《生物》試題評析

曾正老師試題評析

一、命題分佈：

範疇	題數	配分
生物學概論	0	0
生物無機及有機化學	1	2
細胞學	3	6
生物能量學	2	4
遺傳學(細胞+古典)	4	8
分子生物學	7	14
生物分類學	1	2
植物生理學	4	8
動物生理學	26	52
演化及生態學	2	4

二、試題評析：

1.首次創舉，後中醫試卷採英文命題，這讓考生及補教老師的思考有了轉向，不準備及閱讀原文重點及考題的考生勢必面臨上榜壓力。

2.試題內容完全符合後中醫考題重點，完全題庫命題，平時準備題庫的考生會佔盡便宜。

3.基本上來說，試題挑選極不平均，動物生理學佔分高達 52 分，實在也太多了！去年動物生理學命題佔分亦高達 50 分，演化生態學亦僅佔 4 分，命題老師的背景可見，此可作爲考生往後準備的方向。

4.試題完全在本人所編講義、題庫班講義完全命中，本班優秀學員可能考到接近滿分，而中等程度也可拿到 80 分以上，學員可高興的等待高分的成績單！

三、第 17 題說明：

1.題目指的是基因組的大小是不與生物表型複雜度成正相關(生物演化位階的高等或低等亦即 gene 數目的多寡)，故選(B)，而(C)指的是基因組的大小不與 gene 的複雜度成相關，基因組的大小與 gene 的複雜度是無關的，但與本題所指的是無關的。

2.∴選(C)爲錯誤的，故義守大學公佈答案是正確的。

《生物》命中事實

曾正老師講義命中事實

題號	回數	頁數	說明
1	細胞學(一)	P145	平滑型內質網(SER)涉及藥物解毒。
2	細胞遺傳學(二)	P30	週期素(cyclin)在細胞周期中濃度上升及下降，且與激酶(cyclin dependent protein kinase)結合組成MPF而控制細胞周期的進行。
3	動物生理學(五)	P139	甲狀腺素(T3/T4)與基本代謝率提升及神經元發育有關。
4	動物生理學(五)	P147	胰臟β細胞分泌胰島素(insulin)降低血糖。
5	生態學(十三)	P68	題目述及二族群生物的分佈佔領不同的生態區，故屬於種的生態學概念。
6	分類學(三)	P133	渦鞭毛藻(dinoflagellates)導致紅潮(red tides)。
7	動物生理學(六)	P107 P108	原腸(腔) archenteron 形成消化道(屬於內胚層)。
8	動物生理學(五)	P36	腎小管上皮細胞內襯含大量緻密接合(tight junction)以防止液體滲漏。
9	動物生理學(五)	P160	下視丘的GnRH控制腦下腺前葉控制FSH及LH的分泌
10	動物生理學(六)	P46	懷孕前10～11周，hCG (人類絨毛膜促性腺激素)維持黃體的存在。
11	動物生理學(四)	P79	多發性硬化症(multiple sclerosis)髓鞘神經元成爲自體免疫反應對抗的標的。
12	動物生理學(五)	P132	老年人的黑色素細胞(melanocyte)活動下降致使抗UV的能力下降。
13	細胞學(一)	P213	Glucose透過 Glucose transporter 由高濃度區域往低濃度區域移動，屬於易化擴散的代表例。
14	生物有機化學(一)	P112	蛋白質的四級結構係由一條以上多肽鏈，經非共價鍵的力量連結而形成。
15	遺傳學(二)	P161	Klinefelter syndrome 睪丸小，精子數量下降，而女性外觀明顯，且體內睪丸酮量下降。
16	動物生理學(五)	P152	糖尿病病患因過度代謝脂肪，故有動脈粥樣硬化及酮酸中毒(Ketoacidosis) 的危險。
17	分子生物學補資		基因組的大小與生物複雜性並不永遠成正相關，換句話可說基因組大的生物其基因數目並不成比例增加。

