

# National Board of Veterinary Medical Examiners

## Qualifying Examination

### Bulletin of Information for Candidates

#### Testing Dates

September 16, 2010; January 20, 2011; and May 12, 2011

The policies, procedures, requirements and other information in this bulletin pertain to applications for the Qualifying Examination (QE) for the testing dates specified above. This bulletin contains important information. Please keep it for reference throughout your licensure and score transfer process.

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#### General Information

This bulletin contains procedural and policy information for the Qualifying Examination (QE). You should become familiar with all aspects of this bulletin. Please note that while every attempt has been made to provide accurate and definite information, the National Board of Veterinary Medical Examiners (NBVME) may need to change or revise policies and procedures that affect the QE program. Changes will be posted on the NBVME's web site ([www.nbvme.org](http://www.nbvme.org)) as soon as they are determined. You should check this web site for the most current information about NBVME policies and procedures.

Test questions for the QE are written by faculty members at American Veterinary Medical Association (AVMA) accredited veterinary schools in North America, and by other content experts. With the assistance of staff from the National Board of Medical Examiners (NBME®), each newly written test question is reviewed by a test development committee. Questions that seem problematic are revised or discarded. All accepted questions are then reviewed and validated by at least three experts in the field of veterinary medicine for accuracy, content relevance, importance, and difficulty. The QE is prepared in a manner to meet the testing standards of the American Psychological Association.

All test questions used in the QE are owned solely by the NBVME and are copyrighted. Any reproduction by any means or distribution of QE questions without the express written authorization of the NBVME will result in appropriate legal action.

## **Objective of the Qualifying Examination**

The primary objective of the Qualifying Examination is to provide a comprehensive objective examination in basic veterinary medical sciences for use by the Program for the Assessment of Veterinary Education Equivalence (PAVE) of the American Association of Veterinary State Boards in evaluating the education equivalence of veterinarians who are graduates of veterinary schools not accredited by the Council on Education of the American Veterinary Medical Association.

In addressing this objective, the QE also protects the public by ensuring that veterinarians demonstrate a specified level of knowledge and skills before entering veterinary practice, and provides a common standard in the evaluation of candidates that will be comparable from jurisdiction to jurisdiction.

## **Description of the Examination**

Each form of the QE consists of an optional 15-minute tutorial and 300 multiple-choice questions administered in two blocks of 150 questions each. You will have 165 minutes to complete each block. All candidates will have the same number of questions and the same time allotment. Within each block, you may answer questions in any order and review and/or change your answers. When you exit a block, or when time expires, no further review of questions or changing of answers within that block is possible.

You will have 45 minutes of break time between blocks. Breaks may only be taken between blocks.

The QE is designed to assess your knowledge of basic veterinary medical sciences as taught during the first three years at accredited veterinary colleges in North America. Approximately 10% of the QE questions will include graphic or pictorial information (such as a chart, photograph or radiograph).

The QE is not designed to measure your ability to make diagnoses or manage clinical cases. That knowledge and skill is assessed by the North American Veterinary Licensing Examination (NAVLE®). A passing score on the NAVLE is required by all licensing boards in North America before you can be issued a license to practice veterinary medicine.

## **Registration Procedures for the QE**

All candidates must apply for the QE through the American Association of Veterinary State Boards (AAVSB). All QE candidates must be enrolled in the PAVE program. You are responsible for obtaining the necessary application materials from the AAVSB office:

AAVSB  
4106 Central Street  
Kansas City, MO 64111  
Phone: 816-931-1504  
Fax: 816-931-1604  
E-mail: [info@aavsb.org](mailto:info@aavsb.org)  
Web site: [www.aavsb.org](http://www.aavsb.org)

The application receipt deadline for the September 16, 2010 examination is July 2, 2010; for January 20, 2011 it is October 29, 2010; and for May 12, 2011 it is February 25, 2011.

The AAVSB's policy is that PAVE candidates are allowed a maximum of five attempts for the Qualifying Examination, to be taken and passed within five years from the first attempt. This policy went into effect in April 2005. For more information about the attempt limit, contact the AAVSB.

