b) Bacterial spore.

c) Generation time.

d) Peritricate flagella.

e) Koch's postulate.

6. Answer ***any one*** question: 1 x 10

a) What is the principle of sterilization by hot air oven? Sterilization of which items are done by this method? Name a few methods of sterilization. Name a few disinfectants.

b) Name the nuclic acids found in bacteria. Write in brief about bacterial conjugation.

60 / 12

The West Bengal University of Health Sciences
1st BMLT Examination, 2012

Subject: Medical Lab Fundamentals & Basic Computer Skills

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

5 x 1

1. Answer all questions :
   a) pH of a solution is dependent on :
      i) Pressure. ii) Volume. iii) Mass. iv) Temparature.
   b) Unit of Radioactivity is :
      i) Dalton. ii) Bohr. iii) Becquerel. iv) All of these.
   c) TLC is a technique where the stationary phase is :
      i) Silica gel. ii) Water. iii) Alcohol. iv) None of these.
   d) The range of pH, 0-7-14 is applicable only at :
      i) 100^0c. ii) 60^0c. iii) 25^0c - 30^0c. iv) 0-10^0c.
   e) Uv – visible spectroscopy is :
      i) Absorption spectroscopy. ii) Emission spectroscopy.
      iii) Nuclear spectroscopy. iv) All of the Above.

4 x 5

2. Answer ***any four*** from the following :
   a) How can a standard curve be drawn during the determination of unknown concentration of a sample by colorimetric method?
   b) What do you mean by 'shielding effect' and desheiding effect of NMR spectroscopy?
   c) Briefly discuss the working principle of IR spectroscopy.
   d) Classify chromatographic techniques according to the mobile and stationary phases.
   e) Why phenolpthalein is colourless in acidic medium but pink colour in basic medium?

3. Answer ***any one*** from the following :
   a) Briefly discuss the working principle of SDS-PAGE electrophoresis technique. State its application. 6+4
   b) Briefly discuss the working principle of GM counter and scintillation counter in radioactivity measurement. 5+5

Group – B

5 x 1

4. Answer all questions :
   a) Operating system is :
      i) System software. ii) Application software.
      iii) Assembly level software. iv) All of the above.
   b) WWW is :
      i) Web page. ii) Internet.
      iii) A type of hypertext. iv) To get the benefit of four services of internet.
   c) TCP / IP is a :
      i) Protocol. ii) Lazer. iii) Software. iv) None of these.

P. T. O.

d) ASC II stands for :

i) Asia standard code for information interchange.
ii) Asia standard code for information intelligence.
iii) American standard code for information interchange.
iv) None of the above.

e) The nature of e-mail address is :

i) Name @ domain.com.
ii) Name @ domain.
iii) Domain @ Name.
iv) Name domain.com.

5. Answer ***any four*** questions :

a) Define swaping. Briefly describe about virtual memory. 2+3

b) Define threat "Hence X is virus free" – if yes, then explain. 2+3

c) Write short note about search engine. 5

d) Write different functions of operating system. 5

e) Write a short note about Q-basic. 5

6. Answer ***any one*** question :

a) What is DBMS? Describe different views presenting DBMS. Write different function of DBA. Write different uses of DBMS. 1+2+4+3

b) Briefly describe about www. Write different advantages of Internet. What is Browser? Briefly describe about – internet protocol. 3+2+2+3

The West Bengal University of Health Sciences.

1st Year BMLT Practical Examination – 2012.

Sub: - Medical lab. Fundamental

Time: Max. 6 hrs.

Full Marks: 60

1. Demonstrate how do you focus a microscope on
   a) Low power and high power objective. 10
   b) Oil immersion objective.
   c) Illumination of light.
   d) Open iris diaphragm and operate condenser.
   e) A stained slide.
2. Demonstrate the procedure of routine care and maintenance of microscope and cleaning of lenses. 5
3. Discuss the basic principle of a colorimeter with diagram. What are the advantages of spectrophotometer over colorimeter? 5
4. Demonstrate the basic components of a clinical centrifuge and procedure of centrifugation. 5
5. Demonstrate the sterilization procedure with a vertical autoclave and mention the precautions to use autoclave. 5
6. Viva - Voce 20
7. Practical Note Book 10

The West Bengal University of Health Sciences

1st BMLT Examination, 2011

Subject: Basic Anatomy, Physiology & Biochemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