題號	回數	頁數	說明
18	動物生理學(五)	P57	酒精會抑制抗利尿激素(ADH) 的釋放，故有利尿的作用。
19	細胞學(一)	P210	芹菜柄置於清水會膨脹，而置於鹽水會萎縮，故對爲清水而言爲高滲，但對鹽水而言爲低滲。
20	生物能量學(一)	P281	Glucose的結構類似物但無法藉由糖解作用而被代謝(即競爭糖解的酵素，但無產物合成，故糖解停擺)
21	遺傳學(二)	P122	按題意：$X^{\cdot}X^{\cdot} \times XY \rightarrow X^{\cdot}X$ (tortoiseshell, 雌) $X^{\cdot}Y$(黑,雄)
22	生物能量學(一)	P284	粒線體缺乏transporter，無法將丙酮酸運至粒線體繼續氧化，故丙酮酸僅能在細胞質液中行醱酵而產生乳酸及少量ATP。
23	演化論(十三)	P49	異型合子佔優勢，故類似穩定型天擇。
24	分子生物學(二)	P225	端粒酶利用本身的RNA經逆轉錄作用而延長染色體末端的DNA。
25	分子生物學(二)	P336 P337	染色質的共價修飾會引發其組態的變化，常見有histone尾部的甲基化，乙醯化及磷酸化。
26	分子生物學(二)	P372	不管是原核生物或真核生物，轉錄起始期皆需RNAP結合至promoter上(雖然真核生物需轉錄因子的協助)
27	植物生理學(三)	P417	根瘤中，豆科血紅素可調節根瘤中氧氣的濃度。
28	分子生物學(十)	P138 P139	此題無正確的選項，僅能選胚胎幹細胞是全能性，而成體幹細胞是富潛能性可符合論述。
29	分子生物學(二)	P362	SiRNA可與細胞內標的mRNA結合，以阻止其轉譯或促使其被降解。
30	動物生理學 生物分類學(三)	P36	感染某一物種的流感病毒經過遺傳重組或甚至是突變再傳遞給另一物種最終再感染人類。
31	植物生理學(三) 上課補充	P522	生物燃料是由植物細胞壁聚合物分解成可進行醱酵的糖。
32	植物生理學(三)	P489	植物的基因對基因的辨識是對入侵者辨認的機制，涉及植物的*R* 基因與入侵病原體的*Avr* 基因間產物交互作用。
33	植物生理學(三)	P482	植物對冷壓力的反應是膜增加不飽和脂的含量使得膜呈較流體性。
34	動物生理學(五)	P43 P47	腎臟近曲小管及遠曲小管處理濾液以維持pH的恆定

題號	回數	頁數	說明
35	分子生物學(十)	P119	不同已分化的細胞會表現不同的基因以執行不同的特化功能。
36	遺傳學(二)	P54 P55	精子形成過程中，細胞質分裂是均等分裂的，而卵形成過程中，細胞質分裂是不均等分裂(產生極體)
37	分子生物學(二)	P197 P199	遺傳物質爲DNA，而DNA來源爲phage λ(lambda)，故複合的phage產下的子代爲phage λ(lambda) 的DNA及proteins
38	動物生理學(五)	P146	副甲狀腺素(PTH)及降鈣素(CT) 對於血Ca^{2+}的調節有關。
39	動物生理學(三)	P93	肝臟功能失常，血漿蛋白合成下降，故滲透壓無法維持而導致水腫。
40	動物生理學(四)	P10	僅有特定的白血球，纖維母細胞才可合成干擾素(IFN)
41	動物生理學(九)	P29	內在因子(IF)係由胃製造而非胰臟
42	動物生理學(七)	P59	肌肉收縮活動在有氧情況下及無氧情況下(可產生乳酸)皆可運行，提高粒線體的數目增加有氧代謝。
43	動物生理學(九)	P36	脂溶性物質由中央乳糜管吸收，而水溶性物質則由微血管吸收。
44	動物生理學(三)	P77	總周邊阻力在運動時的變化(按題意)僅能選體循環的血管管徑。
45	動物生理學(七)	P40	運動神經元支配骨骼肌的特化區域，稱爲運動終板或神經肌肉交接處。
46	動物生理學(三)	P69 P70	平均動脈壓升高，左心室喞出血液通過半月瓣的量減少，故心縮排血量(SV)下降。
47	動物生理學(三)	P92	微淋巴管一端爲盲端，而微血管則連通動脈端及靜脈端。
48	動物生理學(三)	P79	動脈壓升高(透過壓力接受器)則活化降血壓機制及抑制升血壓機制，所以angiotensin II 的量須下降。
49	動物生理學(四)	P148	Pco_2↑則促使血紅素與氧氣的親和力下降，促使氧氣提供周邊組織利用。
50	動物生理學(四)	P28	抗體係由活化的B 細胞(漿細胞, plasma cells)製造。