## **Payment of the QE Fee**

The QE fee is \$800, payable in US funds. QE candidates pay the examination fee to the AAVSB as part of the PAVE application. You will not be permitted to take the QE unless the fee has been paid. The examination fee is non-refundable.

## **Web-Based Testing**

The Qualifying Examination is given via the internet. With this mode of testing, candidates log onto a secure web server using a unique password, and are then able to access the computer-based examination. Testing is done at a computer testing center, under the supervision of trained proctors, whose job it is to admit candidates, assist them in logging in to the web server, and ensure test security during the administration.

## **Testing Appointment and Location**

All QE candidates will list on their PAVE applications their preferred testing location. The NBVME will use that information to establish regional test sites. The NBVME will notify you of your test site by e-mail approximately five weeks prior to the test date. At that point, if you would like to change your site, the NBVME can move you to another site already established for that administration. All requests for site changes must be received by the NBVME no later than seven business days prior to the examination date.

The NBVME will send you an Authorization Letter by email approximately 30 days prior to your test date. The letter will indicate where and when you are to report to take the QE. If you have not received an Authorization Letter by three weeks prior to the test date, contact the NBVME office immediately.

You must present the Authorization Letter to the proctor at the test center on the day of your examination. If you do not bring the Authorization Letter to the test center, you will not be able to take the QE. If you lose your Authorization Letter, contact the NBVME office immediately.

Since the QE is administered on common dates, **it is not possible to reschedule an examination.** If you are not able to test because you fail to follow the procedures set forth for test scheduling and test administration, such as failing to make a testing appointment, missing a testing appointment, arriving too late for test administration, or failing to bring the required materials to the testing center (Authorization Letter and unexpired, government-issued photo identification with your signature), you are unlikely to be able to test at all until the next scheduled testing date.

If you are unable to take the examination at the specified place and time, you must contact both the NBVME and AAVSB to explain the circumstances. AAVSB and NBVME will determine if circumstances warrant a deferment to the next examination date or a partial refund.

## **Change of Name or Address**

In order to receive examination materials (e.g., Authorization Letters, score reports, etc.) without delay, you must notify the NBVME and the AAVSB in writing of any name or contact information changes, whether or not the U.S. Postal Service is also notified. Notification of a name change must be accompanied by an attested photocopy of a marriage certificate, divorce decree, or court judgment from a name change petition.

## Candidates with Documented Disabilities

If you have a documented disability covered under the Americans with Disabilities Act (ADA) and require test accommodations, you must contact the AAVSB office to obtain information regarding procedures and documentation requirements *before* you apply for the QE. All accommodations must be approved by the AAVSB and the NBVME.

It takes time to review the documentation necessary to approve test accommodations. If you do not submit the required documentation to the AAVSB in time to allow the AAVSB and the NBVME to review it, you will not be eligible for accommodations. Generally, documentation must be provided to the AAVSB prior to, or at the time of, submission of your QE application.

Applications for test accommodations are available on the AAVSB's web site, [www.aavsb.org](http://www.aavsb.org). The application must be received by the posted application deadline. Late applications will not be considered.

## Preparing for the QE

The NBVME has included in this bulletin a set of sample questions to provide you with an idea of the type of questions that appear in the QE. These sample questions were chosen to represent the various content areas of the examination, but they do not necessarily address all of the QE content areas as defined below.

Additional sample test questions have been incorporated into a computer-based practice version of the QE. The NBVME recommends that you access the practice examination from the NBVME web site ([www.nbvme.org](http://www.nbvme.org)) in order to get experience with the QE computer-based format. The practice test uses the same tutorial and general software interface that is used to deliver the web-based QE. This software includes, among other features, clickable icons for marking questions to be reviewed, automated review of marked and incomplete questions, a clock indicating the time remaining in the test, and a help application. Although the software is simple and intuitive, it is highly recommended that you practice before your test date, because practice at the test center will be limited to a 15-minute tutorial.

The NBVME is developing a Qualifying Examination self-assessment. The assessment will be a web-based examination available for purchase on the NBVME's website in fall 2010. Check the website for further information.

