

The West Bengal University of Health Sciences

2nd BMLT February-March, 2021 Examination

Subject: Histopathology & Cytotechnology

Time: 3 hrs.

Full Marks: 70

Attempt all questions

1. Tick the correct answer:

20 x 1

- a) Which one is not a fixative?
 i) Dry heat. ii) Alcohol. ~~iii) Formic Acid.~~ iv) Formalin.
- b) Use of ascending grade of alcohol means:
~~i) 70% to absolute.~~ ii) Absolute to 70%.
 iii) Two changes of absolute alcohol. iv) None of the above.
- c) PAS stain cannot demonstrate:
 i) Mucin. ii) Fat. iii) Fungus. ~~iv) Basement membrane.~~
- d) Ideal thickness of a paraffin section is-
 i) 3-4 μ ii) 1-2 μ ~~iii) 5-6 μ~~ iv) 7-8 μ
- e) Reagent required for Perl's stain is
 i) Potassium chloride. ii) Potassium cyanide.
~~iii) Potassium ferricyanide.~~ iv) Potassium ferrocyanide.
- f) Ripening of hematoxylin means:
 i) Reduction of haematoxylin. ii) Reversion of haematin to haematoxylin.
~~iii) Both are correct.~~ iv) Both are incorrect.
- g) Which one is the best microtome knife?
 i) Non disposable. ~~ii) Disposable.~~ iii) Diamond. iv) All are equally good.
- h) Argyrophil tissue:
~~i) Have affinity to silver~~ ii) Need reduction of silver salt to give colour
 iii) Both are correct iv) Both are incorrect.
- i) For rapid decalcification the agent of choice is:
 i) Formic acid. ~~ii) Nitric acid.~~ iii) Sulphuric acid. iv) Any one of the above.
- j) In PAS with diastase technique loss of positivity means tissue contains:
 i) Mucin ii) Fat ~~iii) Glycogen~~ iv) Glucose
- k) Schiff's reagent is discarded when its colour changes to:
~~i) Yellow~~ ii) Blue ~~iii) Pink~~ iv) Green
- l) Example of exfoliative cytology is all except:
 i) Lateral vaginal wall scraping. ii) Stomach wash.
 iii) FNAC. iv) Ectocervical scraping.

P.T.O.

m) For PAP stain FNAC smears are:

- i) Alcohol fixed after drying
- ii) Formalin fixed
- iii) Heat fixed after drying
- iv) Alcohol fixed before drying

n) Pap stain is commonly used to detect:

- i) Malignant cells
- ii) Cytohormonal status
- iii) Both of them
- iv) None of them

o) In H&E stain, differentiation is done by:

- i) 1% acid alcohol
- ii) 20% acid alcohol
- iii) Both of them
- iv) None of them

p) Universal fixatives is:

- i) Glutaraldehyde
- ii) 10% formalin
- iii) Bouin's fluid
- iv) Zenker's fluid

q) For routine section cutting, microtome used is:

- i) Rocking
- ii) Rotary
- iii) Base sledge
- iv) Vibrating knife.

r) Reticulin stain is done to detect:

- i) Reticulocyte.
- ii) Reticulin fibre.
- iii) Both of them.
- iv) None of them.

s) All of them are clearing agent:

- i) Xylene.
- ii) Toluene.
- iii) Chloroform.
- iv) Benzidine.

t) Fat is stained by:

- i) Prussian blue.
- ii) Oil-red o.
- iii) Myeloperoxidase.
- iv) Methylene blue.

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

4 x 5

- a) Decalcification of histological specimen.
- b) Microtomes & their use.
- c) PAS staining & its importance.
- d) Mordant (in relation to haematoxylin solution).
- e) Factors affecting fixation of tissue.
- f) Trichrome stain.

3. Answer *any three* of the following :

- a) What type of stain is Giemsa? Discuss briefly about the uses of this stain in histology. Write the procedure of one staining technique in which this stain is used. 1+2+7
- b) What do you mean by fixation of tissue? Classify fixative. Mention the properties of an ideal fixative. 2+5+3
- c) What do you mean by FNAC & exfoliative cytology? Mention different stains used for FNAC smear staining. Describe the procedure of any one. 2+4+4
- d) Name the different types of microtomes. What is the basic mechanism of operation of rotary microtome? Why automatic microtomes are superior to manual microtomes. 2+4+4
- e) Write down briefly the different steps you will adopt during & after receiving a surgically operated specimen for histopathological studies. Enumerate six different stains for histopathological studies. Write down briefly the steps of H & E stain in tissue section. 4+3+3



The West Bengal University of Health Sciences
2nd BMLT Examination, 2018

Subject : Histopathology and Cytotechnology

Full Marks: 70

Time: 3 hrs.

Use separate answer script for each group

Attempt all questions

20 x 1

1. Tick the correct answer:

- a) Alcohol fixation is required for all except :
i) MGG. ii) Leishman. iii) PAP. iv) Giemsa.
- b) Blueing is related to :
i) Staining. ii) Fixation. iii) Dehydration. iv) Mordant.
- c) Which one is not a fixative?
i) Dry heat. ii) Alcohol. iii) Formic acid. iv) Formalin.
- d) Use of ascending grade of alcohol means :
i) 70% to absolute. ii) Absolute to 70%.
iii) Two changes of absolute alcohol. iv) None of the above.
- e) In reticulin stain reticulin fibres take color :
i) Black. ii) Blue. iii) Red. iv) Grey.
- f) For decalcification following is necessary :
i) Formalin. ii) Alcohol. iii) Nitric Acid. iv) Xylene.
- g) Clearing of the histological tissue can be done by using :
i) Xylene. ii) Absolute alcohol. iii) Formalin. iv) Paraffin.
- h) PAS stain cannot demonstrate :
i) Mucin. ii) Fat. iii) Fungus. iv) Basement membrane.
- i) Ideal thickness of a paraffin section is :
i) 3-4 μ . ii) 1-2 μ . iii) 5-6 μ . iv) 7-8 μ .
- j) Reagent required for Perl's stain is :
i) Potassium chloride. ii) Potassium cyanide.
iii) Potassium ferricyanide. iv) Potassium ferrocyanide.
- k) Ripening of haematoxylin means :
i) Reduction of haematoxylin. ii) Conversion of haematin to haematoxylin.
iii) Both are correct. iv) Both are incorrect.
- l) Which one is the best microtome knife?
i) Non disposable. ii) Disposable. iii) Diamond. iv) All are equally good.

P. T. O.

- m) Argyrophil tissue :
- Have affinity to silver.
 - Need reduction of silver salt to give colour.
 - Both are correct.
 - Both are incorrect.
- n) For rapid decalcification the agent of choice is :
- Formic acid.
 - Nitric acid.
 - Sulfuric acid.
 - Any one of the above.
- o) In PAS with Diastase technique loss of positivity means tissue contain :
- Mucin.
 - Fat.
 - Glycogen.
 - Glucose.
- p) Schiff's reagent is discarded when its colour changes to :
- Yellow.
 - Blue.
 - Pink.
 - Green.
- q) Example of interventional cytology is :
- Lateral vaginal wall scraping.
 - Stomach wash.
 - Fine needle aspiration.
 - Ectocervix scraping.
- r) For pap stain FNAC smears are :
- Alcohol fixed after drying.
 - Formalin fixed.
 - Heat fixed after drying.
 - Alcohol fixed before drying.
- s) With Pap stain colour of cytoplasm of Keratinized cell is :
- Pink.
 - Blue.
 - Green.
 - Black.
- t) Clearing the histological tissue can be done by using :
- Xylene.
 - Absolute alcohol.
 - Formalin.
 - Paraffin.

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

4 x 5

- Preparation on FNAC set.
- Preparation of Paraffin block.
- Exfoliative Cytology.
- Different embedding medium in histology.
- Biomedical waste disposal in histopathology laboratory.
- Removal of formalin pigment from tissue sections.

3. Answer *any three* of the following :

- Define dehydration. Dehydration should be undertaken slowly & upto the optimum level-justify this statement. Discuss about ethanol as dehydrating agent. 1+5+4
- Name the stains in papanicolaou stain. Write down the staining method. What are the advantages of this stain? 2+6+2
- What is mordant? Classify the haematoxylin stains according to mordants used and discuss their advantages & disadvantages. 2+3+5
- Name the different types of microtomes. What is the basic mechanism of operation of rotary microtome? Why automatic microtomes are superior to manual microtomes. 2+4+4
- Discuss about different types of cytological tests being performed in routine clinical setting. How a FNAC smear is prepared. 6+4

The West Bengal University of Health Sciences 2nd BMLT Examination, 2017

Subject : Haematology & Histotechnology

Time: 3 hrs.

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the followings :

5 x 1

a) Toxic granules present in :

- i) Neutrophil. ii) Eosinophil. iii) Basophil. iv) Lymphocytes.

b) Which coagulant factor deficiency is responsible for haemophilia-B disease?

- i) Factor VII. ii) Factor VIII. iii) Factor IX. iv) Factor X.

c) Average Hb/Cell is calculated by :

- i) PCV. ii) MCV. iii) MCH. iv) MCHC.

d) Phagocytosis done by :

- i) Neutrophil. ii) Eosinophil. iii) Basophil. iv) Monocytes.

e) In which of the following condition amount of platelet decreases?

- i) Anaemia. ii) Basophilia. iii) Purpura. iv) None of these.

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

4 x 5

a) Parasitic cause of Anaemia.

b) Thalassemia syndrome.

c) Red cell indices and abnormal forms of RBCs in peripheral blood smear study.

d) Process of platelet count.

e) Name the pathological variations in ESR.

3. a) What is haemoglobin? State briefly the procedure of estimation of haemoglobin?

2+8

or

b) Describe about the function of WBCs of each cell.

10

Group – B

4. Answer the followings:

5 x 1

a) In histological tissue processing autolysis can be prevented by using :

- i) Fixatives. ii) Dehydrating agents. iii) Clearing agents. iv) Mounting medium.

b) Clearing of the histological tissue can be done by using :

- i) Xylene. ii) Absolute alcohol. iii) Formalin. iv) Bouin's Fluid.

P. T. O.

10/1/17

- c) PAS staining technique is used for histological demonstration of :
i) Glutamate. ii) Glucose.
iii) Glycogen. iv) None of these.
- d) Sudan stain can be used to visualize :
i) Lipids. ii) Glycoproteins. iii) Mucoproteins. iv) Carbohydrates.
- e) In phase-contrast microscope :
i) Light beam is used. ii) Electron beam is used.
iii) Both light and electron beam are used. iv) None of these beams are used.

4 x 5

5. Write short notes on *any four* of the following :
- a) Decalcification of histological specimen.
 - b) Microtomes and their use.
 - c) PAS staining and its importance.
 - d) Different freezing media used in cryosectioning.
 - e) Uses of fluorescent microscope in histology.

6. a) What is Giemsa stain? Discuss briefly about the uses of this stain in histology. Write the procedure of one staining technique in which this stain is used.

1+2+7

or

- b) What are the different stages of preparation of paraffin embedded tissue? Discuss on these stages.

2+8

161/16

**The West Bengal University of Health Sciences
2nd BMLT Examination, 2016**

Time: 3 hrs.

Subject : Haematology & Histotechnology

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the followings :

5 x 1

- a) Pluripotent stem cells are present in :
 - i) Heart. ii) Liver. iii) Kidney. iv) Bone marrow.
- b) Monocytosis can be found in :
 - i) Whooping cough. ii) Acute Haemorrhage.
 - iii) Bttn. iv) Tuberculosis.
- c) Exchange of O₂ and CO₂ gases takes place in :
 - i) Lung. ii) Heart.
 - iii) Kidney. iv) Alveoli.
- d) Which enzyme present in cytoplasm of neutrophils?
 - i) PAS stain. ii) Perl stain.
 - iii) Methelene blue. iv) PAP stain.
- e) Haemoglobin production is regulated by :
 - i) LH. ii) FSH. iii) TSH. iv) EPO hormone.

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

4 x 5

- a) Write short note on leukaemia. b) How to determine CT, BT and PT?
- c) Write short note on prothrombin test. d) Write short note on development stage of RBC.
- e) Mention clinical importance of E.S.R.

3. a) Describe composition of blood. Write functions of blood.

6+4

or

- b) Write the causes and symptoms of parasitic, bacterial and viral anaemia. What is the full form of CML?

3+3+3+1

P. T. O.

R

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By Rupak

Group – B

4. Answer the followings:

- a) Aquous mountant is used to mount :
i) Frozen section. ii) Paraffin section. iii) Hematological smear. iv) Cryostat section
- b) In van Gieson stain muscles take :
i) Red colour. ii) Yellow colour. iii) Deep blue colour. iv) Black colour
- c) For dehydration tissue is passed through :
i) Ascending grades of alcohol. ii) Descending grades of alcohol.
iii) Absolute alcohol. iv) All of them.
- d) Resin embedding agent is used to obtain sections of thickness :
i) 1-2 μ . ii) 4-5 μ . iii) 7 μ . iv) 8 μ .
- e) Loss of PAS positivity after diastase treatment indicates presence of :
i) Glucose. ii) Mucin. iii) Glycogen. iv) All of them.

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

4 x 5

- a) Specimen handling and identification in histopathology.
b) Mordant (in relation to hematoxylin solution).
c) Extraction of formalin pigment from tissue section.
d) Factors affecting fixation of tissue.
e) Principle of frozen section.

6. a) What is tri-chrome technique of staining? Give examples. Discuss in short the principle, procedure of staining and result of any one of the methods.

2+1+2+4+1

or

b) Define fixative. What are the characteristics of an ideal fixative? Enumerate different types of fixatives.

2+4+4

1. Tick the correct an

The West Bengal University of Health Sciences

2nd BMLT April, 2022 Examination

Subject : Histopathology & Cytotechnology

Full Marks: 100

Time: 3 hrs.

Attempt all questions

20 x 1

I. Tick the correct answer :

- a) Alcohol fixation is required for all except :
 i) MGG. ii) Leishman. iii) PAP. iv) Giemsa.
- b) Oxidizing agent is :
 i) Formaldehyde. ii) Methyl alcohol. iii) Potassium dichromate. iv) Acetic acid.
- c) Van Gieson stain is used for :
 i) Collagen stain. ii) Fat stain. iii) Calcium stain. iv) Mucin.
- d) Fixation of tissue can be done by :
 i) 10% formalin. ii) 20% formalin. iii) 40% formalin. iv) 5% formalin.
- e) Reticulin stain contains all except :
 i) Picric acid. ii) Silver nitrate. iii) Alcohol. iv) Ammonia.
- f) Van Gieson stain contains all except :
 i) Picric acid. ii) Acid fuchsin. iii) Distilled water. iv) Acetic acid.
- g) Following things are required for preparation of PAS stain except :
 i) Periodic acid. ii) Sodium metabisulfite.
 iii) Activated charcoal. iv) Nitric acid.
- h) In Van Gieson stain, collagen fibres are stained :
 i) Blue. ii) Black. iii) Red. iv) Green.
- i) Blueing is done by :
 i) Lithium. ii) Formalin. iii) Acetone. iv) Alcohol.
- j) Following are decalcifying agents except :
 i) Alcohol. ii) Nitric acid. iii) Sodium EDTA. iv) Formic acid.
- k) Which one is not a fixative?
 i) Dry heat. ii) Alcohol. iii) Formalin. iv) Formic acid.
- l) Clearing of the histological tissue is done by using :
 i) Xylene. ii) Alcohol. iii) Formalin. iv) Paraffin.
- m) Ripening of haematoxylin means :
 i) Reduction of haematoxylin. ii) Conversion of haematoxylin to haematin.
 iii) Both. iv) None of the above.
- n) Example of interventional cytology is :
 i) FNAC. ii) Cervical cytology.
 iii) Ectocervix scraping. iv) Scraping of buccal mucosa.
- o) Argyrophil tissue :
 i) Have affinity to silver. ii) Need reduction of silver salt to give colour.
 iii) Both are correct. iv) Both are incorrect.
- p) Which is not a fixative?
 i) Bouin's fluid. ii) Formalin. iii) Alcohol. iv) Pleural fluid.

P. T. O.

- q) In tissue section, AFB is stained by :
 i) Hot ZN. ii) Cold ZN. iii) Both. iv) None.
- r) Ideal thickness of a paraffin section is :
 i) 3-4 micron. ii) 1-2 micron. iii) 5-6 micron. iv) 7-8 micron.
- s) Following is an example of naturally ripened hematoxylin :
 i) Harris hematoxylin. ii) Mayer's hematoxylin.
 iii) Ehrlich's hematoxylin. iv) Gill's hematoxylin.
- t) Best fixative for testicular biopsy is :
 i) Bouin's fixative. ii) Glutaraldehyde.
 iii) Liquid nitrogen. iv) Buffered formalin.

2. Answer the following :

2 x 5

- a) Write the criteria of a good microtome tissue section.
 b) State the bio safety in histology laboratory which should be adopted by the worker.