1. Tick the correct answer : 5 x 1

a) Diaphragm is supplied by which nerve :
i) Vagus. ii) Phrenic. iii) Intercostal. iv) None.

b) C.S.F is drawn from the vertebral canal at :
i) Between L_1 & L_2. ii) Between L_2 & L_3. iii) Between L_3 & L_4. iv) None.

c) Antibody are available form which W.B.C.
i) Lymphocyte. ii) Neutrophil. iii) Eosinophil. iv) Basophil.

d) Bruner's glands are found in which of the following :
i) Stomach. ii) Duodenum. iii) Jejunum. iv) Ilium.

e) Cruciate ligament are found in which joint ?
i) Ankle. ii) Elbow. iii) Knee. iv) Hip.

2. Write short note on ***any four*** of the following : 4 x 5

a) Hamstring muscles. b) Bile. c) Conducting system of Heart.
d) Function of Stomach. e) Composition and function of C.S.F.

3. Answer ***any one*** of the following : 1 x 10

a) Describe knee joint on following points :
i) Structure. ii) Ligaments attached. iii) Muscle responsible for movements.

c) Describe the different stages of development of R.B.C.

Group – B

4. Tick the correct answer : 5 x 1

a) Pituitary gland is found in which cavity: i) Oral cavity. ii) Nasal.
iii) Cranial. iv) Abdominal.

b) Blood ph is : i) 5.2. ii) 6.7. iii) 4.7. iv) 7.4.

c) Gland having duct are called : i) Endocrene. ii) Exoerine. iii) Holocrane. iv) Apocrene.

d) Oxygenated blood is found in : i) Pulmonary artery. ii) Pulmonary Vein.
iii) Rt Atrium. iv) Rt. Ventricle.

e) Which organ produces Insulin : i) Liver. ii) Stomach. iii) Thyroid. iv) Pancreas.

5. Write short note on ***any four*** of the following : 4 x 5

a) T.C. and D.C. b) Quadriceps. c) Elbow joints. d) Nephron. e) Root of Left lungs.

6. Answer ***any one*** of the following : 1 x 10

a) Describe the composition of Blood.

b) Describe stomach on following points :
i) Structure. ii) Function. iii) Blood supply.

60/11

The West Bengal University of Health Sciences
1st BMLT Examination, 2011

Subject: Cell Biology & Biological Chemistry

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group

Attempt all questions

Group – A

5 x 1

1. Answer the following :

a) Which of the following are all present in animal cells?
   i) Mitochondria, cell membrane cell wall, cytoplasm.
   ii) Chloroplast, cytoplasm, vacuole, nucleus.
   iii) Nucleus, cell membrane, mitochondria, cytoplasm.
   iv) Vacuole, cell membrane, nucleus, mitochondria.

b) Which of the following is not true of the nuclear envelop?
   i) The nuclear envelop is exactly like other cellular membranes.
   ii) The nuclear envelop separates the genetic material from the cytoplasm.
   iii) The nuclear envelop is a pair of concentric membrane.
   iv) The nuclear envelop is studded with pores.

c) Find the odd one out - . i) Nerve cells. ii) Muscle cells. iii) Red blood cells. iv) White blood cells.

d) What kind of molecules must pass between the nucleus and the cytoplasm?
   i) DNA. ii) Protein. iii) Lipids. iv) Carbohydrate.

e) Which of the following is not a source for stem cells?
   i) Early emboyos. ii) Sperm and eggs. iii) Certain adult tissues. iv) Umbilical cord blood.

2. Answer ***any four*** of the following :

a) What are stem cells? Briefly discuss the different types of stem cells. 2+3

b) Write down the differences between normal cells and cancer cells. What are protooncogenes? 4+1

c) With suitable diagram, describe the structure of mitochondria. Mention two important functions of mitochondria. 3+2

d) Write short notes on ***any two*** of the following : 2 x 2½
   i) Mycoplasma. ii) Lysosome. iii) Viroids.

e) State the properties of RER and SER. Name two enzymes that are present in peroxisome. 3+2

P. T. O.

3. Answer ***any one*** question:

a) Draw the structure of nucleus. Describe the functions of each part of the nucleus. Write the difference between euchromatin and heterochromatn. 2+4+4

b) What are tumor suppressor genes? Give examples. Distinguish between benign and malignant tumor. Can cancer cells be cultured? Justify your answer. Give examples of a blood cancer and a colon cancer. 2+3+3+2

