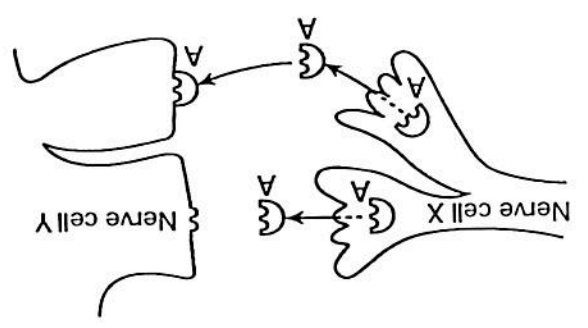


Base your answers to questions 1 through 3 on the diagram below and on your knowledge of biology.



1. The process represented in the diagram best illustrates
- (1) cellular communication
 - (2) muscle contraction
 - (3) extraction of energy from nutrients
 - (4) waste disposal

2. A drug is developed that, due to its molecular shape, blocks the action of substance A. Which shape would the drug molecule most likely resemble?

- (1)
- (2)
- (3)
- (4)

3. Which statement best describes the diagram?

- (1) Nerve cell X is releasing receptor molecules.
- (2) Nerve cell Y is signaling nerve cell X.
- (3) Nerve cell X is attaching to nerve cell Y.
- (4) Nerve cell Y contains receptor molecules for substance A.

4. When leg muscles respond to a stimulus by moving the foot, the response depends most directly on the functioning of

- (1) bronchioles
- (2) nephrons
- (3) capillaries
- (4) neurons

5. Regulation of heart rate is most closely associated with the

- (1) cerebrum
- (2) cerebellum
- (3) somatic nervous system
- (4) autonomic nervous system

6. An increase in the amount of carbon dioxide in the blood stimulates the respiratory center of the brain. As a result, impulses are sent from the medulla to the diaphragm, increasing the rate of breathing

- (1) medulla to the diaphragm, increasing the rate of breathing
- (2) cerebrum to the chest muscles, decreasing the rate of breathing
- (3) medulla to the trachea, causing it to constrict
- (4) cerebrum to the alveoli, causing them to actively transport oxygen

7. Rapid messages are sent from the brain to muscles and glands of the human body by way of the

- (1) spinal cord and peripheral nervous system
- (2) sensory neurons located in sensory nerves
- (3) red blood cells and blood plasma
- (4) lymph vessels and lymph nodes

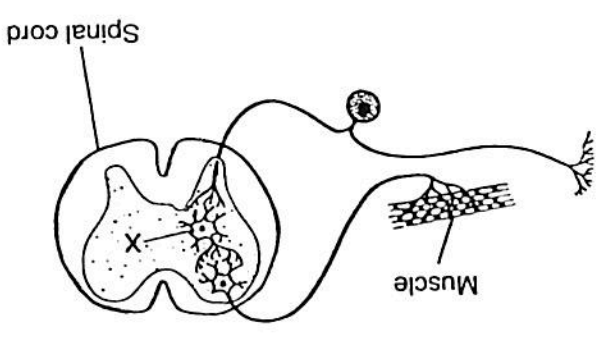
8. In the human central nervous system, the medulla directly controls

- (1) voluntary activity
- (2) memory
- (3) involuntary activity
- (4) balance

9. The peripheral nervous system consists of the

- (1) neurons located in the brain and spinal cord
- (2) nerves that extend from the brain and spinal cord
- (3) interneurons of the central nervous system
- (4) portions of the brain known as the medulla and cerebellum