楊老師試題評析

一、試題以 campbell 爲主。
二、很多都是從題庫照抄，爲怕翻譯成中文會與原文題庫原意有出入，因此直接用原文出題。
三、題目水準與去年相差不大，只是改用英文出題。
四、考試配分如下：

範疇	98 年	99 年	預估明年
化合物	0	2%	2%
細胞學	8%	8%	8%
能量學	6%	4%	6%
遺傳	10%	12%	10%
分生	14%	14%	14%
胚胎學	2%	4%	4%
生理	42%	44%	44%
演化學	2%	2%	2%
動物演化分類學	6%	2%	2%
植物學	6%	6%	6%
生態學	4%	2%	2%

楊老師講義命中事實

題號	回數	頁數	說明
1	總複習(一)	P8	第2→2→2分支
2	總複習(一)	P18	第1→1分支
3	總複習(二)	P17	第4分支
4	總複習(二)	P20	第2→2分支
5	總複習(二)	P29	第2→1分支
6	總複習(二)	P43	第1→2分支
7	總複習(一)	P46	第2→5分支
8	總複習(一)	P10	第7→3小分支
9	總複習(二)	P21	
10	總複習(二)	P25	第4→2分支
11	總複習(一)	P92	第4→2分支
12	總複習(一)	P106	
13	總複習(一)	P10	第6→1→1→1小分支
14	總複習(一)	P6	第4→3→4小分支
15	總複習(一)	P23	第1→→2→3分支
16	總複習(一)	P99	第6分支
17	總複習(一)	P40	第2→2分支
18	總複習(一)	P102	第2→1分支
19	總複習(一)	P10	第6→1→1小分支
20	總複習(一)	P13	第2分支
21	總複習(一)	P22	第5分支
22	總複習(一)	P13	第2分支
23	總複習(一)	P20	第3分支
24	總複習(一)	P25	第2→3分支
25	總複習(一)	P32	第1→2分支
26	總複習(一)	P26	第2分支
27	總複習(二)	P65	第3→4分支
28	總複習(一)	P49	第1→3分支
29	總複習(一)	P6	第4→4→3→1→1分支
30	總複習(一)	P30	第2→2分支
31	總複習(一)	P72	
32	總複習(二)	P72	第2→2分支
33	總複習(二)	P68	第6分支

題號	回數	頁數	說明
34	總複習(一)	P103	第3分支
35	總複習(一)	P18	
36	總複習(一)	P19	第3分支
37	總複習(一)	P24	第1分支
38	總複習(二)	P17	第1分支
39	總複習(一)	P89	第3→3分支
40	總複習(一)	P93	第2→2→3→1分支
41	總複習(一)	P81	第2→2分支
42	總複習(一)	P109	第5分支
43	總複習(一)	P84	第3分支
44	總複習(一)	P88	第1→2分支
45	總複習(一)	P109	第3分支
46	總複習(一)	P88	第1→1→1分支
47	總複習(一)	P86	第6小分支
48	總複習(一)	P88	第1→1→2→1→1分支
49	總複習(一)	P98	第2分支
50	總複習(一)	P95	第4→1分支