3. Write short notes on *any six* of the following :

6 x 5

- a) Formalin pigment.
 b) Embedding of tissues in histology.
 c) Fluid cytology.
 d) Dehydration procedure in histopathology.
 e) Frozen section.
 f) Automated tissue processor.
 g) Principle and procedure of PAS staining.
 h) Principle and principle of Geimsa staining.

4. Answer *any one* of the following :

- a) Enumerate different types of cytological techniques used in a routine hospital setting. Describe the steps of FNAC procedure. What are the advantages of FNAC?
 b) Enumerate different methods of decalcification. Compare any two methods of decalcification. How do we know that the end point of decalcification has been reached?

2+4+4

3+5+2

5. Answer *any two* of the following :

- a) Define fixative. Name the different fixatives in histology. Which one is ideal fixative and why?
 b) Name the stains in PAP stain. Describe the steps of staining procedure and advantages of this stain.
 c) Name the different types of microtomes. Which among them is commonly used and why? Write down the steps of cutting sections using a microtome.

3+4+2+6

3+9+3

3+5+7

The West Bengal University of Health Sciences
2nd BMLT November-December, 2022 Examination

Subject : Histopathology & Cytotechnology

Time: 3 hrs.

Full Marks: 100

Attempt all questions

1. Tick the correct answer :

20 x 1

- a) Exudative CSF is found in which type of meningitis?
i) ☒ Pyogenic. ii) Viral. iii) Fungal. iv) Sub-arachnoid haemorrhage.
- b) For preparation of cell block using thrombin which pathway of coagulation is involved?
i) Intrinsic. ii) Extrinsic. iii) ☒ Common. iv) None of them.
- c) Semen analysis is done as a part of investigations for :
i) Infertility. ii) Post vasectomy operation. iii) Different legal cases. iv) ☒ All of them.
- d) In cytocentrifuge the smear is prepared :
i) From deposit. ii) ☒ Directly on slide.
iii) After washing the deposit. iv) None is correct.
- e) Frozen section is done for :
i) Quick diagnosis. ii) Demonstration of fat.
iii) Demonstration of enzymes. iv) ☒ All of them.
- f) Which one of the following is not a fixative?
i) Dry heat. ii) Formalin. iii) ☒ Formic acid. iv) Alcohol.
- g) With formalin fixative, minimum time (in hour) required for a tissue, 6 m.m. thick, to get fixed is :
i) Four. ii) ☒ Nine. iii) Sixteen. iv) Twenty five.
- h) Harris hematoxylin is a :
i) Progressive stain. ii) Regressive stain. iii) ☒ Both of them. iv) None of them.
- i) All are advantages of Frozen Section biopsy except :
i) Results are available within about 15-20 minutes. ii) Used with Cryosection.
iii) Extent of tissue to be removed may be decided on it. iv) ☒ Can never be used in planned operation.
- j) Temperature of water in floatation bath is kept at :
i) ☒ 10°C below the melting point of paraffin. ii) 5°C above the melting point of paraffin.
iii) 60-65°C. iv) None of them.
- k) Mounting of histological tissue section is done with :
i) Mayer's albumin. ii) Xylene. iii) Resin. iv) ☒ None of them.
- l) Schiff's reagent is also known as :
i) Acid fuchsin. ii) Basic fuchsin. iii) ☒ Leuco fuchsin. iv) Carbol fuchsin.
- m) Total number of stains in tri-chrome stain is :
i) Two. ii) ☒ Three. iii) Four. iv) Six.
- n) Cytology means study of :
i) Blood. ii) ☒ Cell. iii) Tissue. iv) All of them.
- o) Histopathological report indicate which of the following about prognosis of a disease :
i) Whether the tumour has metastasized. ii) TNM classification.
iii) ☒ Tumour grade. iv) Predisposing factors for the development of tumour.
- p) With Pap stain, colour of cytoplasm of keratinized cell is :
i) Bright red. ii) Safran. iii) ☒ Pink. iv) Black.

P. T. O.

- q) Best preservative for fluid sample for cytology is :
 i) 50% Ethanol. ii) 95% Ethanol. iii) 50% Methanol. iv) Any one of them.
- r) Number of stains used in Pap stain is :
 i) Two. ii) Three. iii) Four. iv) Five.
- s) For taking cervical smear, the spatula or brush must be rotated through :
 i) 90°. ii) 180°. iii) 360°. iv) 280°.
- t) In liquid based cytology, the liquid used has a base of :
 i) Glycerol. ii) Methanol. iii) Formalin. iv) Ethanol.

2. Answer the questions briefly :

5 x 2

- a) Characteristics of an ideal fixative.
 b) Mordant.
 c) Uses of frozen section.
 d) Scraping cytology.
 e) Advantages of cytopspin.

3. Write short notes on any six of the following :

6 x 5

- a) Mounting of histological tissue section.
 b) Acid decalcifying agent.
 c) Reagents and principle of van-Gieson's stain.
 d) Indirect immune-fluorescence test.
 e) CSF in pyogenic and tuberculous meningitis.
 f) Sperm motility.
 g) Uses and procedure of Liquid based cytology.
 h) Preparation of a set, advantages and disadvantages of F.N. A.C.

4. Answer any one of the following :

- a) Write down the principle of PAS stain. What are the structures those take up the PAS stain? 6+4
 b) i) You have received a large volume of preserved peritoneal fluid for cytological examination. How will you proceed to prepare a smear? 5
 ii) For a cytology smear, choice of fixative depends on the stain to be used – discuss. 5

5. Answer any two of the following :

- a) What is the utility of establishing a pathology museum? Discuss about different Kaiserling fluids in detail. What are the informations and articles those are kept along with the specimen? 3+8+4
 b) What do you mean by tri-chrome technique of staining? Give examples of tri-chrome stain. Discuss about the principle, procedure and result of any one technique. Why iron-hematoxylin is used in this technique? 2+2+8+3
 c) Define cell block. What are the advantages of cell block study? How a cell block is prepared? 2+3+10

STIPIITA Jana

The West Bengal University of Health Sciences
2nd BMLT September, 2023 Examination

Subject : Histopathology & Cytotechnology

Time: 3 hrs.

Full Marks: 100

Attempt all questions

20 x 1

I. Tick the correct answer :

- a) Active component of hematoxylin is :
 - i) Heme. ☐
 - ii) Hematin. ☒
 - iii) Hemoin. ☐
 - iv) Hemoxyn. ☐
- b) Period of abstinence before semen analysis :
 - i) 1-2 days. ☐
 - ii) 3-5 days. ☒
 - iii) 7-10 days. ☐
 - iv) 15 days. ☐
- c) All are used as decalcifying agent except :
 - i) Formic acid. ☐
 - ii) EDTA solution. ☐
 - iii) Hydrochloric acid. ☐
 - iv) Sodium citrate solution. ☒
- d) Special stain to detect iron in tissue is :
 - i) H&E stain. ☐
 - ii) PAS stain. ☐
 - iii) Perl stain. ☒
 - iv) Pap stain. ☐
- e) Which of the following is not a type of microtome?
 - i) Slipping. ☒
 - ii) Rotary. ☐
 - iii) Sledge. ☐
 - iv) Rocking. ☐
- f) Rate of penetration of formalin in tissue is :
 - i) 1mm/hr. ☒
 - ii) 5mm/hr. ☐
 - iii) 7-10mm/hr. ☐
 - iv) 1.5cm/hr. ☐
- g) Source of fructose in seminal fluid is :
 - i) Seminal vesicle. ☒
 - ii) Prostate. ☐
 - iii) Testis. ☐
 - iv) Epididymis. ☐
- h) Light's criteria is used in relation to which fluid :
 - i) Joint fluid. ☒
 - ii) Pleural fluid. ☐
 - iii) CSF. ☐
 - iv) Ascitic fluid. ☐
- i) Indications of semen analysis are all except :
 - i) Male infertility. ☐
 - ii) Effectiveness of vasectomy. ☐
 - iii) Female infertility. ☒
 - iv) Donor selection for artificial insemination. ☐
- j) Not a component of neutral buffered formalin :
 - i) Formaldehyde. ☐
 - ii) Phosphate. ☐
 - iii) Water. ☐
 - iv) Alcohol. ☒
- k) Diluting fluid for sperm count is :
 - i) 90% Ethanol. ☐
 - ii) Sodium bicarbonate. ☐
 - iii) Turk fluid. ☒
 - iv) Distilled water. ☐
- l) Azoospermia means :
 - i) Absent ejaculate. ☐
 - ii) Low sperm count. ☐
 - iii) Absent sperm. ☒
 - iv) Abnormal sperm morphology. ☐
- m) All can be used as infiltration media except :
 - i) Agar. ☐
 - ii) Resin. ☐
 - iii) Gelatin. ☐
 - iv) Methanol. ☒
- n) Cryostat is used for :
 - i) Routine processing. ☐
 - ii) Cell block preparation. ☐
 - iii) Frozen section. ☒
 - iv) Cervical smear preparation. ☐
- o) During ripening of hematoxylin which of the following chemical reaction occurs :
 - i) Oxidation. ☒
 - ii) Reduction. ☐
 - iii) Cross-linking. ☐
 - iv) Dilution. ☐
- p) PAP smears are fixed in :
 - i) Formalin. ☐
 - ii) Alcohol. ☒
 - iii) Phosphate. ☐
 - iv) Paraffin. ☐
- q) Leukhart's mould is made up of :
 - i) Bronze. ☐
 - ii) Iron. ☐
 - iii) Brass. ☒
 - iv) Steel. ☐
- r) Reticulin stain is used for :
 - i) Reticulocyte. ☐
 - ii) Reticulin fibre. ☒
 - iii) Mucin. ☐
 - iv) Fat. ☐

P. T. O.

s) What are the components of Zenker's fluid?

- i) Mercuric chloride.
- iii) Sodium sulphate.

t) Perl stain contains :

- i) Potassium chloride.
- iii) Potassium cyanide.

ii) Potassium dichromate.

~~iv)~~ All of the above.

ii) Potassium ferricyanide.

~~iv)~~ Potassium ferrocyanide.

2. Answer the questions briefly :

5 x 2

- a) Deparaffinization.
- b) What is ripening of Hematoxylin?
- c) What do you mean by blueing?
- d) Components of PAP stain.
- e) What is metachromasia?

3. Write short notes on *any six* of the following :

6 x 5

- ~~a)~~ Fixatives used in cytosmear
- b) CSF picture in tuberculous meningitis.
- c) Imprint cytology and uses.
- ~~d)~~ Neutral buffered formalin.
- ~~e)~~ Reticulin stain.
- ~~f)~~ Mounting media.
- ~~g)~~ Harris hematoxylin.
- ~~h)~~ Clearing agents.

4. Answer *any one* of the following :

- a) Write the merits and demerits of formalin as fixative. What are the fixatives of choice for electron microscopy?

8+2

~~b)~~ Describe different types of microtomes and their uses. 2

10

5. Answer *any two* of the following :

~~a)~~ How a semen sample is examined in laboratory for routine tests?

15

~~b)~~ What are the different decalcifying agents? Describe the process of decalcification.

5+10

c) Write the principle of immunofluorescence methods. What are the uses of frozen section? How buccal smear is prepared for examination?

5+4+6

The West Bengal University of Health Sciences
2nd BMLT August - September, 2024 Examination

Time: 3 hrs.

Subject : Histopathology & Cytotechnology

Full Marks: 100

Attempt all questions

1. Tick the correct answer :

20 x 1

- a) Which one is the best microtome knife?
 - i) Non-disposable.
 - ii) Disposable.
 - iii) Diamond.
 - iv) All are equally good.
- b) Aqueous mountant is used to mount :
 - i) Frozen Section.
 - ii) Paraffin Section.
 - iii) Hematoxylin Section.
 - iv) Cytology smear.
- c) In van gieson stain, muscle stains :
 - i) Red colour.
 - ii) Yellow colour.
 - iii) Deep Blue colour.
 - iv) Black colour.
- d) Reagent required for Perl's stain :
 - i) Potassium chloride.
 - ii) Potassium cyanide.
 - iii) Potassium Ferricyanide.
 - iv) Potassium Ferrocyanide.
- e) Ripening of Hematoxylin are :
 - i) Reduction of Hematoxylin.
 - ii) Conversion of hematin to hemotoxylin.
 - iii) Both are correct.
 - iv) Both are incorrect.
- f) Ideal thickness of paraffin section :
 - i) 3-4 micron.
 - ii) 1-2 micron.
 - iii) 5-6 micron.
 - iv) 7-8micron.
- g) Exchange of Oxygen (O₂) and Carbon di Oxide (CO₂) gas takes place in :
 - i) Trachea.
 - ii) Heart.
 - iii) Kidney.
 - iv) Alveoli.
- h) In histological tissue processing autolysis can be prevented by using :
 - i) Fixation.
 - ii) Dehydrating agent.
 - iii) Cleansing agent.
 - iv) Mounting medium.
- i) Alcohol fixation is required for all except :
 - i) MGG.
 - ii) Leishman.
 - iii) PAS.
 - iv) Giemsa.
- j) Blueing is related to :
 - i) Staining.
 - ii) Fixation.
 - iii) Dehydration.
 - iv) Mordant.
- k) Most commonly used fixative is :
 - i) Formaldehyde.
 - ii) Formalin.
 - iii) 10% Buffered Formalin.
 - iv) 40% Buffered Formalin.
- l) In tissue section AFB is stained by :
 - i) Hot ZN technique.
 - ii) Cold ZN.
 - iii) Both.
 - iv) None.
- m) Which of the following is not a fixative?
 - i) Bouin's fluid.
 - ii) Alcohol.
 - iii) Zenker's fluid.
 - iv) Peritoneal fluid.
- n) TSH is secreted by :
 - i) Thyroid.
 - ii) Pituitary.
 - iii) Kidney.
 - iv) Adrenal Gland.
- o) Sudan stain can be used to visualize :
 - i) Lipids.
 - ii) Glycoprotein.
 - iii) Mucoprotein.
 - iv) Carbohydrate.
- p) PAS stain cannot demonstrate :
 - i) Mucin.
 - ii) Fat.
 - iii) Fungus.
 - iv) Basement membrane.

P. T. O.

- q) Use of ascending grade of alcohol means :
- i) 70% to absolute alcohol.
 - ii) Absolute to 70%.
 - iii) Two changes of absolute alcohol.
 - iv) None of the above.
- r) For decalcification following is necessary :
- i) Formalin.
 - ii) Alcohol.
 - iii) Nitric Acid.
 - iv) Xylene.
- s) Loss of PAS positivity after diastase treatment :
- i) Glucose.
 - ii) Mucin.
 - iii) Glycogen.
 - iv) All of the above.
- t) In phase contrast microscopy :
- i) Light beam is used.
 - ii) Electron beam is used.
 - iii) Both light and electron beam.
 - iv) None of the above.

5 x 2

2. Answer the questions briefly :

- a) Broncho-alveolar lavage.
- b) Gastric-endoscopic biopsy.
- c) Cell block.
- d) Fluorescent microscope.
- e) Clearing agent.

3. Write short notes on any six of the following :

6 x 5

- a) Preparation of FNAC slides.
- b) Principles of Giemsa staining.
- c) Papanicolaou stain.
- d) Microtome and their uses.
- e) Principle of frozen section.
- f) Uses of Fluorescent microscopy in histology.
- g) Preparation of paraffin block.
- h) Extraction of formalin pigment from tissue section.

4. Answer any one of the following :

- a) What is trichrome technique? Give examples. Discuss the stages and results of such technique.

2+4+4

- b) Enumerate the different types of body fluid. You have received a large volume of preserved pleural fluid for cytological examination. How will you proceed to prepare a smear?

2+8

5. Answer any two of the following :

- a) How a tissue bit may become brittle after tissue processing? How this change can affect the quality of section? How this problem may be prevented?

15

- b) What is the utility of establishing a pathology museum? Discuss about different Kaiserling fluids in details. What are the information and articles that are kept along with the specimen?

15

- c) What is the principle of immunohistochemistry? Describe the procedure of this staining. Give some examples how this staining help in diagnosis.

15

The West Bengal University of Health Sciences
2nd BMLT August, 2025 Examination

Time: 3 hrs.

