

01	A	B	C	D	E
02	A	B	C	D	E
03	A	B	C	D	E
04	A	B	C	D	E
05	A	B	C	D	E
06	A	B	C	D	E
07	A	B	C	D	E
08	A	B	C	D	E
09	A	B	C	D	E
10	A	B	C	D	E
11	A	B	C	D	E
12	A	B	C	D	E
13	A	B	C	D	E

14	A	B	C	D	E
15	A	B	C	D	E
16	A	B	C	D	E
17	A	B	C	D	E
18	A	B	C	D	E
19	A	B	C	D	E
20	A	B	C	D	E
21	A	B	C	D	E
22	A	B	C	D	E
23	A	B	C	D	E
24	A	B	C	D	E
25	A	B	C	D	E
26	A	B	C	D	E

27	A	B	C	D	E
28	A	B	C	D	E
29	A	B	C	D	E
30	A	B	C	D	E
31	A	B	C	D	E
32	A	B	C	D	E
33	A	B	C	D	E
34	A	B	C	D	E
35	A	B	C	D	E
36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR)

BDC

Diagnostic Cytology Bundle (Cytology [gyn & nongyn], Histo)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Canadian Alliance of Medical Laboratory Professionals Regulators (CAMLPR) **BDC**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **BDC**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

According to the Bethesda System for Reporting Cervical Cytology (2014), which of the following are required components of a satisfactory cytology report? (Choose two.)

- ☒ **A** Statement of specimen adequacy
- ☐ **B** Patient's menstrual cycle phase
- ☒ **C** General categorization of the specimen
- ☐ **D** Name of the referring clinician
- ☐ **E** Laboratory accreditation number

ANSWER A - C

WHY The Bethesda System specifies that every cervical cytology report must include a statement of specimen adequacy (Satisfactory/Unsatisfactory) and a general categorization (e.g., Negative for Intraepithelial Lesion or Malignancy, Epithelial Cell Abnormality). Menstrual cycle phase, clinician name, and accreditation number are not required Bethesda components.

QUESTION 2

MULTIPLE CHOICE

Which of the following are effects of inadequate fixation in routine histologic processing with 10% neutral buffered formalin? (Choose two.)

- ☒ **A** Incomplete cross-linking of proteins
- ☐ **B** Loss of nuclear detail due to excessive hydrolysis
- ☐ **C** Inhibition of antigen retrieval for immunohistochemistry
- ☐ **D** Formation of formalin pigment artifact
- ☒ **E** Rapid autolysis of tissue

ANSWER A - E

WHY Inadequate fixation time or penetration results in incomplete cross-linking of proteins by formaldehyde and allows autolytic enzymes to degrade the tissue. Loss of nuclear detail from hydrolysis and inhibition of antigen retrieval relate more to fixation chemistry and downstream processing, while formalin pigment is a deposit artefact seen even with adequate fixation in some tissues.

QUESTION 3 SINGLE CHOICE

Under the Bethesda System, the minimum squamous cellularity criterion for a conventional cervical cytology specimen to be considered satisfactory (assuming no obscuring factors) is approximately:

- ☐ A 1,000 squamous cells
- ☐ B 3,000 squamous cells
- ☒ C 5,000 squamous cells
- ☐ D 8,000 squamous cells

ANSWER C

WHY The Bethesda System (2014) requires an estimated minimum of approximately 5,000 well-visualized squamous cells for conventional smear adequacy, with 8–12,000 cells typically present on a well-sampled slide. Liquid-based preparations have a separate minimum.

QUESTION 4 SINGLE CHOICE

A pleural fluid cytology shows clusters of large cells with prominent nucleoli, abundant cytoplasm, and cytoplasmic vacuoles against a background of mesothelial cells and lymphocytes. What is the MOST likely interpretation?

- ☐ A Reactive mesothelial hyperplasia
- ☐ B Malignant mesothelioma
- ☒ C Metastatic adenocarcinoma
- ☐ D Tuberculous pleuritis

ANSWER C

WHY Three-dimensional clusters of large cells with prominent nucleoli and cytoplasmic (mucin) vacuoles in an effusion are highly characteristic of metastatic adenocarcinoma. Reactive mesothelium typically shows flat sheets with normal N:C ratios; mesothelioma is uncommon and shows different morphology; tuberculous pleuritis shows granulomas and lymphocytes without atypical epithelial clusters.

QUESTION 5

SINGLE CHOICE

Which high-risk human papillomavirus (HPV) genotype is responsible for the largest proportion of cervical cancers worldwide?

- ☐ A HPV 6
- ☒ B HPV 16
- ☐ C HPV 18
- ☐ D HPV 31

ANSWER B

WHY HPV 16 accounts for approximately 50–60% of cervical cancers globally and is the single most oncogenic HPV genotype, followed by HPV 18. HPV 6 causes condylomas and is low-risk. HPV 31 is high-risk but much less common as a sole cause.

QUESTION 6

SINGLE CHOICE

In the routine H&E stain, what is the function of hematoxylin?

- ☐ A Stains cytoplasm and connective tissue pink-red
- ☒ B Stains nuclei blue-purple
- ☐ C Removes paraffin from tissue sections
- ☐ D Differentiates collagen from muscle

ANSWER B

WHY Hematoxylin (as a mordanted complex, typically with aluminum) binds acidic nuclear components such as DNA and stains nuclei blue-purple. Eosin is the counterstain that imparts pink-red coloration to cytoplasm and connective tissue. Differentiation and deparaffinization are separate steps performed with reagents such as acid alcohol and xylene, respectively.

QUESTION 7

SINGLE CHOICE

Cervical cytology shows scattered cells with marked nuclear enlargement, hyperchromasia, irregular nuclear membranes, and increased N:C ratio in a background of mature squamous metaplastic cells. The most appropriate interpretation under the Bethesda System is:

- ☐ A ASC-US
- ☐ B ASC-H
- ☐ C LSIL
- ☒ D HSIL

ANSWER D

WHY The described cells have features that clearly exceed the criteria for atypical squamous cells and satisfy those of a high-grade lesion: marked nuclear enlargement, hyperchromasia, irregular membranes, and high N:C ratio. These are diagnostic of HSIL. ASC-H would be used for atypical cells that cannot definitively be called HSIL.

QUESTION 8

SINGLE CHOICE

Fine needle aspiration of a thyroid nodule yields a specimen showing papillary fragments, intranuclear cytoplasmic pseudoinclusions, and nuclear grooves in follicular cells. The most likely diagnosis is:

- ☐ A Follicular adenoma
- ☐ B Medullary thyroid carcinoma
- ☒ C Papillary thyroid carcinoma
- ☐ D Anaplastic carcinoma

ANSWER C

WHY Intranuclear cytoplasmic pseudoinclusions and nuclear grooves, together with papillary architecture, are the classic diagnostic features of papillary thyroid carcinoma on FNA. Medullary carcinoma shows plasmacytoid cells with amyloid; follicular adenoma shows microfollicular patterns without these nuclear features; anaplastic carcinoma shows pleomorphic giant cells.

QUESTION 9

SINGLE CHOICE

Which of the following best describes the most appropriate thickness for a routine paraffin-embedded histologic section stained with H&E?

- ☐ A 1–2 μm
- ☒ B 3–5 μm
- ☐ C 8–10 μm
- ☐ D 20–30 μm

ANSWER B

WHY Routine paraffin sections for H&E staining are typically cut at 3–5 μm to provide adequate cellular detail and consistent staining. Sections thinner than this are used for special techniques (e.g., 1 μm for EM-like resolution in resin sections), while thicker sections are used for specific procedures such as frozen sections or thick slab imaging.