## Testing Conditions

Policies and procedures governing administration of the examination have been established to ensure that no candidate or group of candidates receives unfair advantage on the examination, inadvertently or otherwise. Efforts are made to ensure that the examination is administered under standard conditions and is consistent with the principles on which the examination is developed and scored. However, if the integrity of the examination process is jeopardized, the NBVME reserves the right to invalidate all or any part of an examination.

Physical security of examination materials will be controlled through computerized, electronic transmission of encrypted data. Observation of the testing sessions will be aided by use of trained proctors. Failure to adhere to the instructions of the proctors during the examination may result in a determination of irregular behavior. Candidates observed engaging in possible violation of test administration rules or other forms of irregular behavior during an examination will not necessarily be told of the observation by the proctors at the time of the examination.

You are not permitted to bring into the testing area any personal belongings, including but not limited to mechanical or electronic devices (such as calculators, digital watches, watches with computer

communication and/or memory capability, recording or filming devices, radios, electronic paging devices, or cellular telephones) coats, jackets, brimmed hats, bookbags, backpacks, handbags, books, notes, study materials, food, or beverages.

If you bring any personal belongings to the test center, you will be required to store them outside the testing area. Upon reasonable suspicion, such personal belongings and their contents may be subject to inspection. Any materials that are, or reasonably appear to be, a reproduction of any QE materials will be confiscated. You are not permitted to make written notes of, or to record in any way, the contents of the QE. Any notes found will be confiscated. Candidates may not use a telephone or other communication device or access reference materials at any point during the examination, including breaks, for any purpose related to test content.

Candidates are not permitted to communicate with, seek aid from, or provide aid to any other candidate during the examination.

Please be aware that there may be test takers from other professions taking examinations during your test administration. Their examination formats and schedules may differ from your schedule. There may be low levels of background activity audible as they arrive, take their examinations, and depart. Candidates are allowed to bring soft-foam earplugs into the testing room. However, they must be out of the packaging and ready for inspection by test center staff during check-in. Earplugs must be left at the workstation during all breaks.

## **General Instructions for Taking the Examination**

You should arrive at the test site 30 minutes before your scheduled test time. If you arrive late, you may not be admitted. If you are permitted to take the QE after arriving late, no additional time will be given to make up for the delayed start and break time may need to be forfeited.

When you arrive at the test center, you are required to sign in on the test center log, and you must present your Authorization Letter and an unexpired government-issued form of identification (such as a driver's license or passport) that includes both a recent photograph and your signature. The first and last name on your identification form must match the name on your letter. You will not be admitted without these items or if there is a name mismatch. If your government-issued identification form contains only a photograph, a second form of unexpired identification with your signature is required, such as a student ID or credit card. If you cannot take the QE due to the circumstances described above, you must contact the NBVME for further information.

After you present the required identification, you will be escorted to your assigned testing station and given brief instructions on the use of the computer equipment. Next, you will enter the access code you receive from the proctor and have the option to complete a 15-minute tutorial prior to starting the first block of the examination.

Once you start a block of questions, no clock-stopping breaks are provided during that block. You will have 165 minutes to complete each block. Please note that time taken by the computer to download test items and images is not counted in the testing time. If you leave the testing area during a block, the test center staff will report that fact as an irregular incident.

The allotted break time for the entire examination day is at least 45 minutes. This time is used to make the transition between blocks. If you complete the tutorial or the first block in less time than allotted, the extra time will be available as break time. Although the computer will keep track of the time elapsed for each testing block and for the entire day (testing time and break time combined), you are responsible for keeping track of the amount of break time that you use. Each time you take a break during the testing day, you will be required to sign out when leaving and sign in when returning. You must present your

government-issued photo identification when signing in each time. The examination ends when both blocks have been completed (or the total testing time for the day expires). You will sign out as you leave the test center. Once you start the examination, you cannot cancel or reschedule unless a technical problem requires rescheduling as described below.