Subject : Histopathology & Cytotechnology

Full Marks: 100

Attempt all questions

1. Tick the correct answer :

20 x 1

- a) Which instrument is used for contact free slicing?
☒ i) Sledge microtome. ☐ ii) Rotary microtome. ☒ iii) Laser microtome. ☐ iv) Rocking microtome.
- b) Decalcification of calcified tissue and bone can be done by the following methods except :
☐ i) Aqueous nitric acid. ☐ ii) Glacial acetic acid.
☒ iii) Chelating agents. ☐ iv) Microwave.
- c) The most commonly used fixative for FNAC sample is :
☐ i) 80% Ethyl alcohol. ☐ ii) 90% Ethyl alcohol.
☒ iii) 95% Ethyl alcohol. ☐ iv) Absolute alcohol.
- d) After decalcification the specimen should be washed in :
☐ i) Xylene. ☒ ii) Alcohol. ☒ iii) Water. ☐ iv) None.
- e) The most commonly used acidic dye is :
☒ i) Methylene blue. ☐ ii) Toluidine blue. ☒ iii) Eosin. ☐ iv) PAS.
- f) Which of the following is identified by PAS staining?
☐ i) Elastic fibers. ☒ ii) Polysaccharides. ☐ iii) Reticular fibers. ☐ iv) All of these.
- g) Which of the following is correct for direct method of immunohistochemistry?
☐ i) Label is used indirectly. ☐ ii) Label is bound to the primary antibody.
☒ iii) Label is bound to the secondary antibody. ☐ iv) Label is not used.
- h) How much fluid is sufficient to get cells for cell block?
☐ i) 5-10 ml. ☒ ii) 10-15 ml. ☐ iii) 20-30 ml. ☐ iv) 30-50 ml.
- i) Which label is the most widely used in immunohistochemistry for electron microscopy?
☐ i) Enzyme labeling. ☒ ii) Fluorescent dye. ☐ iii) Hematoxylin. ☒ iv) Metal particles.
- j) Enzymes for the coagulation and liquefaction of semen are produced by :
☒ i) Seminal vesicle. ☐ ii) Bulbourethral gland. ☐ iii) Ductus deferens. ☒ iv) Prostate gland.
- k) Which colour does a picric acid containing fixative such as Bouin's fixative impart on the tissue?
☐ i) Red. ☐ ii) Green. ☒ iii) Yellow. ☐ iv) Magenta.
- l) Which of the following is the method of end point decalcification?
☐ i) Chemical method. ☒ ii) X-ray method.
☐ iii) Flexibility method. ☒ iv) All of the above.
- m) Which of the following is correct for transudate?
☐ i) Rich in cells. ☐ ii) Often contain malignant cells.
☒ iii) Clear appearance. ☒ iv) High LDH activity.
- n) Schiff's reagent is discarded when its colour changes to :
☐ i) Yellow. ☐ ii) Blue. ☒ iii) Pink. ☐ iv) Green.
- o) What is the liquefaction time for semen?
☒ i) 5-35 mins. ☐ ii) 15-20 mins. ☒ iii) More than 1 hour. ☐ iv) 2-5 mins.

P. T. O.

Ananya Mishra

- p) The component of PAP stain demonstrating Keratin is :
 i) Hematoxylin. ~~OGG~~ ii) EA-36. iv) EA-50.
- q) In van Gieson stain muscle take :
 i) Red colour. ~~Yellow colour.~~ iii) Blue colour. iv) Black colour.
- r) Maturation of spermatozoa takes place in :
 i) Sertoli cells. ii) Seminiferous tubules. iii) Epididymis. iv) Seminal vesicles.
- s) Which of the following is an example of fluid with high nucleus content?
 i) Bronchial aspirates. ii) Pleural fluid. iii) Pericardial fluid. iv) CSF.
- t) Seminal fluid is rich in :
 i) Sucrose, calcium and certain enzymes. ~~Glucose, sodium and certain enzymes.~~
 iii) Fructose, calcium and certain enzymes. iv) Fructose, sodium and certain enzymes.

2. Answer the questions briefly :

5 x 2

- a) Explain mordant with an example.
 b) Name two special stains and write down their uses. ✓
 c) What is oligozoospermia? ✓
 d) Write down the uses of PAP stain. ✓
 e) Write down the clinical importance of FNAC technique. ✓

3. Write short notes on any six of the following :

6 x 5

- ~~a) Embedding. ✓~~
 b) Museum specimen preservation. ✓
 c) Principle and uses of reticulin stain. ✓
 d) Imprint cytology.
 e) Immunofluorescence. ✓
 f) MGG stain. ✓
 g) Processes of decalcification. ✓
 h) Causes of poor quality staining.

4. Answer any one of the following :

- a) Describe the principle, procedure and uses of Van Gieson's stain. ✓
 b) What is fixation? Classify fixatives. What are the advantages and disadvantages of formaldehyde as a fixative?

3+5+2

2+5+3

5. Answer any two of the following :

- a) Explain different physical, chemical and microscopical examinations for Semen analysis. Write down the clinical significance of Semen analysis. ✓
 b) What is mountants? Briefly describe the different mounting media. What is the difference between progressive and regressive staining? Write the difference between natural and synthetic dyes.
 c) What is IHC? Write down the principle of IHC. What are the uses, advantages and disadvantages of IHC? Name two fluorescent dyes. ✓

12+3

2+6+3+4

2+5+2+2+2+2

Anaphiles

The West Bengal University of Health Sciences
2nd BMLT January - February, 2025 Examination

Subject : Histopathology & Cytotechnology

Time: 3 hrs.

Full Marks: 100

Attempt all questions

20 x 1

1. Tick the correct answer :

- a) After decalcification the specimen should be washed in :
 i) Xylene. ii) Alcohol. iii) Water. iv) None.
- b) During FNAC process aspiration from lump the needle is :
 i) Horizontal to the skin. ii) Inserted intravenously.
 iii) Perpendicular to the skin. iv) None.
- c) Paraffin embedded sections of tissue are cut by :
 i) Electron beams. ii) Sharp knife. iii) Microtome. iv) Laser.
- d) The most commonly used fixative for FNAC sample is :
 i) 80% Ethyl alcohol. ii) 90% Ethyl alcohol.
 iii) 95% Ethyl alcohol. iv) Absolute alcohol.
- e) Cryostat sections are cut at an approximate thickness of :
 i) 0.35 μ . ii) 1-2 μ . iii) 3-5 μ . iv) 10-20 μ .
- f) The most commonly used basic dye is :
 i) Methylene blue. ii) Toluidine blue. iii) Hematoxylin. iv) PAS.
- g) Which acid decalcification process is slow?
 i) Formic acid. ii) Nitric acid formaldehyde.
 iii) Aqueous nitric acid. iv) All of these.
- h) Which of the following is correct for indirect method of immunohistochemistry?
 i) Label is used indirectly. ii) Label is bound to the primary antibody.
 iii) Label is bound to the secondary antibody. iv) Label is not used.
- i) Which of the following is an example of fluid with high mucus content?
 i) Bronchial aspirates. ii) Pleural fluid. iii) Pericardial fluid. iv) CSF.
- j) Which label is the most widely used in immunohistochemistry for light microscopy?
 i) Enzyme labeling. ii) Fluorescent dye. iii) Hematoxylin. iv) Metal particles.
- k) Which of the following statement is incorrect for Papanicolaou staining method?
 i) The stain increases cytoplasmic transparency.
 ii) It is polychrome staining reaction.
 iii) It is monochrome staining reaction.
 iv) The use of this stain results in well stained nuclear chromatin.
- l) Cervical scrape for the cervical-vaginal smear is taken from :
 i) Squamous-squamous junction. ii) Squamous-columnar junction.
 iii) Squamous-cuboidal junction. iv) Cuboidal-columnar junction.
- m) Which structure is highlighted using silver impregnation?
 i) Mucus. ii) Mucopolysaccharides. iii) Reticular fibers. iv) Elastic fibers.
- n) Which of the following is the most suitable gauge range of FNAC needle?
 i) 14G-24G. ii) 11G-17G. iii) 21G-27G. iv) 21G-35G.

P. T. O.

- o) With PAP stain colour of cytoplasm of Keratinized cell is :
 i) Blue. ii) Black. iii) Green. iv) Orange.
- p) Which of the following is not correct for transudate?
 i) Rich in cells. ii) Often content malignant cells.
 iii) Clear appearance. iv) High LDH activity.
- q) Example of exfoliative cytology is all except :
 i) Lateral vaginal wall scraping. ii) Stomach wash.
 iii) FNAC. iv) Ectocervical scraping.
- r) Azoospermia means :
 i) No sperm in semen. ii) No measurable amount of sperm in semen.
 iii) Too much sperm in semen. iv) Both (i) & (ii).
- s) Which of the following is true for specimen collection in case of Barrett's esophagus?
 i) Endoscopy. ii) Brushing biopsy. iii) FNAC. iv) Both (i) & (ii).
- t) In Van Gieson stain, collagen fibers are stained :
 i) Blue. ii) Black. iii) Green. iv) Red.

5 x 2

2. Answer the questions briefly :

- Define special stain. Give an example.
- Write down the properties of fixatives.
- What is the role of agitation in fixation?
- What do you mean by imprint cytology?
- State 2 causes of poor quality of staining.

6 x 5

3. Write short notes on *any six* of the following :

- Write a short note on brush cytology.
- Write down the characteristics of exudates.
- Write a short note on decalcification.
- Write down the principle and uses of Van Gieson's stain.
- Write a short note on tissue dehydration.
- Describe cryosectioning.
- Describe the principle and uses of cell block preparation.
- Write down the factors involved in fixation.

4. Answer *any one* of the following :

- Describe briefly the different stages of paraffin embedded tissue.
- Write down the principle and the process of H&E staining process.

10
3+7

5. Answer *any two* of the following :

- What do you mean by microanatomical fixatives? What is the composition of Zenker's fluid? Briefly describe simple fixatives. 4+4+7
- What do you mean by semen analysis? State its clinical importance. Describe the physical, chemical and microscopical examination for semen analysis. 1+1+3+2+8
- What is FNAC? What are the indications and contraindications of FNAC? Describe the process of FNAC. What are the advantages and disadvantages of FNAC? 1+2+2+6+2+2

The West Bengal University of Health Sciences
2nd BMLT March - April, 2026 Examination

Subject : Histopathology & Cytotechnology

Time: 3 hrs.

Full Marks: 100

Attempt all questions

20 x 1

1. Tick the correct answer :

- a) Which of the following is the first step in FNAC (Fine Needle Aspiration Cytology)?
 i) Smear preparation. ii) Needle insertion. iii) Slide staining. iv) Fixation.
- b) Exfoliative cytology is best suited for the examination of cells from :
 i) Semen. ii) Blood. iii) Bone marrow. iv) Cerebrospinal fluid.
- c) Brush cytology is most useful in diagnosing lesions of the :
 i) Skin. ii) Respiratory tract. iii) Bone. iv) Muscle.
- d) Which of the following is a characteristic feature of a transudate fluid?
 i) High protein content. ii) Low specific gravity.
 iii) Numerous inflammatory cells. iv) Cloudy appearance.
- e) Fixation of cytological smears is ideally done :
 i) After air-drying. ii) Immediately after smear preparation.
 iii) After staining. iv) During slide mounting.
- f) Leishman-Giemsa stain is used primarily to detect :
 i) Bacteria. ii) Parasitic infections and blood cells. iii) Collagen. iv) Hormones.
- g) In Papanicolaou staining, which component stains the cytoplasm green or blue?
 i) Eosin Azure. ii) OG-6. iii) Hematoxylin. iv) EA-50
- h) Liquid Based Cytology differs from conventional Pap smear in that it :
 i) Uses larger samples. ii) Involves air-drying.
 iii) Filters and transfers cells to the slide in a thin layer. iv) Requires no fixative.
- i) The main advantage of cell block preparation is :
 i) Prevents sample drying. ii) Provides material for histological staining and IHC.
 iii) Increases staining time. iv) Requires no reagents.
- j) Semen analysis includes evaluation of all EXCEPT :
 i) Volume. ii) Motility. iii) Blood sugar level. iv) Sperm morphology.
- k) Which fixative is commonly used for tissue specimens in routine histopathology?
 i) Glutaraldehyde. ii) Zenker's fluid.
 iii) 10% Neutral Buffered Formalin. iv) Osmium tetroxide.
- l) Tissue embedding is done to
 i) Fix tissue. ii) Remove water. iii) Support tissue during sectioning. iv) Dehydrate proteins.
- m) What is the main purpose of mounting tissue sections?
 i) To fix proteins. ii) To stain collagen.
 iii) To protect the stained section and allow microscopic viewing. iv) To dissolve wax.
- n) Which dye stains the nuclei in H&E staining?
 i) Eosin. ii) Acid fuchsin. iii) Hematoxylin. iv) PAS
- o) Van Gieson's stain differentiates :
 i) Cytoplasm and nuclei. ii) Mucopolysaccharides and fibers.
 iii) Muscle and collagen. iv) Blood and lymph.

P. T. O.

- p) Frozen section is most useful for :
- i) Long-term tissue storage.
 - ii) Teaching purpose.
 - iii) Rapid intraoperative diagnosis.
 - iv) Electron microscopy.
- q) Immunohistochemistry is mainly used to :
- i) Cut tissue.
 - ii) Remove calcium.
 - iii) Identify cell types based on antigen expression.
 - iv) Count cells.
- r) Which stain is used for demonstrating fungal organisms and basement membranes?
- i) PAS.
 - ii) H&E.
 - iii) Reticulin.
 - iv) Van Gieson.
- s) In immunofluorescence, the label used is usually a :
- i) Dye.
 - ii) Fluorescent dye bound to an antibody.
 - iii) Enzyme.
 - iv) Radioisotope.
- t) Which step ensures tissue hardening before section cutting?
- i) Fixation.
 - ii) Dehydration.
 - iii) Clearing.
 - iv) Embedding.

2. Answer the questions briefly :

5 x 2

- a) What are basic dyes and acidic dye?
- b) Write the names of two fixatives.
- c) Write the significance of PAS stain.
- d) What is complex dye?
- e) What is brush cytology?

3. Write short notes on *any six* of the following :

6 x 5

- a) Removal of formalin from a tissue section.
- b) Dehydration of tissues and its significance.
- c) Trichrome staining techniques.
- d) Automated tissue processor.
- e) Grossing of Specimen.
- f) Sperm motility test.
- g) Use of Paraffin in tissue processing.
- h) Maintenance of Microtome knife.

4. Answer *any one* of the following :

- a) Describe the principle, procedure, and applications of Papanicolaou staining. How is it used in cervical cancer screening? 5+5
- b) Compare Pap and Leishman-Giemsa stains. Where is each preferred and why? 5+5

5. Answer *any two* of the following :

- a) What are the process of sample collection method for exfoliative cytology. Write its principle and preparing the smear. 6+4+5
- b) What is function of a microtome in histopathological laboratory? Write its care and maintenance. 8+7
- c) What are the different stages of preparation of paraffin embedded tissue? Discuss on these stages. What is use of fluorescent microscope in histology? 2+8+5

Shot on realme 2

The West Bengal University of Health Sciences
2nd BMLT Examination, 2018

Subject : Histopathology and Cytotechnology

Time: 3 hrs.

Full Marks: 70

Use separate answer script for each group

Attempt all questions

1. Tick the correct answer:

20 x 1

- a) Alcohol fixation is required for all except :
i) MGG. ii) Leishman. iii) PAP. iv) Giemsa.
- b) Blueing is related to :
i) Staining. ii) Fixation. iii) Dehydration. iv) Mordant.
- c) Which one is not a fixative?
i) Dry heat. ii) Alcohol. iii) Formic acid. iv) Formalin.
- d) Use of ascending grade of alcohol means :
i) 70% to absolute. ii) Absolute to 70%.
iii) Two changes of absolute alcohol. iv) None of the above.
- e) In reticulin stain reticulin fibres take color :
i) Black. ii) Blue. iii) Red. iv) Grey.
- f) For decalcification following is necessary :
i) Formalin. ii) Alcohol. iii) Nitric Acid. iv) Xylene.
- g) Clearing of the histological tissue can be done by using :
i) Xylene. ii) Absolute alcohol. iii) Formalin. iv) Paraffin.
- h) PAS stain cannot demonstrate :
i) Mucin. ii) Fat. iii) Fungus. iv) Basement membrane.
- i) Ideal thickness of a paraffin section is :
i) 3-4 μ . ii) 1-2 μ . iii) 5-6 μ . iv) 7-8 μ .
- j) Reagent required for Perl's stain is :
i) Potassium chloride. ii) Potassium cyanide.
iii) Potassium ferricyanide. iv) Potassium ferrocyanide.
- k) Ripening of haematoxylin means :
i) Reduction of haematoxylin. ii) Conversion of haematin to haematoxylin.
iii) Both are correct. iv) Both are incorrect.
- l) Which one is the best microtome knife?
i) Non disposable. ii) Disposable. iii) Diamond. iv) All are equally good.