10. A reflex arc is illustrated in the diagram below.



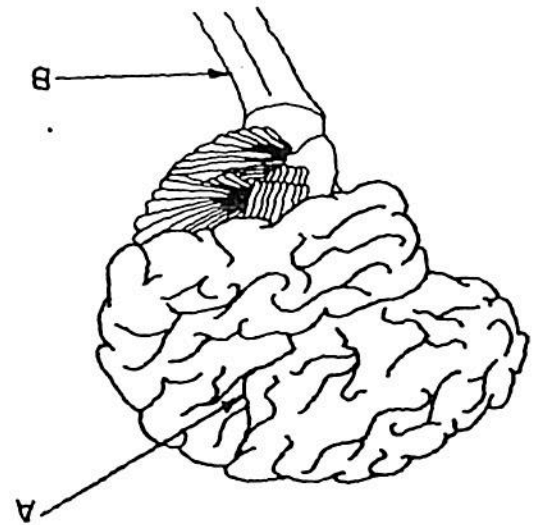
Structure X represents

- (1) an effector
- (2) a motor neuron
- (3) an interneuron
- (4) a receptor

11. The maintenance of proper blood sugar level involves the storage of excess sugar in the

- (1) salivary glands
- (2) stomach
- (3) pancreas
- (4) liver

Base your answers to questions 12 and 13 on the diagram below which represents the human brain and on your knowledge of biology.



12. Which processes would most likely be affected if the part of the brain indicated by letter A was damaged?
- (1) ability to contract muscles in the walls of arteries
 - (2) reflex actions and involuntary behavior patterns
 - (3) involuntary activities such as breathing and peristalsis
 - (4) reasoning and speech
13. Which are the correct structure and function for the part indicated by letter B?
- (1) cerebellum → balance
 - (2) cerebellum → muscle coordination
 - (3) medulla → problem solving
 - (4) spinal cord → reflex actions
14. If a motor neuron involved in a reflex arc is damaged, which event in that arc is *least* likely to occur?
- (1) contraction of a muscle
 - (2) stimulation of an interneuron
 - (3) reception of a stronger stimulus by the sense organ
 - (4) secretion of a neurotransmitter by the sensory neuron
15. Gland A releases a hormone that causes gland B to release estrogen. Gland A is most likely the
- (1) testis
 - (2) pituitary
 - (3) thyroid
 - (4) ovary

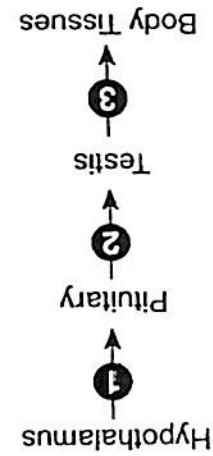
16. Two types of human cells are shown in the diagram below.



Muscle cells that attach to the skeleton

- Cell A causes the cells at B to contract. This activity would be most useful for
- (1) lifting a book from a bookshelf
 - (2) coordinating the functions of organelles
 - (3) digesting food in the small intestine
 - (4) carrying out the process of protein synthesis
17. Which is a correct route of an impulse in a reflex arc?
- (1) receptor → sensory neuron → interneuron → motor neuron → effector
 - (2) effector → receptor → motor neuron → sensory neuron → interneuron
 - (3) sensory neuron → effector → motor neuron → receptor → interneuron
 - (4) motor neuron → sensory neuron → interneuron → effector
18. The secretion of chemicals that stimulate responses in specific body tissues is a function of
- (1) the nervous system, only
 - (2) the endocrine system, only
 - (3) both the nervous system and the endocrine system
 - (4) neither the nervous system nor the endocrine system
19. In humans, certain glands produce chemicals that are distributed by the circulatory system and influence various target organs. These glands are classified as
- (1) intestinal glands
 - (2) salivary glands
 - (3) gastric glands
 - (4) endocrine glands
20. An increase in the level of insulin in the blood would most directly result in
- (1) a decrease in the amount of glucose in the blood
 - (2) a decrease in the amount of protein in the blood
 - (3) an increase in the amount of fat in cells
 - (4) an increase in the amount of carbon dioxide in cells

Base your answers to questions 21 through 23 on the diagram below and on your knowledge of biology. The arrows in the diagram indicate certain hormones in the human male body.