In the event of a technical problem, testing software is designed to allow the test to restart at the point it was interrupted. In most cases, an examination can be restarted at the point of interruption with no loss of testing time. However, it is possible that a technical problem may occur that requires the examination to be rescheduled. In that event, you may be allowed to test at a later date at no additional charge.

## **Irregular Behavior**

All QE candidates must agree with the following statement that will appear on the computer monitor before they will be able to take the examination:

“This examination contains test materials that are owned and copyrighted by the National Board of Veterinary Medical Examiners (NBVME). Any reproduction of these materials or any part of them, through any means, including, but not limited to copying or printing of electronic files, reconstruction through memorization and/or dictation, and/or dissemination of these materials or any part of them is strictly prohibited.”

Irregular behavior is defined by the NBVME as any behavior that undermines the application, assessment, or certification processes of the NBVME or that threatens the integrity of the PAVE certification process. Anyone having information or evidence that suspected irregular behavior has occurred should submit a written, signed statement to the NBVME providing a detailed description of the incident and/or circumstances and copies of any supporting documentation and evidence. Insofar as possible, such reports will be handled confidentially; however, the NBVME will not investigate and/or act on unsigned or verbal reports. Irregular behavior may occur prior to, during, and/or following examination application and administration. Such behavior may include, but is not limited to, the following:

- disclosing examination information by using language that is substantially similar to that used in questions and/or answers from NBVME examinations when such information is gained as a direct result of having been an examinee; this includes, but is not limited to, disclosures to students in educational programs, graduates of educational programs, educators or anyone else involved in the preparation of candidates to sit for the examinations; and/or
- receiving examination information that uses language that is substantially similar to that used in questions and/or answers on NBVME examinations from an examinee, whether requested or not; and/or
- copying, publishing, reconstructing (whether by memory or otherwise), reproducing or transmitting any portion of examination materials by any means, verbal or written, electronic or mechanical, without the prior express written permission of NBVME or using professional, paid or repeat examination takers or any other individual for the purpose of reconstructing any portion of examination materials; and/or
- possessing unauthorized materials during an examination administration (e.g., recording devices, photographic equipment, electronic paging devices, cellular telephones, reference materials); and/or
- failure to adhere to testing center regulations; and/or
- using or purporting to use any portion of examination materials which were obtained improperly or without authorization for the purpose of instructing or preparing any applicant for examination; and/or

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- selling or offering to sell, buying or offering to buy, or distributing or offering to distribute any portion of examination materials without express written authorization; and/or
- removing or attempting to remove examination materials from an examination room, or having unauthorized possession of any portion of or information concerning a future, current, or previously administered examination of NBVME; and/or
- disclosing what purports to be, or under all circumstances is likely to be understood by the recipient as, any portion of or “inside” information concerning any portion of a future, current, or previously administered examination of NBVME; and/or
- communicating with another individual during administration of the examination for the purpose of giving or receiving help in answering examination questions, copying another candidate’s answers, permitting another candidate to copy one’s answers, or possessing unauthorized materials including, but not limited to notes (except on the provided scratch paper at the test center); and/or
- looking in the direction of the computer monitor or another candidate during the examination if such may reasonably be interpreted as affording the opportunity to copy the work of another candidate; and/or
- engaging in any conduct that materially disrupts any examination or that could reasonably be interpreted as threatening or abusive toward any examinee, proctor, or staff; and/or
- impersonating a candidate or permitting an impersonator to take or attempt to take the examination on one’s own behalf; and/or
- falsifying information on application or registration forms; and/or
- the use of any other means that potentially alters the results of the examination such that the results may not accurately represent the professional knowledge base of a candidate.

Any irregular behavior will be reported to the NBVME and will constitute grounds for the NBVME to:

- bar you from one or more future examinations or permanently; and/or
- terminate your participation in the examination; and/or
- invalidate the results of your examination and any prior examinations; and/or
- withhold your scores; and/or
- fine you in an amount that reflects damages suffered by NBVME, including its costs of investigation and the costs of replacing any items that must be removed from the item bank; and/or
- censure you; and/or
- sue you for damages and civil remedies; and/or
- pursue prosecution of you for any conduct that constitutes a criminal or civil violation; and/or
- take any other appropriate action.