P. T. O.

- m) Argyrophil tissue :
 i) Have affinity to silver. ii) Need reduction of silver salt to give colour.
 iii) Both are correct. iv) Both are incorrect.
- n) For rapid decalcification the agent of choice is :
 i) Formic acid. ii) Nitric acid. iii) Sulfuric acid. iv) Any one of the above.
- o) In PAS with Diastase technique loss of positivity means tissue contain :
 i) Mucin. ii) Fat. iii) Glycogen. iv) Glucose.
- p) Schiff's reagent is discarded when its colour changes to :
 i) Yellow. ii) Blue. iii) Pink. iv) Green.
- q) Example of interventional cytology is :
 i) Lateral vaginal wall scraping. ii) Stomach wash.
 iii) Fine needle aspiration. iv) Ectocervix scraping.
- r) For pap stain FNAC smears are :
 i) Alcohol fixed after drying. ii) Formalin fixed.
 iii) Heat fixed after drying. iv) Alcohol fixed before drying.
- s) With Pap stain colour of cytoplasm of Keratinized cell is :
 i) Pink. ii) Blue. iii) Green. iv) Black.
- t) Clearing the histological tissue can be done by using :
 i) Xylene. ii) Absolute alcohol. iii) Formalin. iv) Paraffin.

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

4 x 5

- Preparation on FNAC set.
- Preparation of Paraffin block.
- Exfoliative Cytology.
- Different embedding medium in histology.
- Biomedical waste disposal in histopathology laboratory.
- Removal of formalin pigment from tissue sections.

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

- Define dehydration. Dehydration should be undertaken slowly & upto the optimum level-justify this statement. Discuss about ethanol as dehydrating agent. 1+5+4
- Name the stains in papanicolaou stain. Write down the staining method. What are the advantages of this stain? 2+6+2
- What is mordant? Classify the haematoxylin stains according to mordants used and discuss their advantages & disadvantages. 2+3+5
- Name the different types of microtomes. What is the basic mechanism of operation of rotary microtome? Why automatic microtomes are superior to manual microtomes. 2+4+4
- Discuss about different types of cytological tests being performed in routine clinical setting. How a FNAC smear is prepared. 6+4

The West Bengal University of Health Sciences
2nd BMLT Examination, 2018

Subject: Haematology and Clinical Pathology

Time: 3 hrs

Attempt all questions

Full Marks: 70

20 x 1

1. Tick the correct answer :

- a) Thrombocytopenia causes
i) Prolong bleeding time. ii) Prolong clotting time.
iii) Increased Prothrombin time. iv) Low factor VIII.
- b) Normal adult haemoglobin contains
i) 2α & 2β chain. ii) 2β & 2Ω chain.
iii) 1α & 1μ chain. iv) None of the above.
- c) Megaloblastic anaemia is due to deficiency of :
i) Iron. ii) Vitamin B12. iii) Vitamin C. iv) None of these.
- d) RBC & WBC ration in human blood is :
i) 100:1. ii) 300:1. iii) 600:1. iv) None of these.
- e) O_2 and CO_2 gases exchange take place in :
i) Bone marrow. ii) Heart. iii) Alveoli. iv) None of these.
- f) CD4, CD8 count is an important tool for the patient treating :
i) Thalassemia. ii) HIV. iii) Anaemia. iv) None of these.
- g) Indication of semen analysis
i) Male infertility. ii) Confirmation of vasectomy.
iii) Oligospermia. iv) All of the above.
- h) Rothera's test done for
i) Ketonuria. ii) Oliguria. iii) Glycosuria. iv) None of these.
- i) Benedict's test for sugar is
i) Qualitative test. ii) Quantitative test.
iii) Semiquantitative test. iv) Specific test for glucose.
- j) Thrombocytopenia is diagnosed when platelet count is less than
i) 0.2 lakh/cumm ii) 0.5lakh/cumm iii) 1.0lakh/cumm iv) 1.5lakh/cumm
- k) Morphological classification of anaemia is done using
i) PCV ii) MCH iii) MCV iv) MCHC
- l) Requirement of LE cell phenomenon is
i) Patient's whole blood ii) Patient's platelets
iii) Patient's skin biopsy iv) Patient's serum

P. T. O.



- m) Casts in the urine are frequently an indication of:
 i) Disease of the upper urinary tract. ii) Disease of the lower urinary tract.
 iii) Both i) & ii). iv) None of the above.
- n) The important component of semen analysis is
 i) Sperm quantity. ii) Sperm motility.
 iii) Sperm count. iv) Sperm maturation.
- o) The casts which is most indicative of several renal disease is
 i) Haemoglobin. ii) Granular. iii) Cellular. iv) Waxy.
- p) Anticoagulant of choice in osmotic fragility test
 i) Heparin. ii) EDTA. iii) Double oxalate. iv) Tri sodium citrate.
- q) Sodium citrate is used in all except
 i) Coagulation study. ii) ESR estimation.
 iii) Blood preservation in blood bank. iv) Hb estimation.
- r) Bence Jones protein is usually found in
 i) Fever. ii) Multiple myeloma. iii) Anaemia. iv) Dengue.
- s) Hypochromic microcytic anaemia can be found in all except
 i) Iron deficiency anaemia. ii) Thalassemia.
 iii) Megaloblastic anaemia. iv) Nutritional anaemia.
- t) 24 hrs. urinary protein can be estimated by
 i) Esbach's albuminometer. ii) Urinometer.
 iii) Centrifuge machine. iv) All of the above.

2. Answer **any four** from this following:

4 x 5

- Sickle cell preparation.
- Abnormal constituents of urine.
- Total WBC count.
- Semen Analysis.
- HPLC.
- Urine dipstick.

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

- Write down morphological classification of anaemia. Define Laboratory Investigations of megaloblastic anaemia. 3+7
- Describe the principle, method and advantages of automated cell counter in haematology. 10
- Write down the composition of blood in details. Describe the important functions of blood. 4+6
- Describe the different process of urine collection and preservation. What do you mean my urinary cast? 8+2
- What do you mean by Quality Assurance (QA)? Describe various methods used for QA in a haematology laboratory. 2+8

The West Bengal University of Health Sciences
2nd BMLT Examination, 2018

Subject : Medical Microbiology, Entomology & Parasitology

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) Which form is found in the peripheral blood of *Plasmodium falciparum* infection?
i) Ring forms and gametocytes. ii) Only gametocytes.
iii) All forms of parasites. iv) None of the above.
- b) Most strains of *Staphylococcus aureus* show :
i) A golden yellow pigment. ii) Mannitol fermentation.
iii) Phosphate production. iv) All of the above.
- c) Negri bodies are most commonly found in :
i) Brain stem. ii) Cerebral cortex.
iii) Spinal cord. iv) Cerebellum.
- d) Weil Felix test is based on the principle of :
i) Agglutination. ii) Precipitation.
iii) Flocculation. iv) None of the above.
- e) Common intermediate host of *Taenia solium* is :
i) Pig. ii) Cow. iii) Dog. iv) Rat.
- f) Disposable syringes are sterilised commercially by :
i) Gamma radiation. ii) Ethylene oxide. iii) Formalin vapour. iv) Autoclaving.
- g) Dengue is transmitted by bite of :
i) Louse. ii) Tick. iii) Mosquito. iv) Sand fly.
- h) Egg of *Ascaris lumbricoides* can be :
i) Fertilized. ii) Decorticated. iii) Unfertilized. iv) All of the above.
- i) The destruction of all micro-organisms including spores is called :
i) Sanitation. ii) Antisepsis. iii) Sterilization. iv) Disinfection.
- j) All of these cause Urinary Tract Infection, except :
i) *E. coli*. ii) *Klebsiella*. iii) *Proteus*. iv) *Shigella*.
- k) All of these cause Sexually Transmitted Infections, except :
i) *N. gonorrhea*. ii) *T. pallidum*. iii) HIV Virus. iv) *T. carateum*.
- l) Tick borne Rickettsial fever commonly found in India is :
i) Epidemic typhus. ii) Scrub typhus. iii) Endemic typhus. iv) Typhoid fever.

P. T. O.

- m) Transfusion transmitted infection is :
 i) Hepatitis C. ii) Hepatitis B. iii) HIV. iv) All of the above.
- n) Typical drum stick appearance of bacilli is observed in :
 i) *Clostridium perfringens*. ii) *Clostridium botulinum*.
 iii) *Clostridium tetani*. iv) *Clostridium histolyticum*.
- o) Which one of these is a DNA virus?
 i) Hepatitis A. ii) Hepatitis B. iii) Hepatitis C. iv) Hepatitis E.
- p) All of these are dimorphic fungus except :
 i) *Blastomyces dermatitidis*. ii) *Histoplasma capsulatum*.
 iii) *Coccidioides immitis*. iv) *Candida albicans*.
- q) All of these are deep mycosis except :
 i) Mycetoma. ii) Chromomycosis. iii) Sporotrichosis. iv) Dermatophytoses.
- r) Infective form of *Plasmodium vivax* is :
 i) Merozoite. ii) Trophozoite. iii) Gametocyte. iv) Sporozoite.
- s) Vector of *Wuchereria bancrofti* is :
 i) Sand fly. ii) Louse. iii) Mite. iv) *Culex fatigans*.
- t) All the following helminthic ova are bile stained except :
 i) Fertilised egg of *Ascaris lumbricoides*. ii) Unfertilised egg of *Ascaris lumbricoides*.
 iii) Egg of *Taenia*. iv) Egg of hook worm.

2. Answer **any four** questions :

4 x 5

- a) Write down the principle and Interpretation of Coagulase Test.
- b) Write down the laboratory diagnosis of Enteric fever.
- c) Write down the importance of Universal Precautions for Health workers.
- d) Write a short note on autoclave.
- e) Discuss about some mosquito control measures.
- f) Write in brief about Pasteurization.

6. Answer **any three** question :

- a) Enumerate the organisms causing Meningitis and write the laboratory diagnosis of *Streptococcus pneumoniae*.
5+5
- b) Name the common methods of sterilisation used in your microbiological laboratory with one example for each method
10
- c) Name the common microorganisms causing diarrhoea. Write the laboratory diagnosis of cholera.
5+5
- d) Name the various genera of Dermatophytes. Discuss the laboratory diagnosis of infections caused by dermatophytes.
10

The West Bengal University of Health Sciences

2nd BMLT Examination, 2018

Subject: Clinical Biochemistry, Genetics & Molecular Biology

Time: 3 hrs.

Full Marks: 70

Attempt all questions

20 x 1

1. Tick the correct answer:

a) SGOT can be elevated in all these conditions except :

- i) Haemolytic anaemia.
- ii) Liver disease.
- iii) Pregnancy.
- iv) Myocardial infarction.

b) Aromatic amino acids are all except :

- i) Tyrosine.
- ii) Tryptophan.
- iii) Phenyl Alanine.
- iv) Glycine.

c) The isoenzyme of Creatine kinase that is raised in Acute myocardial infarction is :

- i) CK.
- ii) CK-BB.
- iii) CK-MB.
- iv) CK-MM.

d) Ketone bodies are synthesized predominantly in :

- i) Liver.
- ii) Brain.
- iii) Erythrocytes.
- iv) Skeletal muscles.

e) Blood soaked cotton is disposed in :

- i) Black bag.
- ii) Yellow bag.
- iii) Red bag.
- iv) Puncture proof container.

f) Conjugated hyperbilirubinemia is found in all these conditions except :

- i) Obstructive jaundice.
- ii) Viral hepatitis.
- iii) Gall stone disease.
- iv) Haemolytic anaemia.

g) Posterior pituitary secretes :

- i) FSH.
- ii) TSH.
- iii) ADH.
- iv) LH.

h) All are directly produced from pyruvate except :

- i) Lactate.
- ii) Alanine.
- iii) Oxaloacetate.
- iv) Fructose.

i) Creatinine is measured by :

- i) Biuret method.
- ii) Jendrasik Grof method.
- iii) Jaffe method.
- iv) Berthelot method.

j) Absorption of calcium involves the participation of :

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

k) Function of Fluoride in Fluoride oxalate vial :

- i) Acts as anticoagulant.
- ii) Acts as antiglycolytic agent.
- iii) Acts as buffer.
- iv) Acts as chelating agent.

l) Which of the following is not true regarding CSF?

- i) It is an ultrafiltrate of plasma.
- ii) Chloride level higher than plasma.
- iii) Glucose content same as plasma.
- iv) Protein content very low compared to plasma.

P. T. O.



Shot on realme 2

By Rupak

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- m) All are reducing substances except :
 i) Pentose. ii) Galactose. iii) Sucrose. iv) Fructose.
- n) During urea cycle, the two nitrogen atoms are derived from :
 i) Ammonia and Arginine. ii) Ammonia and Ornithine.
 iii) Ammonia and Aspartic acid. iv) Both from Ammonia.
- o) Which protein is not present in plasma?
 i) Albumin. ii) Globulin. iii) Fibrinogen. iv) Hemoglobin.
- p) Master gland of the body is :
 i) Pituitary gland. ii) Thyroid gland.
 iii) Adrenal gland. iv) Gonads.
- q) Protein free filtrate is prepared by addition of :
 i) Sodium tungstate. ii) NaOH. iii) HCl. iv) Methanol.
- r) Which of the following enzyme is a good marker of pancreatic function?
 i) LDH. ii) Amylase. iii) SGOT. iv) CPK.
- s) Anticoagulant found in body :
 i) Heparin. ii) Sodium citrate. iii) EDTA. iv) Potassium oxalate.
- t) Serum electrolytes in laboratory can be measured by :
 i) ELISA. ii) CLIA. iii) RIA. iv) Direct ISE.

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

4 x 5

- a) Describe Liver function tests.
- b) Write a short note on tricarboxylic acid cycle.
- c) Define glycolysis and state the different stages involved.
- d) Describe some diseases that affect the Digestive system.
- e) Illustrate the function of minerals in human body.
- f) Discuss the process of storage and transport of Iron (Fe) in plasma.

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

- a) Enumerate the parameters done routinely for 'Liver Function Test'. Give reference values of each parameter. Give an account of possible blood and urinary findings in patients of obstructive jaundice? 2+3+5
- b) Write down the procedure for estimation of TSH level in serum by ELISA. Differentiate between competitive and noncompetitive ELISA. 7+3
- c) Write down the standard operating procedure for estimation of plasma glucose by Glucose oxidase – peroxidase method. Why is this method preferable to Folin-Wu method? 7+3
- d) Outline the Renal function tests. Give a brief account of methods used to detect urea. How Glomerular filtration rate can be assessed? 3+4+3
- e) Enumerate the abnormal biochemical constituents of urine. Outline the principle and method for Benedict's test and heat coagulation test in urine. Mention three clinical conditions where protein can be detected in urine. 2+3+3+2

1. Stain the given section with H&E stain. Write the name of reagents used procedure of staining in short and result. Show to the examiner. (10)
2. Stain the given slide with PAP stain. Write the name of reagents used, procedure of staining in short and the result. Show to the examiner. (10)
3. Pick up the name of the special stain by lottery. Write the indication, reagents used, procedure in short and results. (10)
4. Spot the supplied items. (10×1=10)
5. Viva voce. (20)
6. Practical note book. (10)

West Bengal University of Health Sciences
2nd Year BSc.MLT Practical Examination (Final), 2018

Hematology and Clinical Pathology

Full marks: 70

1. Answer any one of the following questions.

30

- a) Perform thick and thin smear preparation from peripheral blood sample.
- b) Collect blood by venipuncture method, make a smear and find out its normal and abnormal findings.
- b) Perform estimation of Hemoglobin from the supplied sample.
- c) Perform Total count of WBC / RBC from supplied blood sample.
- d) Perform platelet count from supplied blood samples.
- e) Perform the estimation of PCV from supplied blood samples and write down the procedure and interpret the result.

2. Spot identification.

5

3. Viva-voce

30

4. Laboratory note book.

5



West Bengal University of Health Sciences
2nd Year BSc.MLT Practical Examination (Final), 2018

Medical Microbiology, Entomology and Parasitology

Full marks: 70

- | | |
|--|----|
| 1. Perform acid fast staining of supplied sputum smear. Identify the acid fast bacilli. | 10 |
| 2. Perform RPR test of supplied blood serum sample. | 10 |
| 3. Perform Wet mount preparation of supplied stool sample. Identify and draw labelled diagram of your findings with identifying characteristics. | 10 |
| 4. Spot Identification | 10 |
| 5. Viva- Voce | 20 |
| 6. Practical record | 10 |



West Bengal University of Health Sciences
2nd Year BSc.MLT Practical Examination (Final), 2018
Clinical Biochemistry (204)

Full marks: 70

- | | |
|---|----|
| 1. Estimate protein level of the given blood sample against protein standard

(Standard protein concentration is 6.5gm/dl). | 20 |
| 2. Estimate blood urea level of the given sample against urea standard (Standard

urea concentration 40mg/dl). | 20 |
| 3. Spot identification. | 5 |
| 4. Practical notebook. | 5 |
| 5. Viva-Voce. | 20 |



The West Bengal University of Health Sciences 2nd BMLT Examination, 2017

Subject : Haematology & Histotechnology

Time: 3 hrs.