《生物》

選擇題（單選題，共50 題，每題2 分，共100 分。答錯1 題倒扣0.5 分，倒扣至零分為止。未作答時，不給分亦不扣分）

(B) 1. The liver is involved in detoxification of many poisons and drugs. Which of the following structures is primarily involved in this process and therefore abundant in liver cells?
(A) Transport vesicles (B) smooth ER
(C) Golgi apparatus (D) Nuclear envelope

(D) 2. Which of the following is a protein synthesized at specific times during the cell cycle that associates with a kinase to form a catalytically active complex?
(A) PDGF (B) MPF (C) protein kinase (D) cyclin

(B) 3. The hormone primarily responsible for setting the basal metabolic rate and for promoting the maturation of the brain is
(A) TSH. (B) thyroxine. (C) ACTH. (D) cortisol.

(C) 4. Which of the following cells of the pancreas secrete insulin?
(A) exocrine cells (B) alpha cells
(C) beta cells (D) delta cells

(B) 5. A biologist discovers two populations of wolf spiders whose members appear identical. Members of one population are found in the leaf litter deep within the woods. Members of the other population are found in the grass at the edge of the woods. The biologist decides to designate the members of the two populations as two separate species. Which species concept is this biologist most closely utilizing?
(A) phylogenetic (B) ecological
(C) Physiological (D) morphological

(C) 6. Which group includes members that are important primary producers in ocean food webs, causes red tides that kill many fish, and may even be carnivorous?
(A) ciliates (B) apicomplexans
(C) dinoflagellates (D) brown algae

(A) 7. The blastopore denotes the presence of an endoderm-lined cavity in the developing embryo, a cavity that is known as the
(A) archenteron. (B) blastula.
(C) coelom. (D) blastocoel.

(A) 8. What type of specialized junction connects epithelial cells lining the renal tubules?

(A) tight junctions (B) desmosomes
(C) gap junctions (D) intercalated disks

(A) 9. In both males and females, gonadotropin secretion by the anterior pituitary is stimulated by
(A) GnRH. (B) FSH. (C) GHRH. (D) androgens.

(C) 10. The corpus luteum is maintained for the first 10 weeks of pregnancy by
(A) progesterone. (B) estrogen. (C) hCG. (D) LH.

(C) 11. Which of the following is an autoimmune disease in which myelinated neurons become the target of the immune response?
(A) rheumatoid arthritis (B) myasthenia gravis
(C) multiple sclerosis (D) diabetes mellitus

(C) 12. The reason older persons are more sensitive to sun exposure and more likely to get sunburned is that with age
(A) glandular activity declines. (B) skin thickness decreases.
(C) melanocyte activity declines. (D) vitamin D_3 production declines.

(D) 13. Glucose diffuses slowly through artificial phospholipid bilayers. The cells lining the small intestine, however, rapidly move large quantities of glucose from the glucose-rich food into their glucose-poor cytoplasm. Using this information, which transport mechanism is most probably functioning in the intestinal cells?
(A) simple diffusion (B) phagocytosis
(C) active transport pumps (D) facilitated diffusion

(D) 14. The structure of a protein that contains two or more polypeptides is the
(A) primary structure. (B) secondary structure.
(C) tertiary structure. (D) quaternary structure.

(C) 15. A man with Klinefelter syndrome (47, XXY) is expected to have any of the following *except:*
(A) lower sperm count. (B) possible breast enlargement.
(C) increased testosterone. (D) female body characteristics.

(A) 16. Ketoacidosis in untreated diabetes mellitus is due to
(A) excessive fat catabolism. (B) hypoventilation.
(C) excessive fluid loss. (D) excessive eating and obesity.