Candidates also understand and agree that the NBVME may withhold their scores and may require them to retake one or more portions of an examination if the NBVME is presented with evidence demonstrating to the NBVME, in its sole discretion, that the security of those portions of the examination has been

compromised, notwithstanding the absence of any evidence of their personal involvement in the compromising activities. Candidates further understand and agree that the examination and related materials utilized in the NBVME's examinations are copyrighted as the sole property of the NBVME and must not be removed from the test area or reproduced in any way, and that reproduction of copyrighted material, in whole or in part, is a federal offense and may subject them to the sanctions listed above.

Any irregular behavior or violation of the test administration rules may, in the sole discretion of NBVME, be reported to the AAVSB, which could jeopardize your potential for licensure. In addition, if NBVME has reason to believe that a candidate may have engaged in irregular behavior, it may notify the AAVSB, even if the investigation is ongoing and no findings have been made.

If you have any questions or doubts about whether an activity might constitute irregular behavior, you should contact the NBVME Executive Director for clarification.

## **Score Reporting**

As you take the QE, your responses will be recorded and stored by the web server. After you complete testing, these responses are transmitted to the NBME for scoring. The QE score report will show your score and a pass/fail designation. The score report will be sent to the AAVSB office, and the AAVSB will report your QE score to you. Scores will be reported approximately 4 weeks after the testing date.

If you fail the examination, you may reapply for testing on the next QE testing date. Contact the AAVSB office for application materials.

If you sat for the QE, but it is determined that you were not eligible, or that you engaged in irregular behavior, scores for that examination will not be reported or, if previously reported, may be rescinded.

QE scores may be used by the NBVME for statistical purposes and may be released to third parties provided all candidate identification has been deleted prior to release.

## **Scoring, Analysis, and Standard Setting**

In the scoring of the QE, one point is awarded for each correct answer. Test questions are not weighted, and additional points are not subtracted for incorrect responses. After all responses are recorded, an analysis is conducted for each examination question that produces statistics descriptive of difficulty and discrimination. When such analysis and/or candidate comments indicate the need, specific questions are reviewed again by one or more test committee members to ensure that the answer key is correct. Any question that fails to perform acceptably may be dropped from both the current scoring key and from the test question pool. Examinations are then scored for all candidates.

The minimum passing score for the QE is established by criterion-referenced (also known as content-based) methods. Using content-based standard setting means that an established level of proficiency in the content is required in order to pass. If all candidates meet this criterion (passing standard), then all candidates will pass; if only 50% meet the passing standard, then only 50% will pass. Whether a candidate passes or fails is not influenced by the relative performance of others taking the examination. Equating methods are used to maintain the same passing standard from administration to administration, despite potential differences in ability levels of candidate groups and/or question difficulty across administrations. Calculating the scores in this manner facilitates both comparisons of individual performance and comparisons of examinations from year to year.

## **Grievances**

### **Examination Scores**

Standard procedures ensure that the score reported for each candidate is an accurate reflection of the responses recorded by the computer, and a change in the score based on a recheck is an extremely remote possibility. However, a recheck will be done if you submit a signed, written request to the NBVME along with a fee of \$50. The request must be made within three weeks of the release of scores. Results will be reported in writing as soon as possible after receipt of the request and payment. The recheck only confirms that the original score was correct or provides a correction in the score in the event there was an error. If a correction is required, the recheck fee will be refunded.

### **Examination Conduct**

If you believe that the administration of the examination or the examination conditions adversely affected your performance, for consideration, you must send a signed, written request to the NBVME for an investigation. Such requests must be received by the NBVME within 10 days following your test date. Indicate the date and location of the administration and provide a description of the event in as much detail as possible. Each grievance will be evaluated. If your grievance cannot be substantiated through analysis, or if it is determined that your performance was not adversely affected, the score as reported will stand. However, if your complaint can be supported, appropriate corrective action will be taken.

## **Examination Content**

The QE is constructed using the following examination blueprint.