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the followings :

5 x 1

- a) Toxic granules present in :
☒ i) Neutrophil. ☐ ii) Eosinophil. ☐ iii) Basophil. ☐ iv) Lymphocytes.
- b) Which coagulant factor deficiency is responsible for haemophilia-B disease?
☐ i) Factor VII. ☐ ii) Factor VIII. ☒ iii) Factor IX. ☐ iv) Factor X.
- c) Average HB/Cell is calculated by :
☐ i) PCV. ☐ ii) MCV. ☐ iii) MCH. ☒ iv) MCHC.
- d) Phagocytosis done by :
☒ i) Neutrophil. ☐ ii) Eosinophil. ☐ iii) Basophil. ☐ iv) Monocytes.
- e) In which of the following condition amount of platelet decreases?
☐ i) Anaemia. ☐ ii) Basophilia. ☒ iii) Purpura. ☐ iv) None of these.

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

4 x 5

- ☒ a) Parasitic cause of Anaemia.
- ☒ b) Thalassemia syndrome.
- ☒ c) Red cell indices and abnormal forms of RBCs in peripheral blood smear study.
- ☐ d) Process of platelet count.
- ☒ e) Name the pathological variations in ESR.

3. a) What is haemoglobin? State briefly the procedure of estimation of haemoglobin?

2+8

or

☒ b) Describe about the function of WBCs of each cell.

10

Group – B

4. Answer the followings:

5 x 1

- a) In histological tissue processing autolysis can be prevented by using :
☒ i) Fixatives. ☐ ii) Dehydrating agents. ☐ iii) Clearing agents. ☐ iv) Mounting medium.
- b) Clearing of the histological tissue can be done by using :
☒ i) Xylene. ☐ ii) Absolute alcohol. ☐ iii) Formalin. ☐ iv) Bouin's Fluid.

P. T. O.

161/17

c) PAS staining technique is used for histological demonstration of :

- i) Glutamate. ii) Glucose.
- iii) Glycogen. iv) None of these.

d) Sudan stain can be used to visualize :

- i) Lipids. ii) Glycoproteins. iii) Mucoproteins. iv) Carbohydrates.

e) In phase-contrast microscope :

- i) Light beam is used. ii) Electron beam is used.
- iii) Both light and electron beam are used. iv) None of these beams are used.

4 x 5

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

- a) Decalcification of histological specimen.
- b) Microtomes and their use.
- c) PAS staining and its importance.
- d) Different freezing media used in cryosectioning.
- e) Uses of fluorescent microscope in histology.

6. a) What is Giemsa stain? Discuss briefly about the uses of this stain in histology. Write the procedure of one staining technique in which this stain is used.

1+2+7

or

b) What are the different stages of preparation of paraffin embedded tissue? Discuss on these stages.

2+8

The West Bengal University of Health Sciences 2nd BMLT Examination, 2017

Time: 3 hrs

Subject: Medical Microbiology, Entomology & Parasitology

Full Marks: 70

Use separate answer script for each group
Attempt all questions

Group - A

1. Tick the correct answer :

5 x 1

a) Widal test is a :

- i) Complement fixation test. ☒ ii) Agglutination test.
iii) Precipitation test. iv) Flocculation test.

b) Blood Agar is a :

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

c) The culture media for *Corynebacterium diphtheriae* is :

- ☒ i) Loeffler's slope. ii) Mac Conkey agar.
iii) Nutrient agar. iv) LJ media.

d) Acid fastness of *M. tuberculosis* is due to :

- i) Presence of Mycolic acid. ii) Integrity of cell wall.
iii) None of the above. ☒ iv) Both of the above.

e) The antigen used in weil felix test is obtained from :

- i) *Escherichia coli*. ii) *Staphylococcus*. iii) *Pseudomonas*. ☒ iv) *Proteus*.

2. Answer **any four** from the following :

4 x 5

- ☒ a) Cultivation of animal virus by Embryonated egg.
☒ b) Satellitism.
☒ c) Lepromin test.
☒ d) McIntosh fildes jar.
☒ e) Morphology of HIV.

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

☒ a) Name of the common organisms causes urinary tract infection and write its laboratory diagnosis.

10

b) Write down lab diagnosis of Tetanus. How will you immunize person against Tetanus.

5+5

P. T. O.



Shot on realme 2

By Rupak

Group – B

4. Tick the correct answer :

- a) The responsible transmitting agent for 'Oriental sore' is :
i) Louse. ~~ii) Sandfly.~~ iii) Housefly. iv) Ratflea.
- b) Infective form of plasmodium is :
i) Sporozoite. ii) 3rd stage larva.
iii) Quadrinucleated cyst. iv) Filariform larvae.
- c) Hydatid cyst is caused by :
i) Taenia saginata. ii) Taenia solium.
~~iii) Echinococcus granulosus.~~ iv) Hymenolepis nana.
- d) Which of the following egg are not bile stained?
i) Egg of Taenia saginata. ii) Egg of Taenia solium.
iii) Vibrio cholera. ~~iv) Egg of ancylostoma duodenale.~~
- e) Hydatid cyst is caused by :
i) Taenia saginata. ii) Taenia solium. ~~iii) Taenia echinoccus.~~ iv) All of the above.

5. Answer **any four** questions :

4 x 5

- ~~a)~~ Describe about the morphological features for Giardia lamblia.
- ~~b)~~ Write about the erythrocytic schizogony phase observed in human cycle for Plasmodium species.
- c) Briefly describe about the pathogenicity of filariasis.
- ~~d)~~ Morphological forms of leishmania Donovanii.
- ~~e)~~ Concentration methods for detection of ova in stool.

6. Answer **any one** question :

- ~~a)~~ Name the infective form of Hook Worm. Write down the laboratory diagnosis caused by adult hook worm. Describe briefly its life cycle. 5+5
- b) Define medical entomology. Classify Arthropod of medical importance. Write down the mosquito control measures. 2+3+5

The West Bengal University of Health Sciences 2nd BMLT Examination, 2017

Time: 3 hrs

Subject: Clinical Immunology & Clinical Endocrinology

Full Marks: 70

*Use separate answer script for each group**Attempt all questions***Group – A**

1. Tick the correct answer :

5 x 1

- a) CD- 40 ligand is seen only on :
 i) Macrophages. ii) Cytotoxic T cells. iii) Helper T cells. iv) Dendritic cells.
- b) The interferons are :
 i) Antigen proteins. ii) Antiviral proteins.
 iii) Antibiotic proteins. iv) All of these.
- c) Killer cells along with IgM mediates :
 i) Type I hypersensitivity. ii) Type II hypersensitivity.
 iii) Type III hypersensitivity. iv) Type IV hypersensitivity.
- d) Classical pathway of complement system is activated by :
 i) Antigen. ii) Antigen-antibody complexes. iii) Antigen bound to MHC. iv) IgM.
- e) Hemolytic disorder of newborn is an example of :
 i) Type I hypersensitivity. ii) Type II hypersensitivity.
 iii) Type III hypersensitivity. iv) Type IV hypersensitivity.

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

4 x 5

- a) Type IV hypersensitivity reaction. b) Basic structure of immunoglobulin.
 c) Blood transfusion related disorders. d) Class II MHC molecules.
 e) Natural killer cells.

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

- a) What is adaptive immunity? What are the organs involved in adaptive immune response? Briefly describe the process of T cell development and activation. 2+2+6
- b) What is antigen? What are the requirements for immunogenicity? Give a Brief description on antigen-antibody interactions. What is cross reactivity? What is adjuvant? 1+2+4+2+1

P. T. O.

Group - B

5 x

4. Answer the following :

- a) In children hypothyroidism can lead to :
i) Myxedema. ~~ii) Cretinism.~~ iii) Goitre. iv) Acromegaly.
- b) Which gland secretes calcitonin?
i) Pancreas. ~~ii) Thyroid.~~ iii) Pineal gland. iv) Adrenal gland.
- c) The hypothalamus regulates :
i) Heart rate. ii) Water balance. iii) Body temperature. ~~iv) All of these.~~
- d) The receptors for non-steroid peptide hormones are located on the :
~~i) Plasma membrane.~~ ii) Nuclear membrane. iii) Peptide chain. iv) None of these.
- e) The primary target organ of aldosterone is :
i) Liver. ii) Pancreas. ~~iii) Kidney.~~ iv) Stomach.

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

4 x 5

- ~~a)~~ Describe the Hypothalamo - hypophyseal - adrenal axis.
- ~~b)~~ Briefly describe the metabolic roles of glucocorticoids.
- ~~c)~~ Write down the clinical features and laboratory diagnosis of Grave's disease.
- ~~d)~~ Briefly discuss about the autocrine and paracrine fashion of hormone functions with proper example.
- e) Briefly describe the functions of estrogen and progesterone.

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

- a) Describe the role of insulin and glucagon in maintaining blood sugar level. Briefly describe diabetes mellitus and diabetes insipidus. 3+5+1+1
- ~~b)~~ Discuss about the menstrual cycle stating the interplay of gonadotrophin hormones and female reproductive hormones. Mention the changes that occur during pregnancy. 8+2

The West Bengal University of Health Sciences

2nd BMLT Examination, 2017

Subject: Clinical Biochemistry, Genetics & Molecular Biology

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) SGOT level increases in :

☒ i) Liver disease. ii) Lung disease. iii) Heart disease. iv) Kidney disease.

b) Presence of ketone body in blood is known as :

i) Ketosis. ii) Ketonuria. iii) Proteinuria. iv) Ketonemia.

c) Which of the following is a good marker of acute pancreatitis?

i) AST. ii) Creatine kinase. ☒ iii) Amylase. iv) LDH.

d) The most prominent cation in extracellular fluid is :

i) Ca^{2+} . ☒ ii) Na^+ . iii) K^+ . iv) Fe^{2+} .

e) Protein free filtrate is prepared by adding :

i) NaOH. ii) HCl. ☒ iii) Na-tungstate. iv) Ethanol.

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

4 x 5

☒ a) Write a short note on working principle of flame photometer.

b) Discuss briefly about the roles of calcium in human body.

☒ c) Write a short note on cardiac marker enzyme.

☒ d) Write a short note on renal function test.

☒ e) State briefly about the working principle of autoanalyser.

3. Answer *any one* of the following :

a) State the criteria for determination of diabetes mellitus. Outline the methods of determination of glucose and triglyceride in blood. 2+5+3

☒ b) Outline the renal function tests. Give a brief account of methods detect urea and creatinine. 2+4+4

P. T. O.

Group - B

5 x

4. Tick the correct answer :

a) Trisomy at 21st chromosome leads to :

- i) Down's syndrome.
- ii) Klinefelter syndrome.
- iii) Edward's syndrome.
- iv) Cri-du-chat syndrome.

b) The linker histone is :

- i) H1.
- ii) H3.
- iii) H4.
- iv) H2A.

c) The first codon to be translated on mRNA is :

- i) AUG.
- ii) GGA.
- iii) GGU.
- iv) AAA.

d) Recognition and attachment of correct amino acids in tRNA during translation depends on the enzyme :

- i) Reverse transcriptase.
- ii) Aminoacyl tRNA synthetases.
- iii) RNA polymerase.
- iv) Spliceosome.

e) The mutation caused due to long time exposure on UV light is :

- i) Spontaneous mutation.
- ii) Induced mutation
- iii) Both of them
- iv) None of them.

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

4 x 5

- a) Explain the terms codominance and incomplete dominance with examples. Differentiate between genotype and phenotype. 4+1
- b) Explain genetic counselling and discuss the role of a Genetic Counsellor.
- c) Mention the salient features of Hardy - Weinberg Equilibrium.
- d) Briefly discuss the different types of spontaneous and induced mutations.
- e) Describe different types of crossing over.

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

a) Define genetic code. What are the salient features of genetic code? What is Wobble hypothesis?

1+6+3

b) Define replicons? What are the mechanism of DNA replication in prokaryotes? What are the role of DNA ligase and DNA polymerase - α -in DNA replication?

1+7+2



Sayan Debnath
Date - 21/9/20
at - SSMT

The West Bengal University of Health Sciences

2nd BMLT Examination, 2017

Subject: Haematology, Histotechnology & Cytotechnology

Paper Code:-201

Full Marks: 60

Use separate answer scripts

Attempt all questions

Haematology

1. Perform the Differential leukocyte count (DLC) by slide preparation, staining, and Micro -
- scopic Identification 10
2. Haemoglobin pipetting, estimation & find the value with known and unknown standards
samples. 5
3. Viva-Voce. 10
4. Laboratory note book. 5

Histotechnology & Cytotechnology

1. A slide with paraffinised section of tissue provided. Perform H & E stain with this section. 10
2. Spot Identification. 5
3. Viva - Voce 10
4. Laboratory Note Book 5



Shot on realme 2

By Rupak

Sayan Debnath
22/9/2017
at - GMS

The West Bengal University of Health Sciences
2nd BMLT Examination, 2017

Subject: Medical Microbiology, Medical Entomology and Parasitology

Paper Code: 202

Full Marks: 60

Use separate answer scripts

Attempt all questions

Medical Microbiology

1. Perform the acid fast staining of supplied heat fixed slide and identify positive findings microscopically. 10
2. Perform biochemical identification of supplied bacterial culture. 5
3. Viva-Voce 10
4. Laboratory note book. 5

Medical Entomology and Parasitology

1. Prepare slide from supplied stool sample and identify positive findings microscopically. 10
2. Spot identification 5
3. Viva-Voce 10
4. Laboratory note book. 5

The West Bengal University of Health Sciences

1st BMLT Examination, 2017

Subject: Clinical Immunology and Clinical Endocrinology

Paper Code:-203 (Practical)

Full Marks: 60

Use separate answer scripts

Attempt all questions

Group-A

- | | |
|--|----|
| 1. Perform VDRL test from supplied serum sample. | 10 |
| 2. Perform ABO blood grouping from supplied blood samples. | 5 |
| 3. Practical note books. | 5 |
| 4. Viva-Voce. | 10 |

Group-B

- | | |
|---|----|
| 1. State the principle of TSH estimation. Mention its normal range. | 5 |
| 2. Estimate TSH of the supplied samples through ELISA. | 10 |
| 3. Practical note books. | 5 |
| 4. Viva-Voce. | 10 |



Shot on realme 2

By Rupak

Clinical Biochemistry

1. Perform the Quantitative estimation of Cholesterol from the given sample & write down the results with clinical significance. 7 (5)
2. Perform the Quantitative estimation of ^{Total Protein} Triglyceride from the provided sample and write down the result with clinical significance. 8 (5)
4. Viva-Voce. 10
5. Laboratory note book. 5
3. Detect the abnormal constituent from abnormal provided sample.
(Ketone Bodies & occult blood) (5)

Molecular Biology

1. Write down the principle and procedure of SDS-PAGE 10
2. Spot identification 5
3. Viva-Voce 10
4. Laboratory note book 5

The West Bengal University of Health Sciences
2nd BMLT Examination, 2016

Subject : Haematology & Histotechnology

Time: 3 hrs.

Full Marks: 70

Use separate answer script for each group
Attempt all questions

Group – A

1. Answer the followings : 5 x 1
- a) Pluripotent stem cells are present in :
 - i) Heart. ii) Liver. iii) Kidney. iv) Bone marrow.
 - b) Monocytosis can be found in :
 - i) Whooping cough. ii) Acute Haemorrhage.
 - iii) B~~arn~~. iv) Tuberculosis.
 - c) Exchange of O₂ and CO₂ gases takes place in :
 - i) Lung. ii) Heart.
 - iii) Kidney. iv) Alveoli.
 - d) Which enzyme present in cytoplasm of neutrophils?
 - i) PAS stain. ii) Perl stain.
 - iii) Methelene blue. iv) PAP stain.
 - e) Haemoglobin production is regulated by :
 - i) LH. ii) FSH. iii) TSH. iv) EPO hormone.
2. Write short notes on **any four** of the following : 4 x 5
- a) Write short note on leukaemia. b) How to determine CT, BT and PT?
 - c) Write short note on prothrombin test. d) Write short note on development stage of RBC.
 - e) Mention clinical importance of E.S.R.
3. a) Describe composition of blood. Write functions of blood. 6+4
- or**
- b) Write the causes and symptoms of parasitic, bacterial and viral anaemia. What is the full form of CML? 3+3+3+1

P. T. O.



Shot on realme 2

By Rupak



Answer the followings:

- a) Aqueous mountant is used to mount :
 i) Frozen section. ii) Paraffin section. iii) Hematological smear. iv) Cytology.
- b) In van Gieson stain muscles take :
 i) Red colour. ii) Yellow colour. iii) Deep blue colour. iv) Black colour.
- c) For dehydration tissue is passed through :
 i) Ascending grades of alcohol. ii) Descending grades of alcohol.
 iii) Absolute alcohol. iv) All of them.
- d) Resin embedding agent is used to obtain sections of thickness :
 i) 1-2 μ . ii) 4-5 μ . iii) 7 μ . iv) 8 μ .
- e) Loss of PAS positivity after diastase treatment indicates presence of :
 i) Glucose. ii) Mucin. iii) Glycogen. iv) All of them.