21. The hormone testosterone is represented by

- (1) 1
- (2) 2, only
- (3) 3, only
- (4) 2 and 3

22. A high level of hormone 3 in the blood inhibits the production of hormone 2. This situation is an example of

- (1) nervous regulation
- (2) hydrolysis
- (3) deamination
- (4) negative feedback

23. Which activity would most likely be a function of hormone 3?

- (1) stimulating the body tissues to produce secondary sex characteristics
- (2) causing the thyroid to produce thyroxin
- (3) increasing the blood-sugar level
- (4) promoting the conversion of body fat into glycogen

24. Feedback mechanisms are best described as processes that help

- (1) reduce hormone levels to below normal in the blood
- (2) destroy hormones in the blood
- (3) directly control muscle contraction in the leg
- (4) keep body conditions near a normal, steady state

25. Homeostasis is illustrated in the human body by the effects of insulin and glucagon on the amount of

- (1) fats digested into glycerol
- (2) amino acids absorbed by villi
- (3) oxygen transported to the lungs
- (4) glucose in the blood

Base your answers to questions 26 and 27 on the glands below. Choose from the list below, that is best described by that statement.

- Glands*
- (1) Adrenal
 - (2) Pancreas
 - (3) Parathyroid
 - (4) Hypothalamus

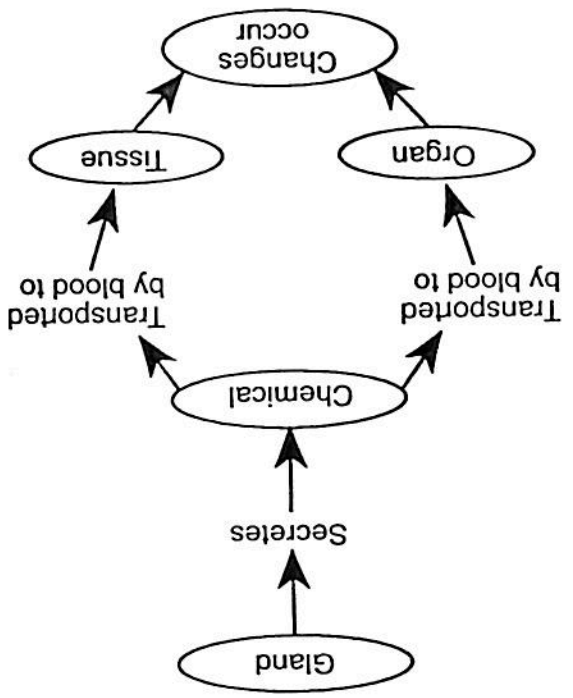
26. Groups of cells within this gland secrete hormones that maintain normal levels of simple and complex carbohydrates in the body.

- (1) 1
- (2) 2
- (3) 3
- (4) 4

27. Cells within this gland, which is part of the central nervous system, produce several hormones that affect the functioning of the pituitary gland.

- (1) 1
- (2) 2
- (3) 3
- (4) 4

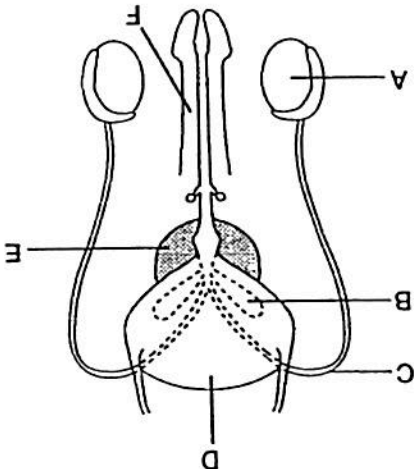
28. The chart below represents a homeostatic control mechanism in humans.



Which system is most directly involved in the events represented in the chart?

- (1) digestive
- (2) endocrine
- (3) nervous
- (4) respiratory

29. Base your answer to the following question on the diagram below.



Which letter indicates a structure that secretes a hormone that promotes maturation of gametes?