### Normal Animal, 59%

Anatomy, 23% (includes gross and microscopic anatomy, and principles of radiology and diagnostic imaging)

Physiology, 23% (includes physiological chemistry/biochemistry, neurobiology, genetics, endocrinology, reproduction, and nutrition)

Pharmacology, 13% (includes principles of anesthesiology)

### Abnormal Animal, 41%

Microbiology, 20% (includes bacteriology, virology, mycology, parasitology, immunology, public health, food safety, and epidemiology)

Pathology, 21% (includes clinical pathology and toxicology)

Unlike the blueprint used for the North American Veterinary Licensing Examination (NAVLE), the QE blueprint does not classify items by animal species or veterinary practice role. Many items on the QE are not species specific, or are applicable to more than one species. The examination includes items dealing with all animal species that might be encountered by veterinarians in private clinical practice in North America.

## **Test Question Format**

The QE includes only single questions with one best answer. They consist of a statement or question followed by four to five options arranged in alphabetical or logical order. The response options for all questions are lettered (e.g., A, B, C, D, E). Examinees are required to select the best answer to the question. Other options may be partially correct, but there is only one best answer.

## **Strategies for Answering Single One Best Answer Questions**

- Read each question carefully. It is important to understand what is being asked.
- Try to generate an answer and then look for it in the list of options.
- Alternatively, read each option carefully and eliminate those that are clearly incorrect. Of the remaining options, select the one that is most correct.
- If you are unsure about an answer, it is better to guess, because unanswered questions are counted as wrong answers.

## Sample Questions

1. Surgical exploration of the abdomen of the horse should include a check for intussusception of the ileum into the cecum. The ileum may be easily identified by locating which of the following?

- (A) Antimesenteric ileal artery along the length of the ileum
- (B) Entrance of the ileum into the right side of the base of the cecum
- (C) Ileocecal fold that is attached to it
- (D) Right abdominal gutter
- (E) Small-diameter intestinal segment that has a single band

2. In the horse, damage to the suprascapular nerve results in the condition called sweeny, which is atrophy of which of the following muscles?

- (A) Brachialis and supraspinatus muscles
- (B) Brachialis, supraspinatus, and infraspinatus muscles
- (C) Supraspinatus and infraspinatus muscles
- (D) Triceps and infraspinatus muscles
- (E) Triceps and supraspinatus muscles

3. In cattle, pericarditis may be caused by a sharp object penetrating the diaphragm. The object is most commonly located in which of the following organs?

- (A) Duodenum
- (B) Abomasum
- (C) Omasum
- (D) Reticulum
- (E) Rumen

4. Which of the following features characterizes the kidneys of an adult cow?

- (A) The left kidney is attached to the liver
- (B) The left kidney is more caudally located than the right kidney
- (C) The right kidney can be palpated rectally
- (D) They are of the unipyramidal type
- (E) They have smooth surfaces

5. Which of the following best describes the composition of the musculature of the canine esophagus?

- (A) Two-thirds smooth muscle and one-third striated muscle
- (B) One-half striated and one-half smooth muscle
- (C) Two-thirds striated muscle and one-third smooth muscle
- (D) Almost entirely striated muscle
- (E) Almost entirely smooth muscle

6. Which stage of the canine estrous cycle is indicated by nonnucleated epithelial cells in a vaginal smear?

- (A) Late diestrus
- (B) Late estrus
- (C) Early diestrus
- (D) Early proestrus
- (E) Anestrus

7. When using hand processing chemical tanks to develop radiographic film, which of the following is the order in which the chemicals should be used:

- (A) Developer, water bath, fixer, water bath
- (B) Fixer, water bath, developer, water bath
- (C) Water bath, developer, water bath, fixer
- (D) Water bath, fixer, water bath, developer

8. A radiographic film appears brownish yellow. Which of the following procedures was not performed properly?

- (A) Developing
- (B) Drying
- (C) Fixing
- (D) Washing

9. Which of the following changes occurs as a result of metabolic acidosis?

- (A) Oxygen-hemoglobin saturation curve shifts to the left
- (B) Plasma becomes hypotonic
- (C) Plasma ionized calcium concentration increases
- (D) Serum glucose concentration increases
- (E) Serum potassium concentrations decreases