Group – B

4. Answer the following : 5 x 1

a) The monosaccharide is :
i) Sucrose. ii) Galactose. iii) Lactose. iv) Maltose.

b) Barfoed's solution is not reduced by :
i) Glucose. ii) Mannose. iii) Sucrose. iv) Ribose.

c) The sulfur containing amino acid is :
i) Alanine. ii) Lysine. iii) Glycine. iv) Cysteine.

d) The stop codon is -
i) UAA. ii) AAA. iii) GCC. iv) GGA.

e) The number of unsaturation point in Linolenic acid is :
i) 2. ii) 1. iii) 4. iv) 3.

5. Answer ***any four*** of the following :

a) Write how a non reducing sugar differs from a reducing one. Write the osazone test. Give example of a heteropolysaccharide. 2+2+1

b) Write short note on membrane protein and their functions. 5

c) Compare the properties among A – DNA, B-DNA and Z – DNA. 5

d) Describe mutarotation. Write the difference between starch and glycogen. 2+3

e) Write down the significance of mutation .State one each of chemical mutagen and natural mutagen. Name one mutagen responsible for cancer. 3+1+1

6. Answer ***any one*** question:

a) State the working mechanism of enzyme in thermodynamic point of view. Write sho rt note on "Enzyme specificity". What is K_m? 3+5+2

b) Describe the process of transcription in prokaryotes. Write about past transcriptional modification. 5+5

X

Answer *any one* question:

a) Draw the structure of nucleus. Describe the functions of each part of the nucleus. Write the difference between euchromatin and heterochromatn. 2+4+4

b) What are tumor suppressor genes? Give examples. Distinguish between benign and malignant tumor. Can cancer cells be cultured? Justify your answer. Give examples of a blood cancer and a colon cancer. 2+3+3+2

Group – B

5 x 1

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i) Alanine. ii) Lysine. iii) Glycine. iv) Cysteine.

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b) Describe the process of transcription in prokaryotes. Write about past transcriptional modification. 5+5

The West Bengal University of Health Sciences
1st BMLT Examination, 2011

Subject: Pathology & Microbiology

Group – A

Time: 3 hrs **Full Marks: 70**

Attempt all questions

5 x 1

1. Answer the following :

a) ESR depends on following factors except :

i) WBC Count. ii) Fibrinogen level. iii) Anaemia. iv) Globulin.

b) Leishman Stain contains :

i) Acetone free methyl alcohol + Leisman powder.
ii) Methyl Alcohol + Eosin + Leishmen powder.
iii) CCl_4 + Leishman powder.
iv) Deionized water + Leishman powder.

c) Bence Jones protein is detected in :

i) Anaemia. ii) Multiple Mycloma. iii) Porphyria. iv) Viral Hepatitis.

d) Tissue for H. P. examined should be kept in :

i) 10% Formation. ii) Saline. iii) Sugar Solution. iv) Chloroform.

e) In Blood Bank blood is stored at :

i) $4\text{-}6^0$c. ii) 37^0c. iii) 20^0c. iv) -20^0c

4 x 5

2. Write short notes on ***any four*** of the following :

a) Coomb's Test.

b) Red Cell Indices.

c) Differentiate between Apoptosis & Necrosis.

d) Lab Diagnosis of Myocardial Infraction.

e) Tubercular Granuloma.

1 x 10

3. Answer ***any one*** question:

a) Define Anaemia. Describe the peripheral blood picture of Iron deficiency Anaemia. How will you investigate the case of Iron deficiency anaemia.

b) What do you mean by Jaundice? Classify different types of Jaundice. Give the Lab Diagnosis of Jaundice briefly.