- (1) A (2) B (3) C (4) D (5) E

30. Base your answer to the following question on the list below. Select the endocrine gland that is best described by each phrase.

Endocrine Glands

- (1) Thyroid
(2) Adrenal
(3) Islets of Langerhans
(4) Parathyroid

Requires a supply of iodine to synthesize its hormone

- (1) 1
(2) 2
(3) 3
(4) 4

31. Which row in the chart below contains a correct comparison between nervous regulation and chemical regulation?

Row	Nervous Regulation	Chemical Regulation
A	Slow response	Fast response
B	Long duration	Short duration
C	Involves neurotransmitters	Involves neuro-hormones
D	Common to all organisms	Only in multi-cellular animals

- (1) A (2) B (3) C (4) D

32. The pancreas produces one hormone that lowers blood sugar level and another that increases blood sugar level. The interaction of these two hormones most directly helps humans to

- (1) maintain a balanced internal environment
(2) digest needed substances for other body organs
(3) dispose of wastes formed in other body organs
(4) increase the rate of cellular communication

33. Which row in the chart below contains the words that best complete this statement?

The I glands produce II, which are transported by the III system.

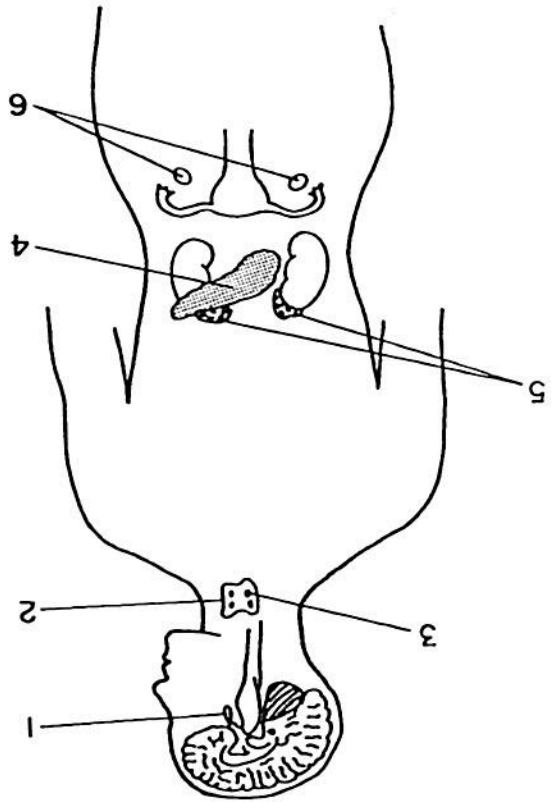
Row	I	II	III
A	digestive	hormones	circulatory
B	endocrine	enzymes	lymphatic
C	endocrine	hormones	circulatory
D	digestive	enzymes	lymphatic

- (1) A (2) B (3) C (4) D

34. Which malfunction of the human nervous system is a group of congenital diseases characterized by a disturbance of motor functions?

- (1) meningitis (2) stroke (3) cerebral palsy (4) polio

Base your answers to questions 35 and 36 on the diagram below which represents the location of several endocrine glands found within a human body and on your knowledge of biology.