10. Gastrin decreases which of the following:

- (A) Gastric pH
- (B) Ileocecal sphincter pressure
- (C) Lower esophageal sphincter pressure
- (D) Pepsinogen secretion
- (E) Pyloric sphincter pressure

11. Volatile fatty acids (VFA) provide what percentage of energy for the dairy cow?

- (A) 20%
- (B) 40%
- (C) 50%
- (D) 60%
- (E) 80%

12. In the ketoacidosis of uncontrolled diabetes mellitus, which one of the following findings is most likely?

- (A) Arterial blood pH = 7.7
- (B) Neuromuscular hyperirritability causing fasciculations and convulsions
- (C) Plasma osmolarity = 260 mosmol/L
- (D) Plasma potassium concentration = 1.7 mEq/L
- (E) Arterial blood pCO<sub>2</sub> = 30 mm Hg

13. Parasympathetic activity decreases mean arterial pressure by which of the following mechanisms?

- (A) Decreased heart rate
- (B) Decreased muscle tone
- (C) Decreased stroke volume
- (D) Decreased ventricular contractility
- (E) Dilation of arterioles

14. In the healthy animal, decreasing which of the following also decreases blood flow?

- (A) Arteriolar radius
- (B) Length of the vessel
- (C) Number of circulating red blood cells
- (D) Plasma protein concentration
- (E) Surface area of the vessel

15. During exercise, which of the following physiologic parameters would be expected to decrease compared with the resting state?

- (A) Cardiac output
- (B) Plasma glucagon concentration
- (C) Stroke volume
- (D) Ventricular end-systolic volume

16. Which of the following is the primary pathophysiologic mechanism associated with hypoadrenocorticism?

- (A) Combined deficiencies of mineralocorticoids and glucocorticoids
- (B) Decreased glomerular filtration rate
- (C) Depletion of extracellular fluid volume
- (D) Increased serum calcium concentration
- (E) Impaired renal excretion of potassium and conservation of sodium

17. The main ingredients in diets of caged birds are seeds. Which two vitamins are most likely to be deficient in seed diets?

- (A) Vitamins E and K
- (B) Vitamins A and D
- (C) Vitamins A and K
- (D) Vitamins A and B
- (E) Vitamins D and E

18. Which of the following best describes the actions of thromboxanes and prostacyclin?

- (A) Anabolic
- (B) Antagonistic
- (C) Inhibitory
- (D) Synergistic
- (E) Unrelated

19. Which of the following is more likely to occur with use of an extended-spectrum antimicrobial drug than with a narrow-spectrum antimicrobial drug?

- (A) Drug fever
- (B) Drug interactions
- (C) Hypersensitivity reactions
- (D) Release of bacterial endotoxins
- (E) Superinfection

20. In comparison to morphine, codeine is:

- (A) more addictive
- (B) more potent
- (C) a stronger respiratory depressant
- (D) more useful as an antitussive
- (E) an opiate antagonist, whereas morphine is an agonist

21. Which of the following is an adsorbent commonly given orally as an antidote in the treatment of a wide variety of poisonings in animals?

- (A) Activated charcoal
- (B) Tannic acid
- (C) Zinc oxide
- (D) Poloxalene
- (E) Copper sulfate

22. Which of the following is the drug of choice for treatment of sinus bradycardia?

- (A) Atropine
- (B) Propranolol
- (C) Quinidine
- (D) Phenylephrine
- (E) Methacholine

23. Which of the following parasitic genera acquires protection from adverse pasture conditions by inhibiting its larval development in the abomasal wall of cattle?

