UNIVERSITY OF JOHANNESBURG

PROGRAM	:	*BIOMEDICAL TECHNOLOGY*
MODULE	:	**Cellular Pathology 2A**
CODE	:	**SPA2111**
DATE	:	25 MAY 2019 MAIN EXAMINATION
DURATION	:	180 MINUTES
WEIGHT	:	50: 50
TOTAL MARKS	:	180

EXAMINER	:	Ms J. Mthombeni
MODERATOR	:	Ms I.N. Ngcakaza
NUMBER OF PAGES	:	4 PAGES

INSTRUCTIONS	:	QUESTION PAPER MUST BE HANDED IN
REQUIREMENTS	:	NONE

INSTRUCTIONS TO CANDIDATES:

1. Answer ALL THE QUESTIONS.
2. Number your answers clearly
3. This question paper must be handed in with your examination script

SECTION A

QUESTION 1

1.1 Define histopathology (1)

1.2 Which special branch of Histology/ Cytology will you direct the following specimens to? Match the specimen to a branch of histopathology below:

1. Nerve (1)
2. Liver Bx (1)
3. Amniotic fluid (1)
4. Muscle (1)
5. Renal Bx (1)

(a) Routine Histology
(b) Histochemistry
(c) EM
(d) Cytology
(e) Routine Histology & Histochemistry
(f) Routine Histology & EM
(g) Routine Histology & Cytology
(h) Histochemistry & EM
(i) Histochemistry & Cytology
(j) EM & Cytology
(k) Routine Histology, EM & Histochemistry
(l) Routine, EM & Cytology
(m) All four branches

1.3 Explain confidentiality as related to the laboratory environment. Include what factors may be seen as breach of confidentiality**.** (4)

1.4 Explain how you would treat and prepare the following specimen for processing.

(i) Renal Bx (6)

(ii) Lymphoid tissue (4)

1.5 Evaluate microwave fixation for urgent specimen (3)

1.6 A number of factors can influence fixation of a specimen; evaluate how the following can influence fixation:

(i) Buffers & pH (5)

(ii) Penetration (2)

[30]

QUESTION 2

2.1 Define Freeze Drying (5)

2.2 Evaluate the Quenching & Drying as some of the stages of freeze drying (15)

2.3 You are in a theatre to attend to an "on the table operation" for a patient diagnosed with liver cancer. You have only 20 minutes to produce a slide to confirm the type of cancer. Take us through the processes to the point of staining the slide using the following headings:

(i) Evaluate the type of microtome you would use (4)

(ii) Evaluate the use of liquid Nitrogen as the cooling agent for LTW (5)

2.4 Evaluate the sequence of the protocol for decalcification (6)

2.5 You have been given a 2 cm piece of a bone for histological processing. As a Technologist responsible for decal section, discuss the processes involved to render the bone cuttable answering the questions below:

(i) What is the aim of decalcifying tissue? (2)

(ii) Describe surface decal (3)

(iii) Evaluate the chemical method of determining the decal end point (5)

[45]

[SECTION A = 75]

SECTION B

QUESTION 1

1.1 Define the following terms giving 1 example of each where possible:

(i) Mordant (3)

(ii) Buffers (3)

(iii) Metachromasia (5)

1.2 Discuss how Haematoxylin is extracted, include the advantages and disadvantages of the major oxidation product? (10)

1.3 Evaluate the 3 types of differentiators (9)

1.4 Differentiate the following staining methods:

(i) Direct and indirect staining methods (4)

(ii) Progressive and regressive staining methods (4)

[38]

QUESTION 2

2.1 Define the term Trichrome (1)

2.2 Evaluate the following factors that affect trichrome staining

(i) Tissue permeability and dye molecule size (5)

(ii) pH (3)

2.3 Which type of haematoxylin would you use in the Masson's trichrome stain? And why? (3)

2.4 (i) What is the principle behind combined Alcian Blue-PAS technique? (5)

(ii) Give staining results of Alcian Blue-PAS in (i) (4)

2.3 What is Melanin and how is it demonstrated histologically? (3)

2.4 What is a pink disease, how to avoid it and if already present, how do you treat it? (5)

[29]

[SECTION B = 67]

SECTION C

QUESTION 1 (EM)

1.1 Tabulate the differences between an ultramicrotome and the ordinary rotary microtome used in a histology lab? (6)

1.2 Evaluate the purpose of staining tissue for TEM (3)

1.3 Name the common stain used for TEM (1)

1.4 Describe the TEM principle and state the types of knives used for ultramicrotomy (6)

[16]

QUESTION 2 (Cytology)

2.1 Evaluate the 3 sites of serous fluid collection (9)

2.2 Discuss the collection of exfoliated material (4)

[13]

QUESTION 3 (Cytogenetics)

3.1 Evaluate how change in procedure could affect cell growth in a lab (3)

3.2 Give 6 reasons for chromosomal analysis (6)

[9]

[SECTION C = 38]

GRAND TOTAL: 180

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