4 x 5

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

- a) Specimen handling and identification in histopathology.
- b) Mordant (in relation to hematoxylin solution).
- c) Extraction of formalin pigment from tissue section.
- d) Factors affecting fixation of tissue.
- e) Principle of frozen section.

6. a) What is tri-chrome technique of staining? Give examples. Discuss in short the principle, procedure of staining and result of any one of the methods.

2+1+2+4+1

or

- b) Define fixative. What are the characteristics of an ideal fixative? Enumerate different types of fixatives.

2+4+4

Use separate answer script for each group
Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- a) Food poisoning is caused by :
i) Clostridium tetani. ii) Clostridium Welchii.
iii) Diptheria sp. iv) Clostridium botulinum.
- b) Botulism means :
i) Food adulteration. ii) Food poisoning by streptococcus bacteria.
iii) Chemical contamination of food. iv) Food processing.
- c) The causative agent of tetanus is :
i) Clostridium botulinum. ii) Clostridium tetani.
iii) Clostridium Welchii. iv) Clostridium perfringens.
- d) Mycobacteria are stained with :
i) Gram's staining. ii) Simple staining.
iii) Both a and b. iv) Ziehl - Neelsen's staining.
- e) C.diphtheriae requires :
i) LJ medium. ii) MacConkey's medium.
iii) Potassium tellurite medium. iv) PDA medium.

4 x 5

2. Answer **any four** from the following :

- a) Progeny Virus. b) Pathogenesis of HIV. c) Lysogenic Cycle of Virus.
d) Hot Air Oven. e) Indole test.

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

- a) Give a brief account on Laboratory waste management. State the mechanism of Laminar Air flow.
b) Give the details account of any of the STD.

6+4

10

P. T. O.

4. Tick the correct answer :

- a) Infective form of Plasmodium is :
i) Sporozoite. ii) 3rd stage larva. iii) Falariform larva. iv) Quadrinucleate.
- b) Hydatid cyst is caused by :
i) Taenia saginata. ii) Taenia solium.
iii) Echinococcus granulosus. iv) Hyemenolepis nana.
- c) Hepatitis A virus is transmitted by :
i) Injection. ii) Air. iii) Food and water. iv) Mosquito bite.
- d) Housefly acts as a vector & can transmit :
i) Entamoeba histolytica. ii) Salmonella typhi.
iii) Vibrio cholera. iv) All of the above.
- e) Amoebic abscess can occur in :
i) Liver. ii) Lung. iii) Brain. iv) All of these.

4 x 5

5. Answer **any four** questions :

- a) Occult filariasis.
b) Creeping eruption.
c) Mosquito control measures.
d) Morphological forms of Entamoeba histolytica.
e) Casoni's test.

6. Answer **any one** question :

- a) Give labeled diagram of amastigote and promastigote forms of Leishmania donovani. Discuss the laboratory diagnosis of Visceral Leishmaniasis. 4+6
- b) Name the infective form of Ascaris lumbricoides. Write down the disease caused by larval stage of parasite. Discuss briefly its life cycle. 2+2+6



Shot on realme 2

By Rupak

West Bengal University of Health Sciences
2nd BMLT Examination, 2016

Subject: Clinical Immunology & Clinical Endocrinology

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

1. Tick the correct answer :

5 x 1

- a) Antigen presenting cells that activate helper T cells must express which of the following on their cell surfaces?
i) IgE. ii) Gamma interferon. iii) Class I MHC antigens. iv) Class II MHC antigens. ✓
- b) Individuals of blood group A have 'A' gene that codes for which of the following on RBC membrane?
i) Lactose. ii) N-acetylgalactosamine. ✓
iii) Galactose. iv) Glucose.
- c) AIDS is caused by a retrovirus that kills :
i) B lymphocyte. ii) T lymphocyte.
iii) CD4 positive T cells. ✓ iv) CD8 positive T cells.
- d) Identify the wrong statement about B-cells :
i) They can present both exogenous & endogenous antigens.
ii) They can present only antigens for which they have surface immunoglobulin.
iii) They can present only protein antigen. ✓
iv) They can present both protein & nonprotein antigen.
- e) "J" chains are present in :
i) IgE. ii) IgA. ✓ iii) IgG. iv) IgD.

4 x 5

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

- a) Primary and secondary lymphoid organs. b) Hazards and precaution of blood transfusion.
c) Life cycle of HIV. d) Adjuvant.
e) Blood group polysaccharide.

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

- a) What are the mechanisms of presenting an endogenous noxious particle to T cells with a neat diagram? What are the basic difference between epitope and paratope? What are the main functions of dendritic cells? What is complement system?

6+2+1+1

- b) Write short notes on types of immunity. What is meant by hapten? Make the difference between primary & secondary immune response. What is the mechanism behind type-II hypersensitivity?

4+1+2+3

R

Shot on realme 2

By Rupak

P. T. O.



Shot on realme 2

By Rupak

Group - B

Answer the following :

- a) Which of the following hormone is known to have diabetogenic effect?
i) Prolactin. ii) Glucocorticoids. iii) LH. iv) FSH.
- b) Glucocorticoids are secreted from :
i) Zona fasciculata. ii) Zona glomerulosa.
iii) Zona reticularis. iv) Adrenal medulla.
- c) In semen analysis in the laboratory at the room temperature liquefies naturally in the period of :
i) 15-30 min. ii) 1hr - 1.30 hr. iii) 2hr - 2.30 hr. iv) 3hr - 3.30 hr.
- d) Which of the following neuroendocrine structures :
i) Anterior pituitary. ii) Hypothalamus. iii) Adrenal cortex. iv) Islet of Langerhans.
- e) Zona Glomerulosa cell tumor causes Hypokalemia, slight increase in Na, High blood pressure 200/100 mmHg persistent, condition is:
i) Pheochromocytoma. ii) Conn's syndrome.
iii) Hyperthyroidism. iv) Pheochromocytoma and Conn's syndrome.

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

4 x 5

- a) Briefly discuss Post menopausal syndrome with laboratory diagnosis.
b) Describe briefly about types of receptors with their mechanism of action.
c) Principles of Radioimmuno Assay, disadvantage of this test procedure.
d) Clinical features, etiology of Addison's disease with laboratory diagnosis.
e) Chronic complication of Diabetes Mellitus and laboratory diagnosis.

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

- a) Capacitation of spermatozoa, types of infertility, cause of infertility and steps of semen analysis.

1+1+4+4

- b) Describe in details the mechanism of action of protein hormones. What is ryanodine receptor? 8+2



Use separate answer script for each group

Attempt all questions

1. Tick the correct answer;

Group - A

5 x 1

- a) How many isoenzyme LDH have :
i) 3. ii) 4. iii) 5. iv) 7.
- b) Presence of Ketone body in urine known as :
i) Ketosis. ii) Glycosuria. iii) Ketonuria. iv) Proteinuria.
- c) The most prominent anion in the extra cellular fluid is :
i) Cl^- . ii) HCO_3^- . iii) HPO_4^{2-} . iv) Protein.
- d) The serum enzyme used to evaluate pancreatic function is :
i) Amylase. ii) ALP. iii) Aspartate transferase. iv) Lactate dehydrogenase.
- e) Vanden-bergh reaction is :
i) Indirect positive. ii) Direct positive. iii) Biphasic. iv) None of them.

4 x 5

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

- a) Cardiac marker enzyme.
- b) Write a short note about flame photometer.
- c) How do you measure alkaline phosphatase in serum?
- d) What is hippuric acid test? Why is it done?
- e) Briefly discuss about the test to determine urine abnormalities.

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

- a) Briefly discuss about different types of thyroid function test. What do you mean by hyperthyroidism?
8+2
- b) Briefly discuss about liver function test.
10

P. T. O.



Shot on realme 2
By Rupak

Group - B

Tick the correct answer :

- a) The various forms of a given gene are called :
i) Genotype. ii) Phenotype. iii) Gamete. iv) Alleles.
- b) Crossing over was coined by :
i) Mendel. ii) Stern. iii) Morgan. iv) Robert king.
- c) The unwinding of DNA duplex is performed by an enzyme called :
i) Gyrase. ii) Lactase. iii) Maltase iv) Ligase.
- d) In monohybrid cross a typical genotype ratio is.
i) 3:1. ii) 9:7. iii) 9:3:3:1. iv) 1:2:1.
- e) Haplodiploidy is found in :
i) Grasshoppers & cockroaches. iii) Birds & reptiles
ii) Butterflies & moths iv) Honey bee, ants & wasps.

4 x 5

1 + 4

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

- a) Define test cross? Give an example of test cross?
b) Write an suitable example of a Mendel's law of segregation.
c) Short notes :
Chiasmata theory.
d) Homologous Recombination.
e) DNA polymerase both eukaryote & prokaryote.

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

- a) What are the characteristics of multiple alleles? Write a suitable example of a multiple alleles. 5+5
b) How chromosome compactions occur? What is Barr body? Differentiate between Facultative and Constitutive heterochromatin. 6+2+2

5 x 1

1. Tick the correct answer :

- a) Antigen presenting cells that activate helper T cells must express which of the following on their cell surfaces?
 i) IgE. ii) Gamma interferon. iii) Class I MHC antigens. iv) Class II MHC antigens.
- b) Individuals of blood group A have 'A' gene that codes for which of the following on RBC membrane?
 i) Lactose. ii) N-acetylgalactosamine. iii) Galactose. iv) Glucose.
- c) AIDS is caused by a retrovirus that kills :
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- e) "J" chains are present in :
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2. Answer **any four** of the following:

4 x 5

- a) Primary and secondary lymphoid organs. b) Hazards and precaution of blood transfusion.
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3. Answer **any one** of the following :

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 6+2+1+1
- b) Write short notes on types of immunity. What is meant by hapten? Make the difference between primary & secondary immune response. What is the mechanism behind type-II hypersensitivity?
 4+1+2+3

P. T. O.

4+1+2+3



Shot on realme 2

By Rupak

Group - B

Answer the following :

a) Which of the following hormone is known to have diabetogenic effect?

- i) Prolactin. ii) Glucocorticoids. iii) LH. iv) FSH.

b) Glucocorticoids are secreted from :

- i) Zona fasciculata. ii) Zona glumculosa.
- iii) Zona reticularis. iv) Adrenal medulla.

c) In semen analysis in the laboratory at the room temperature liquefies naturally in the period of :

- i) 15-30 min. ii) 1hr - 1.30 hr. iii) 2hr - 2.30 hr. iv) 3hr - 3.30 hr.

d) Which of the following neuroendocrine structures :

- i) Anterior pituitary. ii) Hypothalamus. iii) Adrenal cortex. iv) Islet of langerhans.

e) Zona Glumculosa cell tumor causes Hypokalamia, slight increase in Na, High blood pressure 200/100 mmHg persistant, condition is:

- i) Pheochromocytoma. ii) Conn's syndrome.
- iii) Hyper thyroidism. iv) Pheochromocytoma and Conn's syndrome.

**The West Bengal University of Health Sciences
2nd BMLT Examination, 2015**

Subject : Haematology & Histotechnology (201)

Time: 3 hrs.

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

1. Answer the followings :

5 x 1

a) Anticoagulant used in E.S.R determination :

i) 3.8% Na-citrate : Blood = 1:9

ii) 3.4% Na-citrate : Blood = 1:4

iii) 3.8% Na-citrate : Blood = 1:4

iv) 5.6% Na-citrate : Blood = 1:4

b) What is needed for performing L.E. Cell phenomenon?

i) Patient's RBCs

ii) Patient's serum.

iii) Hemolysate.

iv) Cells from Buffy coat.

c) What is needed for HPLC?

i) Patient's RBCs.

ii) Patient's serum.

iii) Hemolysate IV.

iv) Cells from Buffy coat.

d) Reticulocyte is stained by:

i) PAS stain.

ii) Perl stain.

iii) Methelene blue.

iv) PAP stain.

e) TSH is secreted from :

i) Thyroid.

ii) Pitutary.

iii) Kidney.

iv) Adrenal gland.

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

4 x 5

a) Morphological classification of anaemia.

b) Sickle cell disease.

c) Different methods of E.S.R estimation.

d) Colorimeter.

e) Packed cell volume.

f) Red cell indices.

3. a) Describe briefly the different instruments required to run a district level haematological laboratory with their relative hazards and precautions to overcome them.

10

or

b) What do you mean about Quality Assurance? Describe different methods applied in haematology laboratory for Quality Assurance.

2+8

P.T.O.

Group – B

4. Answer the followings:

a) Which is not a fixative:

- i) Bouins fluid ii) Alcohol. iii) Zenker's fluid. iv) Pleural fluid.

b) "Bluein" is related with:

- i) Fixation. ii) Staining. iii) Dehydration. iv) Mounting.

c) Mounting is done with:

- i) D.P.N ii) Canada Balsam. iii) All of the above. iv) None of the above.

d) In tissue section AFB is stained by:

- i) Hot ZN technique. ii) Cold ZN. iii) C. Both. iv) None.

e) In tissue collagen is stained by :

- i) H&E stain. ii) Masson trichrome stain.
iii) Von cosa stain. iv) None of the above.

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

4 x 5

a) Papanicalaou Stain.

b) Maintenance of microtome knife.

c) Hematoxylene of different types.

d) Pigments in tissue section.

e) Trichrome stain.

6. a) Write down briefly the different steps you will adopt during and after receiving a surgically operated specimen for histopathological studies. Enumerate 6 different stains for histopathological studies. Write down briefly the different steps of Hematoxylene and Eosin stain in tissue section. 4+3+3

or

b) Define fixative. Name the different fixatives in histopathology. What are advantages and disadvantages of Formalin fixative?

2+3+5

The West Bengal University of Health Sciences

2nd BMLT Examination, 2015

Subject: Clinical Immunology & Clinical Endocrinology (20)

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group – A

5 x 1

1. Tick the correct answer :

- a) What is the molecular weight of immunoglobulin heavy chain?
 i) More than or equal to 50,000 dalton. ii) 25,000 iii) 75,000 iv) 50,000.
- b) What are the fragments produced on digesting whole antibody molecule with papain?
 i) two $F(ab)_2$ fragments. ii) two Fab fragments.
 iii) one F_c and two Fab fragments. iv) two light and two heavy chains.
- c) Which one is not the professional antigen presenting cell?
 i) T cells. ii) Macrophages.
 iii) Dendritic cells. iv) B cells.
- d) Which is true regarding a person with O positive blood group?
 i) A blood group antigen is present on red cell.
 ii) B blood group antigen is present on red cell.
 iii) Both A and B blood group antigens are present on red cell.
 iv) Neither A or B blood group antigen is present on red cell.
- e) Lipid antigen is presented along with which type of T cell?
 i) $\gamma\delta$ TCR (T cell receptor) expressing T cell. ii) $\alpha\beta$ TCR (T cell receptor) expressing T cell.
 iii) CD4+CD8+ T cell. iv) CD4-CD8- T cell.

4 x 5

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

- a) Structure of major histocompatibility complex I. b) Principle of flow cytometry.
- c) Delineate antigen presentation through MHC II with diagram.
- d) Type II hypersensitivity reaction.
- e) Discuss alternate pathway of complement activation.

1 x 10

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

- a) What is hyperacute, acute and chronic graft rejection? Describe mechanism of acute graft rejection?
- b) What is DNA vaccine? What is its immunologic basis of action? What are its advantages and disadvantages?

Group – B

4. Answer the following :

- a) Which of the following hormones does not act by a second messenger system:
i) Glucagon. ii) Epinephrine. iii) Follicle stimulating hormone. iv) Testosterone.
- b) The fight or flight response is developed by hormones of the:
i) Hypothalamus. ii) Adrenal medulla.
iii) Adrenal cortex. v) Adrenal-pancreatic complex.
- c) The source of Gastrin hormone is :
i) Liver. ii) Kidney. iii) Pancreas. iv) Stomach.
- d) The most active mineralocorticoid hormone is :
i) Cortisol. ii) Aldosterone. iii) 11-Deoxycorticosterone. iv) Corticosterone.
- e) Cushing's syndrome is due to overproduction of :
i) ADH. ii) LH. iii) ACTH. iv) TSH.

5. Answer *any four* of the following :

- a) List posterior pituitary hormones with their source and biochemical function.
b) Discuss in detail the synthesis and biochemical function of thyroid hormones.
c) What are endorphins? What is their function?
d) Describe the metabolic roles of estrogen and progesterone.
e) Write a short note about Diabetes mellitus.

6. Answer *any one* of the following :

- a) Synthesis and biochemical functions of corticosteroids? Write two example of peptide hormones?
b) Define ELISA? Briefly describe the Indirect ELISA and RIA?