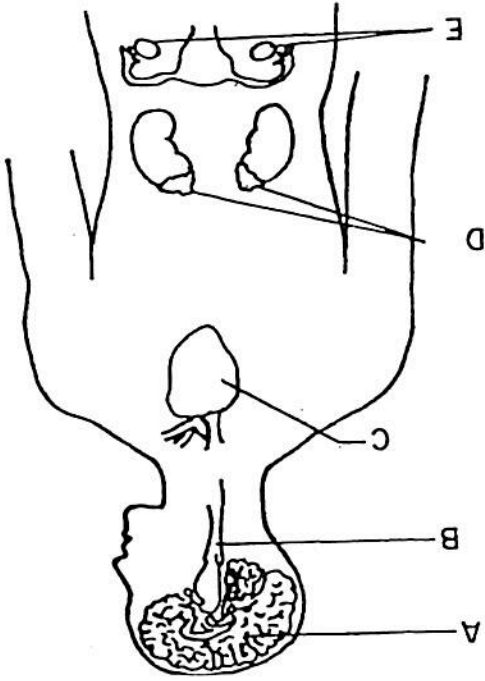


35. The hormone that is important to the development of female secondary sex characteristics and is produced by the structures labeled 6 is
- (1) estrogen
(2) adrenaline
(3) cortisone
(4) testosterone
36. Which gland produces parathormone, which regulates the metabolism of calcium?
- (1) 1
(2) 2
(3) 3
(4) 5
37. What will most likely result if a diabetic injects an overdose of insulin?
- (1) a serious infection in the pancreas
(2) an increase in the production of pancreatic enzymes
(3) an accumulation of wastes in the bloodstream
(4) a dangerous drop in blood sugar levels

38. A physiologist removed the pancreas from several dogs in an experiment to investigate its function. He placed five normal dogs in one kennel and five dogs lacking a pancreas in another kennel. The physiologist observed that ants were attracted in large numbers to the kennel of the dogs lacking a pancreas. Because they lacked a pancreas, what substance did these dogs have that attracted the ants?

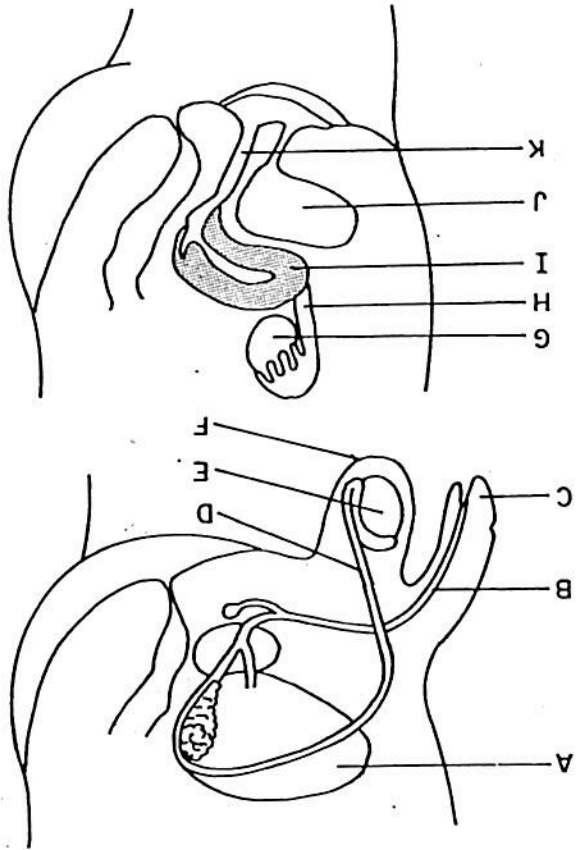
(1) enzymes in their saliva
(2) sugar in their urine
(3) mineral salts in their feces
(4) oil on their fur

Base your answers to questions 39 and 40 on the diagram below and on your knowledge of biology.

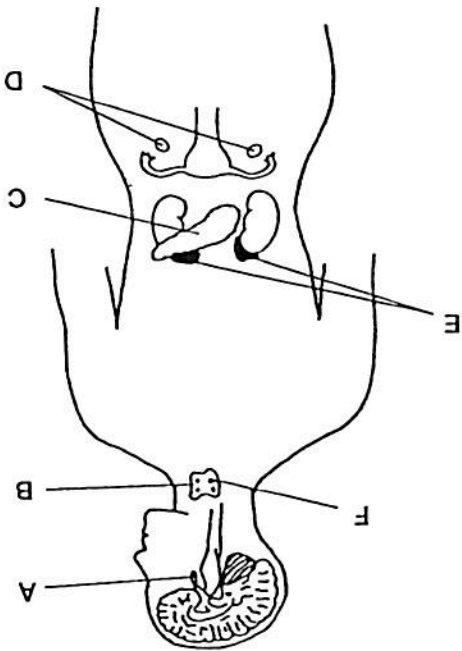


39. Which gland secretes a steroid that promotes the conversion of body fat and protein into glucose?
- (1) E
(2) B
(3) C
(4) D
40. Which organ is damaged when a stroke results from a hemorrhage or clot in a blood vessel?
- (1) A
(2) E
(3) C
(4) D