(B) 17. If humans have 2,900 Mb, a specific member of the lily family has 120,000 Mb, and a yeast has ~13 Mb, why can't this data allow us to order their evolutionary significance?
(A) Size matters less than gene density.
(B) Size does not compare to gene density.
(C) Size does not vary with gene complexity.

(D) Size is comparable only within phyla.

(B) 18. Drinking alcohol makes you urinate more frequently because

(A) alcohol contains caffeine.

(B) alcohol inhibits the release of ADH and therefore causes excessive urinary water loss.

(C) alcohol inhibits the release of renin, a hormone that increases water reabsorption in the kidneys.

(D) alcohol causes more water to filter from the blood into the kidneys.

(C) 19. Celery stalks that are immersed in fresh water for several hours become stiff and hard. Similar stalks left in a salt solution become limp and soft. From this we can deduce that the cells of the celery stalks are

(A) hypotonic to both fresh water and the salt solution.

(B) hypertonic to both fresh water and the salt solution.

(C) hypertonic to fresh water but hypotonic to the salt solution.

(D) hypotonic to fresh water but hypertonic to the salt solution.

(C) 20. Which kind of metabolic poison would most directly interfere with glycolysis?

(A) an agent that reacts with oxygen and depletes its concentration in the cell

(B) an agent that binds to pyruvate and inactivates it

(C) an agent that closely mimics the structure of glucose but is not metabolized

(D) an agent that blocks the passage of electrons along the electron transport chain

(D) 21. In cats, black fur color is caused by an *X-linked* allele; the other allele at this locus causes orange color. The heterozygote is tortoiseshell. What kinds of offspring would you expect from the cross of a black female and an orange male?

(A) Tortoiseshell females; tortoiseshell males

(B) Black females; orange males

(C) Orange females; orange males

(D) Tortoiseshell females; black males

(A) 22. A young animal has never had much energy. He is brought to a veterinarian for help and is sent to the animal hospital for some tests. There they discover his mitochondria can use only fatty acids and amino acids for respiration, and his cells produce more lactate than normal. Of the following, which is the best explanation of his condition?

(A) His mitochondria lack the transport protein that moves pyruvate across the outer mitochondrial membrane.

(B) His cells cannot move NADH from glycolysis into the mitochondria.

(C) His cells contain something that inhibits oxygen use in his mitochondria.

(D) His cells lack the enzyme in glycolysis that forms pyruvate.

(C) 23. The frequency of heterozygosity for the sickle cell anemia allele is unusually high, presumably because this reduces the frequency of malaria. Such a relationship is related to which of the following?

(A) Mendel's law of independent assortment

(B) Mendel's law of segregation

(C) Darwin's explanation of natural selection

(D) Darwin's observations of competition

(C) 24. The enzyme telomerase solves the problem of replication at the ends of linear chromosomes by which method?

(A) causing specific double strand DNA breaks that result in blunt ends on both strands

(B) causing linear ends of the newly replicated DNA to circularize

(C) adding numerous short DNA sequences such as TTAGGG, which form a hairpin turn

(D) adding numerous GC pairs which resist hydrolysis and maintain chromosome integrity

(B) 25. When DNA is compacted by histones into 10 nm and 30 nm fibers, the DNA is unable to interact with proteins required for gene expression. Therefore, to allow for these proteins to act, the chromatin must constantly alter its structure. Which processes contribute to this dynamic activity?

(A) DNA supercoiling at or around H1

(B) methylation and phosphorylation of histone tails

(C) hydrolysis of DNA molecules where they are wrapped around the nucleosome core

(D) accessibility of heterochromatin to phosphorylating enzymes

(C) 26. Which of the following is *correct* for both prokaryotic and eukaryotic gene expression?

(A) After transcription, a 3' poly-A tail and a 5' cap are added to mRNA.

(B) Translation of mRNA can begin before transcription is complete.

(C) RNA polymerase binds to the promoter region to begin transcription.

(D) The mRNA transcript is the exact complement of the gene from which it was copied.