The West Bengal University of Health Sciences 2nd BMLT Examination, 2015

Subject : Medical Microbiology, Entomology & Parasitology (203)

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) Blood agar is a :

- | | |
|----------------------|-----------------------|
| i) Transport media. | ii) Selective media. |
| iii) Enriched media. | iv) Enrichment media. |

b) Saliva contains :

- | | | | |
|-------------|--------------|-----------------|---------------|
| i) Amylase. | ii) Sucrase. | iii) Pectinase. | iv) Permease. |
|-------------|--------------|-----------------|---------------|

c) BCG is administered :

- | | | | |
|----------|-------------------|-------------------|--------------------|
| i) Oral. | ii) Subcutaneous. | iii) Intradermal. | iv) None of these. |
|----------|-------------------|-------------------|--------------------|

d) Enterococcus is a :

- | | |
|---------------------------|----------------------------|
| i) Gram positive cocci. | ii) Gram positive bacilli. |
| iii) Gram negative cocci. | iv) Gram negative bacilli. |

e) VP test is positive for :

- | | |
|-------------------|-----------------|
| i) E. Coli. | ii) Klebsiella. |
| iii) Pseudomonas. | iv) Proteus. |

2. Answer **any four** from the following :

4 x 1

a) Widal test.

b) Catalase test.

c) Sterilization by moist heat.

d) Demonstration of motility.

e) STD.

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

1 x 1

a) Describe the different modes of sample collection.

b) Preparation of chocolate agar media.

P. T. O.

Group - B

5 x 161/15

4. Tick the correct answer :

- a) Morphological form of leishmania found in human is :
i) Promastigote. ii) ☒ Amastigote. iii) Trophozoite. iv) None of these.
- b) Peripheral blood smear for demonstration of malarial parasite is stained by:
i) Grams stain. ii) Z-N stain. iii) ☒ Leishman stain. iv) Alberts stain.
- c) Hepatitis- B is transmitted by :
i) Injection. ii) ☒ Food and water. iii) Air. iv) Mosquito bite.
- d) Egg which does not float in saturated sodium chloride solution is :
i) Fertilized egg of *Ascaris lumbricoides*. ii) Unfertilized egg of *Ascaris lumbricoides*.
iii) Egg of *Trichuris trichiura*. iv) Egg of hook worm.
- e) Which of the following is a nematode :
i) *Taenia saginata*. ii) *Hymenolepis nana*. iii) *Balantidium*. iv) *Wuchereria bancrofti*.

5. Answer **any four** questions (Draw labelled diagram where ever applicable):

4 x 5

- a) ☒ Cysticercosis.
- b) Polio vaccine.
- c) ☒ Peripheral blood smear findings in benign tertian malaria.
- d) ☒ Modes of transmission of parasitic diseases with appropriate examples of each.
- e) ☒ ELISA Test.

6. Answer **any one** question :

1 x 10

- a) Name the causative agent of amoebic dysentery? What are the extra intestinal sites of infection?
How will you proceed for laboratory diagnosis?
- b) How will you collect sample and proceed for diagnosis of a case of dengue fever in your laboratory?



Shot on realme 2

By Rupak

The West Bengal University of Health Sciences
2nd BMLT Examination, 2015

Subject: Clinical Biochemistry, Genetics & Molecular Biology (204)

Full Marks: 70

Time: 3 hrs.

Use separate answer script for each group

Attempt all questions

Group – A

5 x 1

1. Tick the correct answer:

- a) Plasma consists of :
 - i) Serum + Blood cells.
 - ii) Only serum.
 - iii) Serum+fibrinogen
 - iv) Whole blood.
- b) Lactate dehydrogenase has the following number of isoenzymes:
 - i) Two.
 - ii) Three.
 - iii) Four.
 - iv) Five.
- c) Presence of Ketone body in urine knowns as :
 - i) Ketosis.
 - ii) Glycosuria.
 - iii) Ketonuria.
 - iv) Proteinuria.
- d) Hippuric acid test is done to assess:
 - i) Kidney function.
 - ii) Liver function.
 - iii) Heart function.
 - iv) Thyroid function.
- e) Which of the following is a good marker of myocardial infarction?
 - i) AST.
 - ii) Creatine Kinase.
 - iii) Amylase.
 - iv) Lipase.

4 x 5

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

- a) State Lambert Beer's Law. Define molar extinction coefficient.
- b) Explain Glucose Tolerance Test.
- c) Describe how do you measure blood urea.
- d) Maintenance of blood pH by phosphate buffer system.
- e) What do you mean by isoenzymes of creatine kinase? Why these are clinically important?

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

- a) Briefly discuss the working principle of an auto analyzer and state its application in the medical field. 7+3
- b) State the important functions of kidney. How do you diagnose the abnormalities related to kidney. 3+7

P. T. O.



Shot on realme 2

By Rupak

Group - B

5 x 1 =

4. Tick the correct answer :

a) Which is not a genetic disease

- i) Albinism. ii) Tay-sachs disease. iii) Hemophilia. iv) Osteoporosis.

b) Back cross is :

- i) F1 X any parent. ii) F1 X recessive parent.
iii) F1 X dominant parent. iv) None of these.

c) The enzyme required for replication of RNA viruses is:

- i) RNA dependent RNA polymerase. ii) DNA dependent RNA polymerase.
iii) Topoisomerase iv) DNA polymerase.

d) DNA replication is _____ in nature.

- i) Semi conservative. ii) Dispersive.
iii) Conservative. iv) Non conservative.

e) The ratio of complementary interaction is:

- i) 12:3:1 ii) 9:3:4
iii) 15:1 iv) 9:7

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

4 x 5 =

a) Discuss epistasis with suitable crosses.

b) Describe Mendel's Monohybrid cross with suitable example.

c) Describe briefly multiple allelism with suitable example.

d) Discuss the process of DNA replication in prokaryotes.

e) Briefly discuss the different types of crossing over.

6. Answer *any one* of the following :

a) Define gene mutation. How transition, transversion and frame shift mutation occur? Discuss the mechanism of introducing mutation by 5- Bromouracil and UV light. 2+3+5 =

b) Distinguish between RNA polymerase I, II and III. Briefly discuss the mechanism of transcription in prokaryotes. 4+6 =



Shot on realme 2

By Rupak

The West Bengal University of Health Sciences

2nd BMLT Examination, 2014

Subject : Haematology & Histotechnology

Full Marks: 70

Time: 3 hrs.

*Use separate answer script for each group
Attempt all questions*

Group – A

5 x 1

1. Tick the correct answer :

- a) Reticulocyte count is done by :
i) Methelene Blue. ii) New Methelene Blue. iii) Methyl violet. iv) Reticulin stain.
- b) EDTA containing vacutainer cap is :
i) Red. ii) Yellow. iii) Purple. iv) Grey.
- c) Most commonly used fixative is :
i) Formal dehyde. ii) Formalin.
iii) 10% buffered formalin. iv) 40% buffered formalin.
- d) Dehydration in tissue processing is best achieved by :
i) Decending grade of alcohol. ii) Ascending grade of alcohol.
iii) Xylene. iv) Acetone.
- e) Hypochromia is best assessed by :
i) Peripheral blood smear. ii) MCV. iii) MCH. iv) MCHC.

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

4 x 5

- a) Prothrombin time. b) Hemoglobin electrophoresis c) Osmotic fragility test.
- d) Detection of Burn body. e) Fluid cytology.

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

1 x 10

- a) Discuss the role of a Medical Laboratory Technician in performing and reporting of FNAC.
- b) Discuss different methods of ESR estimation. Name one condition where ESR is O.

Group – B

4. Tick the correct answer :

5 x 1

- a) The component of Papstain demonstraring Keratin is :
i) Haematoxylin. ii) OG – G. iii) EA – 36. iv) EA – 50.
- b) Frozen section is used for :
i) Lipid stain. ii) Immuno-histochemistry.
iii) Per-operative diagnosis. iv) All of the above.



Shot on realme 2

By Rupak

Which of the following is not a type of Microtome?

- i) Rocking. ii) Rotary. iii) Sliding. iv) Oscillatory.
- d) Thickness of tissue for fixation should be :
 - i) 3.5 micrometre. ii) 5 micrometre. iii) 3.5 millimetre. iv) 5 Millimetre.

e) Air drying may be performed for which staining :

- i) MGG. ii) Giemsa. iii) Pap. iv) Leishman.

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

- a) Broncho Alveolar Cytology. b) Fixation for electron microscopy.
- c) Use of Paraffin in tissue processing. d) Grossing of Specimen.
- e) Immunohistochemistry.

6. Answer *any one* of the following :

- a) Discuss the role of Computer in histopathology Laboratory.
- b) Discuss Biomedical waste disposal in histopathology Laboratory.



The West Bengal University of Health Sciences
2nd BMLT Examination, 2014

Shot on redme 2
By Rupak

Subject: Clinical Immunology & Clinical Endocrinology

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- Which one is secreted in the milk?
i) Ig M. ii) IgG. iii) IgA. iv) IgE.
- In agglutination reactive, the correct answer of the antigen :
i) Antigen is soluble. ii) Antigen is particulate.
iii) Antigen is denatured. iv) All of the above.
- Infectious organisms in the blood is mainly tackled by the organ of the immune system.
i) Spleen. ii) Lymph node.
iii) Gut-associated lymphoid tissue. iv) Cutaneous associated lymphoid tissue.
- MHC class II antigen is presented along with the type of T cell :
i) CD4 + T cell. ii) CD8 + T cell. iii) CD4 + CD8 + T cell. iv) CD4 - CD8 - T cell.

e) Which one is not the professional antigen presenting cell?

- T cells.
- Macrophages.
- Dendritic Cells.
- None of these.

4 x 5

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

- Structure of MHC molecule.
- Principle of polymerase Chain reaction.
- Type-I hypersensitivity reaction.
- Principle of flow cytometry.
- Discuss alternate pathway of complement activation.

1 x 10

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

- Draw an antibody molecule. Discuss the structure and function of different parts.
- Discuss the typing procedures of HLA molecules.

Group - B

5 x 1

4. Tick the correct answer :

- Tropic hormone is secreted from :
i) Neurohypophysis. ii) β - cells. iii) Adenohypophysis. iv) Gonad.
- Steroid hormone acts through :
i) Enhancer. ii) Silencer. iii) Both i) and ii). iv) None of these.

P. T. O.



Shot on realme 2

By Rupak

- c) Amino acid derivative hormone is :
i) Prostaglandin. ii) STH iii) Calciferol iv) Epinephrine.
- d) Cyclopentanoperhydrophenanthrene ring is associated with :
i) T_3 & T_4 . ii) Insulin. iii) Steroid hormone. iv) All of the above.
- e) The substance which inhibit STH action is :
i) Somatotropin. ii) Somatomedin. iii) Somatostatin iv) STH inhibitor.

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

- Briefly discuss the principle of Radio-immuno assay.
- Discuss the characteristic features of obesity.
- Describe the characteristic features of steroid hormone with example.
- Describe the physiological process for the regulation of hormone level in blood.
- Describe briefly how diabetes insipidus caused in our body

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

- Briefly discuss the double antibody method of ELISA. How this method is superior to classical ELISA. Mention names of two enzymes used in ELISA.
- Briefly discuss the action of any protein hormone on target cell. What is CAMP?



Shot on realme 2

By Rupak

The West Bengal University of Health Sciences 2nd BMLT Examination, 2014

Subject : Medical Microbiology, Entomology & Parasitology

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group
Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- | | | |
|---|--------------------------------|--|
| a) <i>Neisseria meningitidis</i> is a : | i) Gram positive cocci. | ii) Gram positive bacilli. |
| | iii) Gram negative cocci. | iv) Gram negative bacilli. |
| b) Indole test positive for : | i) <i>E. Coli.</i> | ii) <i>Klebsiella.</i> |
| | iii) <i>Proteus mirabilis.</i> | iv) <i>Salmonella typhi.</i> |
| c) Blood agar is a : | i) Selective media. | ii) Enriched media. |
| | iii) Simple media. | iv) Enrichment media. |
| d) VDRL test is : | i) Flocculation test. | ii) Agglutination test. |
| | iii) Complement Fixation Test. | iv) Haemagglutination inhibition Test. |

e) Sputum can be differentiated from saliva :

- | | |
|--|---|
| i) Epithelial cells more than pus cells. | ii) Pus cells more than epithelial cells. |
| iii) No pus cells. | iv) Only pus cells. |

4 x 5

2. Answer **any four** from the following :

- | | | |
|-----------------------|----------------|------------------|
| a) Hot air oven. | b) Widal test. | c) Oxidase test. |
| d) Bacterial capsule. | e) VDRL test. | |

1 x 10

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

- | |
|---|
| a) Preparation of Lowenstein Jensen Media. |
| b) Describe collection and processing of urine sample for diagnosis of Urinary tract infection. |

Group - B

5 x 1

4. Tick the correct answer :

- | | | | | |
|--|---------------|---------------------|--------------|------------------|
| a) Hepatitis E is transmitted by : | i) Injection. | ii) Food and water. | iii) Air. | iv) Insect bite. |
| b) All are mosquito borne diseases, except | i) Malaria. | ii) Filaria. | iii) Dengue. | iv) Kala azar. |
| c) Vaccine is available for all except : | i) Measles. | ii) Polio. | iii) Mumps. | iv) Dengue. |

P. T. O.



Shot on realme 2

By Rupak

The eggs of all the following are bile stained except :

- i) *Necator Americanus*.
- ii) *Ascaris Lumbricoides*.
- iii) *Taenia Solium*.
- iv) *Taenia Saginata*.

e) Infective form of *Entamoeba histolytica* is :

- i) Trophozoite.
- ii) Cyst.
- iii) Both.
- iv) None of the these.

5. Answer **any four** questions :

- a) Thick and thin blood film for Malaria parasite.
- b) Rabies Vaccine.
- c) Structure of Hepatitis B Virus.
- d) Post exposure prophylaxis of HIV.
- e) Hookworm infection.

6. Answer **any one** question :

- a) Mosquito borne Viral.
- b) *Ascaris Lumbricoides* – morphology and life cycle.

The West Bengal University of Health Sciences
2nd BMLT Examination, 2014

Subject: Clinical Biochemistry, Genetics & Molecular Biology

Full Marks: 70

Time: 3 hrs.

Use separate answer script for each group

Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- Protein free filtrate is prepared by adding :
i) NaOH ii) HCL iii) Na-tungstate iv) Ethanol.
- TSH is secreted from :
i) Thyroid ii) Pituitary iii) Kidney iv) Adrenal gland.
- Aspartate transaminase requires the following Coenzyme for its activity :
i) Pyridoxal phosphate ii) Coenzyme A iii) NADP iv) Biotin.
- The most prevalent intracellular cation is :
i) Calcium ii) Potassium iii) Iron iv) Sodium.
- LDH convert pyruvate to :
i) Acetyl COA ii) Lactate iii) Citrate iv) Oxaloacetate.

4 x 5

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

- Ketone bodies test in urine and its importance.
- Principle of flame photometer.
- Maintenance of blood pH by bicarbonate buffer system.
- Principle of Cholesterol estimation and its importance.
- Importance of isoenzymes of lactate dehydrogenase.

1 x 10

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

- Disease about the routine examination of urine and its clinical significance. How do you estimate bilirubin concentration in blood?
- Describe the different types of assessment done for thyroid function abnormalities.

5 x 1

Group - B

4. Tick the correct answer :

- The genotypic ratio of incomplete dominance is :
i) 9:3:3:1 ii) 1:2:1 iii) 3:1 iv) None of these.
- Test cross is :
i) F1 X any parent ii) F1 X recessive parent.
iii) F1 X dominant parent iv) None of this above.

P. T. O.

c). Pedigree analysis is mainly done by :

i) Geneticist. ii) Biostatistician. iii) Genetic Counsellor. iv) Taxonomist.

d) The ratio of recessive epistasis :

i) 12:3:1 ii) 9:3:4 iii) 15:1 iv) 9:7

e) The enzyme required for transcription is :

i) RNA dependent RNA Polymerase iii) Topoisomerase
ii) DNA dependent RNA polymerase iv) DNA polymerase.

4 x 5

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

- Briefly discuss the different types of induced mutations.
- Discuss complementary gene interaction with suitable crosses.
- Draw and describe Mendel's Dihybrid cross with suitable example.
- Describe briefly the role of a Genetic Counselor.
- Discuss the process of initiation of protein synthesis in prokaryotes.

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

a) Define Hardy – Weinberg equilibrium. What is genotype frequency? Discuss how genetic drift and mutation affects Hardy – Weinberg equilibrium.

2+2+6

b) State the characteristic features of linkage. Discuss the mechanism of coupling and repulsion phases of linkage with suitable Crosses?