41. Base your answer to the following question on the diagrams below and on your knowledge of biology.



43. Base your answer to the following question on the diagram below of the endocrine system and on your knowledge of biology.



Hormones that regulate the menstrual cycle are secreted by

- (1) A and D
- (2) B and F
- (3) C and E
- (4) F and A

Base your answers to questions 44 and 45 on the malfunction, chosen from the list below, that is best described by that phrase.

- Malfunctions*
- (1) Gout
 - (2) Polio
 - (3) Goiter
 - (4) Diabetes
 - (5) Leukemia

44. A viral disease of the central nervous system preventable through immunization

- (1) 1
- (2) 2
- (3) 3

45. An enlargement of the thyroid gland often associated with an iodine deficient diet

- (1) 1
- (2) 2
- (3) 3

42. Base your answer to the following question on the following list of diseases. Select the disease that is best associated with the statement below.

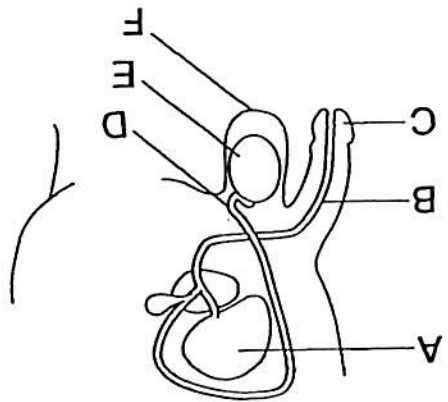
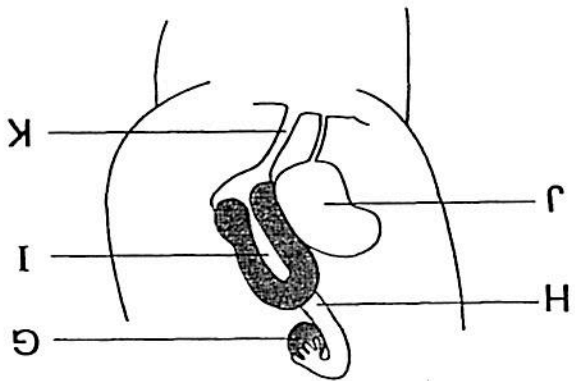
Diseases

- (1) Polio
- (2) Stroke
- (3) Meningitis
- (4) Cerebral palsy

Inflammation of the membranes surrounding the brain and spinal cord

- (1) 1
- (2) 2
- (3) 3
- (4) 4

49. Base your answer to the following question on the diagrams below and on your knowledge of biology.



which structures secrete hormones that regulate the development of secondary sex characteristics? (1) A and J (2) D and H (3) F and I (4) E and G

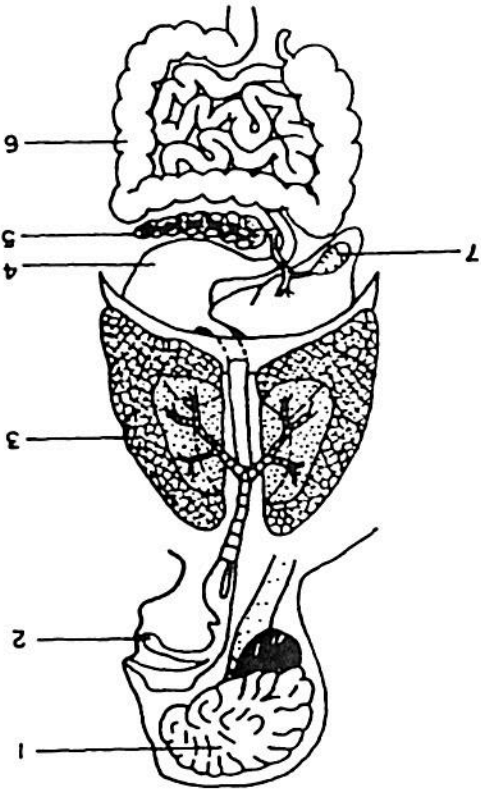
47. Base your answer to the following question on the incomplete chart below and on your knowledge of biology.