P. T. O.

Group - B

4. Answer the following :

a) A negative Shick test is signifies that the person is : :

i) Immune and non–hypersensitive. ii) Susceptible and non–hypersensitive.

iii) Immune and hypersensitive. iv) Non–immune and hypersensitive.

b) Which of the following pathogen can be transmitted by air in the hospitals ?

i) Legionella. ii) Human immunodeficiency virus.

iii) Hepatitis B virus. iv) Corynibacterium diphtherae.

c) Treponema pallidum can be demonstrated in the specimen by :

i) Quallung's reaction. ii) Silver impregnation staining.

iii) Fluorescence in U V Light. iv) Zeihl Neelsen staining.

d) Casoni's test is done for the diagnosis of :

i) Cysticercosis. ii) Hydatid disease. iii) Diphyllobothriasis. iv) Typhoid fever.

e) Demonstration of pseudohyphae on wet smear examination is useful in the diagnosis of infection caused by :

i) Candida. ii) Cryptococci. iii) Dermatophyte. iv) Rhinosporidium.

5. Write short notes on ***any four*** of the following : 4 x 5

a) Agar Fibre.

b) Bacterial Capsule.

c) Koch's Postulate.

d) Preparation of Blood Agar.

e) Various phases of bacterial growth curve.

6. Answer ***any one*** question: 1 x 10

a) What is sterilasation? How sterilisation differs from disinfection? Write about the control of sterilisation by autoclaving a hot air oven.

b) Mention where the genetic information of bacteria are stored? Name the nucleic acids found in bacteria. Outline different ways by which genetic alteration can occur?

The West Bengal University of Health Sciences
1st BMLT Examination, 2011

Subject: Medical Lab Fundamentals & Basic Computer Skills

Time: 3 hrs **Full Marks: 70**

Use separate answer script for each group
Attempt all questions

Group – A

5 x 1

1. Answer all questions :
   a) The available capacity of an ion-exchanger is dependent upon :
      i) pH. ii) Ionic strength. iii) Porosity of matrix. iv) All of these.
   b) The resolving power of an electron microscope is :
      i) $1A^0$. ii) $10A^0$. iii) $100\ A^0$. iv) $1000A^0$.
   c) 3 D structure of protein can be elucidated by using :
      i) Spectrophotometer. ii) Electron microscope. iii) X-ray crystallography. iv) ELISA.
   d) The average pH of urine is :
      i) 5.6. ii) 6.0. iii) 6.4. iv) 6.8.
   e) Cr^{51} is used to study :
      i) RBC. ii) Tumor. iii) Thyroid. iv) Cancer.

2. Answer ***any four*** from the following :
   a) What are the principal components of a compound microscope? Describe only the optical part of a compound microscope. 2+3
   b) State the lambert – Beer's Law. Why do we use filter in calorimeter? 4+1
   c) Draw a schematic representation of instrumentation of NMR spectroscopy. What is chromophore? 3+2
   d) How polyacrylamide get is solidified and cross-linked? 5
   e) Write down the principle of centrifugation. What is standard sedimentation coefficient? 3+2

3. Answer ***any one*** from the following :
   a) What is Autoradiography? State its uses in Medical sciences. Write down the hazards of using radioactive isotopes. 2+5+3
   b) What is HPLC? Describe its principle. Write down the full form of SDS-PAGE. Name one cationic surfactant used in electorphoresis. 2+6+1+1

Group – B

5 x 1

4. Answer all questions :
   a) ENIAC is :
      i) First generation computer. ii) Second generation computer.
      iii) Both i) and ii). iv) None of these.
   b) TCP/IP is a :
      i) Protocol. ii) Layer. iii) Software. iv) None of these.
   c) Primary storage devices include :
      i) EFPROM and ROM. ii) RAM and CD-ROM.
      iii) Hard disk and DVD. iv) All of these.

P. T. O.

d) WWW is :

i) Web page.
ii) Internet.
iii) A type of hypertext.
iv) To get the benefit of four services of internet.

e) The nature of e-mail address is :

i) Name @ domain.com.
ii) Name @ domain.
iii) Domain @ Name.
iv) Name domain.com.

5. Answer ***any four*** questions :

a) What is software and what are its types along with examples? 2+3

b) What is an operating system? Why is it necessary for a computer system? 2+3

c) Write a short note on DBMS along with its benefits. 5

d) Draw a block diagram to illustrate the basic organization of a computer system and explain the functions of the various units. 2+3

e) What is an internet? What do you mean by Internet Protocol? What are the uses of internet? 2+2+1

6. Answer ***any one*** question :

a) What is networking and what are its advantages? What are the types of network architecture used in computing? 2+2+6

b) Briefly describe the basic concept of software development. Write two advantages of e-mail. Briefly describe TCP-IP model. 4+2+4