3+7

Shot on realme 2

By Rupak

The West Bengal University of Health Sciences
2nd BMLT Examination, 2013
Subject: Haematology & Histotechnology

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) Iron is stained by :
 i) PAS stain ii) Perl stain iii) Methelene blue iv) PAP stain
- b) Increased ESR is seen in all except :
 i) Multiple myeloma ii) Anaemia iii) Polycythemia vera iv) Tuberculosis infection of lungs.
- c) Microcytosis means :
 i) Increase in the size of RBC ii) Decrease in the size of RBC
 iii) Change in the shape of the RBC iv) None of the above
- d) Macrocytic red blood cells are found in all except :
 i) Megaloblastic anaemia ii) Iron deficiency anaemia
 iii) Myelodysplastic syndrome iv) Liver disease
- e) What is needed for performing L.E cell Phenomenon :
 i) Patient 's RBCs ii) Patient's serum iii) Hemolysate iv) Cells from buffy coat

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

4 x 5

- a) Colorimeter. b) Sickle cell anaemia. c) Bleeding time.
 d) Premarital counselling of thalassaemia. e) Red cell Indices.

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

1 x 10

- a) What is Romanowsky stain? Write down the composition, preparation, storage and use of Leishman stain. Describe briefly the steps of staining of reticulocyte.
- b) Describe briefly the different instruments required to run a district level haematological laboratory with their relative hazards and precautions to overcome them.

Group – B

4. Tick the correct answer :

5 x 1

- a) Fixation of tissue can be done by following :
 i) 10% formalin solution ii) 40% formalin solution iii) 0.04% formalin iv) None of the above.
- b) Zehl Nelson stain is issued for routine staining of :
 i) Acid fast bacilli ii) Gram Negative bacilli iii) Spirocheate iv) Viral particles
- c) VG stain is used for :
 i) Collagen staining ii) Fat staining iii) Calcium staining iv) Routine staining.
- d) Oxidizing agent is :
 i) Formaldehyde ii) Methyl alcohol iii) Potassium dichromate iv) Acetic acid
- e) Reticulin stain contains all except :
 i) Potassium permanganate ii) Silver nitrate iii) Alcohol iv) Ammonia

4 x 5

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

- a) Honing. b) Automated tissue processing. c) Papanicolau staining.
 d) Handling of body fluid for cytological examination. e) Frozen section.

1 x 10

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

- a) Describe the standard operating procedure in a histopathology laboratory.
- b) How a tissue bit may become brittle after tissue processing? How this change can affect the quality of section? How this problem may be prevented?



Shot on realme 2

By Rupak



Use separate answer script for each group
Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- a) LJ Media is sterilized by :
i) Boiling ii) Autoclaving iii) Incubation iv) Tyndallisation

b) Mycobacterium leprae is decolourised with :

- i) 5% sulphuric Acid ii) 5% Hydrochloric Acid
iii) 5% Nitric Acid iv) 20% Sulphuric acid

c) Clostridium tetani is a :

- i) Gram positive bacilli with elliptical subterminal spore.
ii) Gram positive bacilli with elliptical terminal spore.
iii) Gram negative bacilli with round terminal spore.
iv) Gram positive bacilli with round terminal spore.

d) In significant bacteria the colony count is :

- i) 103-104/ml. ii) 103-105/ml. iii) <105/ml iv) > 105 ml.

e) Surgical gloves is sterilized by :

- i) Autoclaving ii) Boiling iii) Hot air oven iv) Incineration.

4 x 5

2. Answer any four from the following :

- a) Gram staining of CSF. b) Culturing of sputum in LJ Media.
c) Disposal of culture media. d) Processing of blood culture for isolation of bacteria.
e) Disinfection of table top, contaminated with serum.

3. Answer any one from the following:

- a) Colony count in case of UTI. b) Preparation of Blood agar.

1 x 10

Group - B

5 x 1

4. Tick the correct answer :

a) Infection form of Ascaris lumbricoides is :

- i) Fertilised egg ii) Unfertilised egg. iii) Embryonated egg iv) Rhabditiform larva.

b) Which one is not the vector of Wuchereria bancrofti :

- i) Anopheles ii) Culex iii) Aedes iv) Mansonia

c) Negri bodies are associated with :

- i) Dengue virus ii) Rabies virus iii) Polio virus iv) Rota virus

d) All are arboviral diseases except :

- i) Dengue ii) Chikungunya iii) KFD iv) Herpes

e) Cystecercus cellulosae may be present in :

- i) Only cow ii) Only man iii) Only pig iv) Both man and pig.

4 x 5

5. Answer any four questions :

- a) Structure of Influenza virus. b) Role of embryonated egg for viral culture.
c) O.T. sterilization. d) Stoke method. e) Collection of slit skin smear.

6. Answer any one question :

- a) Laboratory diagnosis of malaria. b) Nosocomial infection.

1 x 10



The West Bengal University of Health Sciences

2nd BMLT Examination, 2013

Subject: Clinical Immunology & Clinical Endocrinology

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- Antibodies are produced by :
i) T-cell ii) B-cell iii) Plasma cell iv) Macrophage
- Alternate pathway activate :
i) C_1 ii) C_3 iii) C_5 iv) C_4
- γ -IFN is produced by :
i) B cell ii) T-cell iii) Fibroblast iv) N.K.Cell
- Blood group antigens are :
i) Auto antigen ii) Hetero antigen iii) Allo antigen iv) Isoantigen
- Cowan I stain of staphylococcus aureus attach :
i) Fab portion ii) Fe portion iii) Fd portion iv) F(ab)₂ portion

4 x 5

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

- Importance of IgM in diagnostic microbiology.
- Type-III hypersensitivity.
- CIAP.
- Difference between T-cell and B-cell.
- Collection of complement.

1 x 10

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

- Define Agglutination test. How will you do widal test in your laboratory?
- How will you prepare anti sheep RBC antibody in rabbit? What is its importance?

5 x 1

Group - B

4. Tick the correct answer :

- Insulin is a :
i) Glycoprotein hormone ii) Protein hormone iii) Steroid hormone iv) Amino acid
- The example of a steroid hormone is :
i) Estrogen ii) Lactin iii) STH iv) Glucagon
- Thyroid hormone are secreted from :
i) Thyroid gland ii) Liver iii) Pancreas iv) None of the above
- Blood sugar is regulated by :
i) Insulin ii) Glucagon iii) Steroid hormone iv) None of the above
- Diabetes Incipidus is caused by :
i) Hypersecretion of ADH ii) Hyposecretion of ADH iii) Oxytocin iv) Thyroxin

4 x 5

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

- Classify hormone on the basis of chemical nature.
- Describe the role of estrogen in oogenesis.
- Define diabetes mellitus. How the blood sugar level is regulated in our body?
- State metabolic role of thyroid hormone.
- State the mechanism of action of steroid hormone

1 x 10

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

- Describe the mechanism of action of protein hormone through second messenger hypothesis. What is JAK-STAT pathways?
- Describe the principle of ELISA in relation to hormone assay.

**The West Bengal University of Health Sciences
2nd BMLT Examination, 2013**

Full Marks: 70

Subject: Clinical Biochemistry, Genetics & Molecular Biology

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- | | | | | |
|---|-----------------------------|-------------------------|-----------------|---------------|
| a) Bilirubin is measured to detect : | i) Malaria. | ii) Jaundice. | iii) Influenza. | iv) Dengue. |
| b) Elevated level of Alkaline phosphatase indicate : | i) Liver dysfunction | ii) Kidney dysfunction. | | |
| iii) Thyroid dysfunction. | iv) Hemoglobin dysfunction. | | | |
| c) Normal blood pH is : | i) 6.5 | ii) 7.4 | iii) 8.1 | iv) 9 |
| d) Lactate dehydrogenase has the following number of isoenzymes : | i) 2 | ii) 3 | iii) 4 | iv) 5 |
| e) Thyroxin is secreted from : | i) Liver. | ii) Pituitary. | iii) Thyroid. | iv) Pancreas. |

4 x 5

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

- Lambert-beer's law and its application.
- Principle of blood creatinine estimation with its normal range.
- Working principle of a spectrophotometer.
- Glucose Tolerance Test.
- Urea clearance Test.

1 x 10

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

- Briefly discuss about Semi autoanalyser.
- Write a short notes on Liver Function Test.

P. T. O.

The West Bengal University of Health Sciences
2nd BMLT Examination, 2013

Subject: Clinical Biochemistry, Genetics & Molecular Biology

Full Marks: 70

Time: 3 hrs

Use separate answer script for each group

Attempt all questions

Group - A

5 x 1

1. Tick the correct answer :

- | | | | | |
|---|-----------------------|-------------------------|------------------------------|---------------|
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| b) Elevated level of Alkaline phosphatase indicate : | i) Liver dysfunction. | ii) Kidney dysfunction. | iii) Hemoglobin dysfunction. | |
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4 x 5

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- Glucose Tolerance Test.
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1 x 10

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

- Briefly discuss about Semi autoanalyser.
- Write a short notes on Liver Function Test.

P. T. O.



Shot on realme 2

By Rupak

Group - B

Tick the correct answer :

- a) Those mutations that arise in the absence of known mutagen are known :
 - i) Induced mutation.
 - ii) Fused mutation.
 - iii) Spontaneous mutation.
 - iv) None of the above.
- b) Which of the following is not needed for DNA transcription?
 - i) Ribosomes.
 - ii) Nucleotides.
 - iii) DNA.
 - iv) Enzymes.
- c) Eukaryotic RNA polymerase I is specialized to transcribe which of the following :
 - i) mRNA.
 - ii) t-RNA.
 - iii) rRNA.
 - iv) SnRNA.
- d) Which of the following is correct?
 - i) A forms 2 hydrogen bonds with G; T forms 3 hydrogen bonds with C.
 - ii) A forms 2 covalent bonds with T; G forms 2 hydrogen bonds with C.
 - iii) A forms 2 covalent bonds with T; G forms 3 covalent bonds with C.
 - iv) A forms 2 hydrogen bonds with T; G forms 3 hydrogen bonds with C.
- e) The enzyme responsible for initiating DNA replication in Prokaryotic is :
 - i) DNA polymerase I.
 - ii) DNA polymerase III.
 - iii) Polymerase beta.
 - iv) Primase.

4 x 5

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

- a) Define multiple allele. Discuss with suitable examples.
- b) Write short notes on :
 - i) Codominance.
 - ii) Incomplete dominance
- c) Distinguish between DNA Pol I, II, III
- d) Briefly discuss the mechanism of Transcription in Prokaryotes.
- e) Briefly discuss the mechanism of crossing over.

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

- a) Define nonsense and missense mutations. Discuss the molecular mechanism of gene mutation. How base analogue perform mutation.
- b) Write short notes on :
 - i) Hardy-Weinberg equilibrium.
 - ii) Pedigree analysis.

3+4+3

5+5

The West Bengal
2nd BMLT Examination, 2012

Subject: Clinical Immunology & Clinical Endocrinology

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) Which one is the secretory immunoglobulin?
i) IgM. ii) IgG. iii) IgA. iv) IgE.
- b) Extra-cellular antigens are presented by which major compatibility complex :
i) MHC I. ii) MHC II. iii) All of these iv) None of these.
- c) Infectious organisms in the blood stream are mainly tackled by which organ of the immune system?
i) Spleen. ii) Lymphnode.
iii) Gut-associated lymphoid tissue. iv) Cutaneous-associated lymphoid tissue.
- d) Which one is the most sensitive assay?
i) Precipitation reaction in fluid. ii) Agglutination reaction.
iii) Radioimmunoassay. iv) Flow cytometry.
- e) What is prozone phenomenon?
i) Inhibition of antigen-antibody reaction due to an excess of antibody.
ii) Inhibition of antigen-antibody reaction due to an excess of antigen.
iii) Due to excess of both.
iv) None of the above.

4 x 5

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

- a) Importance of precipitation reactions.
- b) Write down the different types of immunoglobulins and explain IgG.
- c) Write a short note on immunodiffusion techniques.
- d) Organ transplantation.
- e) Discuss about different types and functions of major histocompatibility complex.

P. T. O.

The West Bengal University of Health Sciences

2nd BMLT Examination, 2012

Subject: Clinical Immunology & Clinical Endocrinology

Time: 3 hrs

Full Marks: 70

Use separate answer script for each group

Attempt all questions

Group – A

5 x 1

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

4 x 5

- a) Importance of precipitation reactions.
- b) Write down the different types of immunoglobulins and explain IgG.
- c) Write a short note on immunodiffusion techniques.
- d) Organ transplantation.
- e) Discuss about different types and functions of major histocompatibility complex.

P. T. O.

3. Answer *any one* question :

a) Discuss blood group antigens. Write a short note about the hazards of mismatched blood transfusion. 5+5

b) Write an account on AIDS. 10

Group – B

5 x 1

4. Answer the following :

a) The example of local hormone is :

i) STH. ii) Testosterone. iii) Glucocorticoid. iv) CCK-PZ.

b) The source of tropic hormone is :

i) Pancreas. ii) Ovary. iii) Adrenal medulla. iv) Steroid hormone.

c) Androgen is :

i) Female hormone. ii) Male hormone.
iii) Growth hormone. iv) Steroid hormone.

d) IGF is a :

i) Somatomedin. ii) Somatostatin. iii) Insulin. iv) Diabetogenic hormone.

e) Diabetes insipidus is caused due to :

i) Excess insulin. ii) Decreased insulin.
iii) Decreased ADH. iv) Increased ADH.

5. Answer *any four* of the following :

a) What is second messenger? Mention the name of two second messenger. 2+3

b) Describe in detail the regulation of hormone action. 5

c) Describe the principle of Radioimmuno Assay (RIA). 5

d) Describe the metabolic role of thyroxine. 5

e) What is preproinsulin? Discuss the role of insulin in metabolism. 2+3

6. Answer *any one* question :

a) Describe in details with figure the mechanism of action of protein hormone through cAMP pathway. 6+4

b) What is ELISA? Briefly describe the sandwich and competitive ELISA. 2+(4 x 2)



Shot on realme 2

By Rupak

The West Bengal University of Health Sciences
2nd BMLT Examination, 2012

Subject: Clinical Biochemistry, Genetics & Molecular Biology

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) The most prominent anion in the extra cellular fluid is :
 - i) Cl^- . ii) HCO_3^- . iii) HPO_4^{2-} . iv) Protein.
 - b) The serum enzyme used to evaluate pancreatic function is :
 - i) Alkaline phosphatase. ii) Amylase.
 - iii) Aspartate transaminase iv) Lactate dehydrogenase.
 - c) In hemolytic jaundice, Vanden-Bergh reaction is :
 - i) Indirect positive. ii) Direct positive. iii) Biphasic. iv) None of this.
 - d) TSH is secreted from :
 - i) Thyroid. ii) Adrenal. iii) Pituitary. iv) None of this.
 - e) Ideal anticoagulant is :
 - i) Oxalate. ii) Citrate. iii) Heparin. iv) Fluoride.

4 x 5

2. Write short note on **any four** of the following :
 - a) Importance of different isoenzymes of Creatine Kinase in clinical diagnosis.
 - b) Any method of cholesterol estimation with importance.
 - c) Working principle of a spectrophotometer.
 - d) Importance of Vanden-Bergh reaction to assess liver function.
 - e) Bicarbonate buffer system of blood.

1 x 10

3. Answer **any one** of the following :
 - a) Describe the working principle and clinical application of an autoanalyzer.
 - b) Write an account on renal function test.

Group – B

5 x 1

4. Tick the correct answer :
 - a) Transcription is :
 - i) The exchange of genetic information between the members of a chromosome pair.
 - ii) Another word for binary fission.
 - iii) The entering of DNA sequences into a computer for analysis.
 - iv) The process of copying the genetic information from DNA to mRNA.
 - b) Complementary gene interaction ratio is :
 - i) 12:3:1. ii) 9:7. iii) 9:3:3:1. iv) 15:1.



Shot on realme 2

By Rupak

P. T. O.

- c) Which of the following is not an assumption of the Hardy-Weinberg equilibrium?
- i) No mutation.
 - ii) No more than two alleles at a locus.
 - iii) Random mating with respect to genotype.
 - iv) No selection on basis of genotype.
- d) Which of the following is a mutagen?
- i) 5-BU.
 - ii) Alkalyting agents.
 - iii) X-ray.
 - iv) All of these.
- e) DNA replication involves the breaking of bonds between :
- i) Bases.
 - ii) Sugar and bases.
 - iii) Sugar and Phosphates.
 - iv) Phosphates and bases.
5. Write short note on **any four** of the following : 4 x 5
- a) Explain 'Linkage' with suitable example.
 - b) Write the molecular mechanism of gene mutation.
 - c) Explain genetic counselling and discuss the role of a Genetic Counsellor.
 - d) Write the role of DNA helicase in DNA replication.
 - e) Write in short mechanism of Crossing over.
 - f) Write notes on :
 - i) Codominance.
 - ii) Incomplete dominance
6. Answer **any one** of the following :
- a) Define mutation. Briefly discuss the molecular mechanism of gene mutation. How 5BU and alkalyting agents induce mutations? 2+4+4
 - b) Write short notes of the following : 5 + 5
 - i) Transcription in prokaryotes.
 - ii) Translation in prokaryotes.