- (A) *Haemonchus*
- (B) *Trichostrongylus*
- (C) *Ostertagia*
- (D) *Fasciola*
- (E) *Oesophagostomum*

24. Which of the following arthropods is the intermediate host of the subcutaneous filarid of dogs?

- (A) *Ctenocephalides*
- (B) *Stomoxys*
- (C) *Culex*
- (D) *Rhipicephalus*
- (E) *Tabanus*

25. Which of the following diseases is not considered an exotic disease in North America?

- (A) African swine fever
- (B) Foot-and-mouth disease
- (C) Rinderpest
- (D) Swine vesicular disease
- (E) Vesicular stomatitis

26. Which of the following processes occurs first during acute inflammation?

- (A) Degranulation of leukocytes with release of kinins
- (B) Increased permeability of capillaries and postcapillary venules
- (C) Margination of leukocytes in vessels associated with the area of injury
- (D) Polymerization of fibrin from fibrinogen
- (E) Transformation of monocytes into macrophages that synthesize and release cytokines

27. A 2-month-old Arabian foal has had recurrent respiratory infections, and combined immunodeficiency disease (SCID) is suspected. To support this diagnosis, each of the following should be evaluated EXCEPT

- (A) complement C3 concentration
- (B) immunoglobulin concentration
- (C) lymphocyte count
- (D) splenic tissue
- (E) thymic tissue

28. Which of the following terms most appropriately describes the effects of saprophytic bacteria on necrotic tissue?

- (A) Abscesses
- (B) Coagulation
- (C) Gangrene
- (D) Granulomas
- (E) Infarcts

29. A kidney has a well-demarcated, wedge-shaped, pale tan lesion. Histologic examination of the lesion shows increased cytoplasmic eosinophilia, karyolysis, and intact tissue architecture. This lesion is most consistent with which of the following types of necrosis?

- (A) Caseous
- (B) Coagulative
- (C) Fibrinoid
- (D) Liquefactive
- (E) Zenker's

30. Which of the following terms best describes a neoplasm that induces abundant collagenous stroma?

- (A) Anaplastic
- (B) Desmoplastic
- (C) Dysplastic
- (D) Hyperplastic
- (E) Metaplastic

31. Which of the following cell types is LEAST able to regenerate?

- (A) Centrolobular hepatocytes
- (B) Cerebral neurons
- (C) Colonic epithelium
- (D) Subcutaneous fibroblasts
- (E) Vascular endothelium

32. Which of the following is the most likely cause of decreased mean corpuscular hemoglobin concentration (MCHC)?

- (A) In vitro hemolysis
- (B) Iron deficiency
- (C) Lipemia
- (D) Spherocytosis

33. Which of the following is the most likely finding on a leukogram from a cow with a large chronic abscess?

- (A) Monocytosis with left shift and toxic change
- (B) Neutropenia and eosinopenia
- (C) Neutropenia and monocytosis
- (D) Neutropenia with left shift and toxic change
- (E) Neutrophilia and monocytosis

**Answers to sample questions:**

1. C; 2. C; 3. D; 4. B; 5. D

6. B; 7. A; 8. D; 9. C; 10. A

11. E; 12. E; 13. A; 14. A; 15. D

16. A; 17. B; 18. B; 19. E; 20. D

21. A; 22. A; 23. C; 24. A; 25. E

26. B; 27. A; 28. C; 29. B; 30. B

31. B; 32. B; 33. E

## **QUICK SUMMARY OF THE PROCESS TO TAKE THE QE**

The QE is a computer-based test, administered via the internet. The entire testing day consists of a 15-minute tutorial, two blocks of 150 items in 165 minutes, and a minimum of 45 minutes of break time between blocks. To take the QE, you must:

- obtain application materials through the AAVSB.
- complete your application materials and submit them, with the testing fee, to the AAVSB office.
- receive an Authorization Letter from the NBVME verifying your eligibility and authorizing you to sit for the QE on your given test date.
- arrive at your assigned test center at least 30 minutes prior to your scheduled testing time.
- present your Authorization Letter and an unexpired, government-issued form of identification (such as a driver's license or passport) that includes both your recent photograph and signature. You will not be admitted to the test center without both of these items.
- enter your access code into the computer to start your examination.
- take or exit the optional tutorial, then start the first block of questions.
- sign out and sign in each time you take a break.

The items on this list are outlined in more detail in this bulletin.