(C) 27. Which of the following is a *correct* statement about nitrogen fixation in root nodules?

(A) The plant contributes the nitrogenase enzyme.

(B) The process is relatively inexpensive in terms of ATP costs.

(C) Leghemoglobin helps maintain a low O_2 concentration within the nodule.

(D) The bacteria of the nodule are autotrophic.

(B) 28. In animals, embryonic stem cells differ from adult stem cells in that

(A) embryonic stem cells are pluripotent, and adult stem cells are totipotent.

(B) embryonic stem cells are totipotent, and adult stem cells are pluripotent.

(C) embryonic stem cells have more genes than adult stem cells.

(D) embryonic stem cells have fewer genes than adult stem cells.

(A) 29. Which of the following best describes siRNA?

(A) a short double-stranded RNA, one of whose strands can complement and inactivate a sequence of mRNA

(B) a single-stranded RNA that can, where it has internal complementary base pairs, fold into cloverleaf patterns

(C) a double-stranded RNA that is formed by cleavage of hairpin loops in a larger precursor

(D) a molecule, known as Dicer, that can degrade other mRNA sequences

(D) 30. Which of the following series best reflects what we know about how the flu virus moves between species?

(A) An avian flu virus undergoes several mutations and rearrangements such that it is able to be transmitted to other birds and then to humans.

(B) The flu virus in a pig is mutated and replicated in alternate arrangements so that humans who eat the pig products can be infected.

(C) A flu virus from a human epidemic or pandemic infects birds; the birds replicate the virus differently and then pass it back to humans.

(D) An animal such as a pig is infected with more than one virus, genetic recombination occurs, the new virus mutates and is passed to a new species such as a bird, the virus mutates and can be transmitted to humans.

(B) 31. Biofuels are mainly produced by:

(A) plants that convert hemicellulose into gasoline.

(B) the breakdown of cell wall biopolymers into sugars that can be fermented.

(C) the genetic engineering of ethanol generating genes into plants.

(D) plants that are easy to grow in arid environments.

(D) 32. A plant will recognize a pathogenic invader

(A) if it has many specific plant disease resistance (*R*) genes.

(B) when the pathogen has an *R* gene complementary to the plant's antivirulence (*Avr*) gene.

(C) when the pathogen secretes *Avr* protein.

(D) if it has the specific R gene that corresponds to the pathogen molecule encoded by an *Avr* gene.

(C) 33. All of the following are responses of plants to cold stress *except*:

(A) the production of a specific solute "plant antifreeze" that reduces water loss.

(B) excluding ice crystals from the interior walls.

(C) conversion of the fluid mosaic cell membrane to a solid mosaic one.

(D) an alteration of membrane lipids so that the membranes remain flexible.

(C) 34. Processing of filtrate in the proximal and distal tubules accomplishes what important function?

(A) sorting plasma proteins according to size

(B) converting toxic ammonia to less toxic urea

(C) maintaining a constant pH in body fluids

(D) regulating the speed of blood flow through the nephron

(B) 35. Your bone cells, muscle cells and skin cells look different because

(A) they contain different numbers of genes.

(B) different genes are active in different kinds of cells.

(C) they are present in different organs.

(D) each cell contains different kinds of genes.

(C) 36. In vertebrate animals, spermatogenesis and oogenesis differ, in that

(A) oogenesis begins at the onset of sexual maturity, whereas spermatogenesis happens in embryonic development.

(B) oogenesis produces four haploid cells, whereas spermatogenesis produces only one functional spermatozoon.

(C) cytokinesis is unequal in oogenesis, whereas it is equal in spermatogenesis.

(D) spermatogenesis is not completed until after fertilization occurs, but oogenesis is completed by the time a girl is born.

(B) 37. Biologists have discovered how to put together a bacteriophage with the protein coat of phage T2 and the DNA of phage lambda. If this composite phage was allowed to infect a bacterium, the phages produced in the host cell would have

(A) a mixture of the DNA and proteins of both phages.

(B) the protein and DNA of phage lambda.

(C) the protein of phage T2 and the DNA of phage lambda.

(D) the protein of phage lambda and the DNA of phage T2.

(D) 38. Which of the following hormones have antagonistic (opposing) effects?

(A) growth hormone and epinephrine (B) glucagon and thyroxine

(C) ACTH and cortisone (D) parathyroid hormone and calcitonin

(C) 39. Which of these statements about edema is false?

(A) Edema may be caused by blockage of lymphatic vessels.

(B) Edema may be caused by high blood pressure.

(C) Edema may be caused by increased plasma protein.

(D) Edema may be caused by leakage of plasma protein into tissue fluid.

(B) 40. Which of these statements about gamma interferon is false?

(A) It stimulates the immune system to attack infected cells and tumors.

(B) It is produced by almost all cells of the body.

(C) It is a polypeptide regulator.

(D) It can be produced in response to viral infections.

(B) 41. Which of these statements about intrinsic factor is false?

(A) It helps prevent pernicious anemia.

(B) It is secreted by the pancreas.

(C) It promotes absorption of vitamin B_{12} in the intestine.

(D) It is a polypeptide.

(B) 42. Which of the following would tend to reduce the concentration of lactic acid that accumulates in a muscle cell as a result of contractile activity?

(A) increasing the diameter of the cell

(B) increasing the number of mitochondria in the cell

(C) decreasing the oxygen supply to the cell

(D) increasing the concentration of glycolytic enzymes.

(C) 43. Which of these statements about fat digestion and absorption is false?

(A) Triglycerides are resynthesized from monoglycerides and fatty acids in the intestinal epithelial cells.

(B) Triglycerides are hydrolyzed by the action of pancreatic lipase.

(C) Triglycerides, as particles called chylomicrons, are absorbed into blood capillaries within the villi.

(D) Emulsification by bile salts increases the rate of fat digestion.

(B) 44. Moment-to-moment changes in total peripheral resistance are normally due to changes in

(A) the viscosity of blood.

(B) the radius of certain blood vessels in the systemic circuit.

(C) the lengths of blood vessels in the systemic circuit.

(D) the cardiac output.

(D) 45. The motor end plate is

(A) the specialized region of an effector organ innervated by an autonomic postganglionic

neuron.

(B) the specialized synaptic terminal of autonomic postganglionic neurons.

(C) the specialized synaptic terminal of the motor neuron.

(D) the specialized region of skeletal muscle innervated by a motor neuron.

(C) 46. Which of the following is most likely to cause a decrease in the stroke volume of the left ventricle?

(A) an increase in end-diastolic volume

(B) an increase in the activity of sympathetic nerves to the heart

(C) an increase in mean arterial pressure

(D) an increase in end-diastolic pressure

(D) 47. Lymphatic capillaries differ from blood capillaries in that

(A) lymphatic capillaries are not connected to any other vessels.

(B) lymphatic capillaries have a lower permeability to water.

(C) lymphatic capillaries have a lower permeability to small solutes.

(D) lymphatic capillaries are blind ended.

(C) 48. If arterial pressure is elevated, baroreceptor signals trigger which of the following responses?

(A) an increase in epinephrine secretion

(B) a rise in vasopressin secretion

(C) a fall in plasma angiotensin II levels

(D) increased activity in sympathetic vasoconstrictor nerves

(B) 49. In respiring tissues, a rise in blood P_{CO_2} causes all of the following except

(A) a rise in the concentration of carbaminohemoglobin.

(B) an increase in the affinity of hemoglobin for oxygen.

(C) an increase in the hydrogen ion concentration.

(D) a rise in bicarbonate concentration.

(A) 50. Which of the following is not true about helper T cells?

(A) They secrete antibodies.

(B) When activated, they secrete IL-2 and other cytokines.

(C) They are subject to infection by HIV.

(D) They function in both cell-mediated and humoral immune responses.