Body Part Affected	Cause	Arthritis	B	Meningitis
		Breakdown of lysosomes in cartilage cells	Blood clot or hemorrhage	Bacteria or virus
			Brain	C

Letter C most likely represents
 (1) neurons in arms and legs
 (2) membranes lining bronchi and bronchioles
 (3) membranes covering the brain and spinal cord
 (4) cells covering arteries and veins

48. In a certain community, a number of humans have an abnormally enlarged structure under the skin of the lower front side of their necks. The cause of this condition is most likely
 (1) an excess of calcium in the diet, which has caused a muscle deformity
 (2) deposits of fat under the skin caused by a vegetable diet
 (3) inherited neck deformities caused by elevated environmental temperatures
 (4) a lack of iodine in the diet, which has caused the development of a goiter

Meningitis is an inflammation of the membranes surrounding this organ.



- (1) 1
- (2) 2
- (3) 3
- (4) 4
- (5) 5

50. Base your answer to the following question on the chart below and on your knowledge of biology. The chart lacks some information about the symptoms and disorders of three patients who have recently received medical attention.

Patient	Symptom	Disorder
A	Degeneration and enlargement of alveoli	
B	High blood-sugar level caused by a decrease of insulin	
C		Gottler

Patients B and C have symptoms derived from malfunctions that directly involve which system?
 (1) respiratory (2) excretory
 (3) endocrine (4) nervous

TO REORDER CALL 1-800-722-6876
CUSTOMER SERVICE DEPARTMENT

SCANTRON FORM NO. 882-N-E

TEST RECORD	
PART 1	
PART 2	
TOTAL	

NAME	SUBJECT	DATE	TEST NO.	HOUR
Key Nervous/Endocrine				

50/100%

IMPORTANT

TO USE SUBJECTIVE SCORE FEATURE:
 • Mark total possible subjective points
 • Only one mark per line on key
 • 163 points maximum

EXAMPLE OF STUDENT SCORE:
 100 180 270 360
 50 40 30 20
 0 0 0 0

USE NO. 2 PENCIL ONLY

• MAKE DARK MARKS
 • ERASE COMPLETELY TO CHANGE
 • EXAMPLE: 1, 2, 4, 5

SUBJECTIVE SCORE INSTRUCTOR USE ONLY

100	90	80	70	60
50	40	30	20	10
9	8	7	6	5
4	3	2	1	0

KEY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
(T)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50

03 04 05 M12 3602-999-10 9 8 7 6 5 4 3 2

FEED THIS DIRECTION

www.scantromforms.com

© SCANTRON CORPORATION 1989
ALL RIGHTS RESERVED (U.S. PAT. NO. 5985587)

PART 1

KEY (T) (F) % 2 3 4 5

51 1 2 3 4 5
52 1 2 3 4 5
53 1 2 3 4 5
54 1 2 3 4 5
55 1 2 3 4 5
56 1 2 3 4 5
57 1 2 3 4 5
58 1 2 3 4 5
59 1 2 3 4 5
60 1 2 3 4 5
61 1 2 3 4 5
62 1 2 3 4 5
63 1 2 3 4 5
64 1 2 3 4 5
65 1 2 3 4 5
66 1 2 3 4 5
67 1 2 3 4 5
68 1 2 3 4 5
69 1 2 3 4 5
70 1 2 3 4 5
71 1 2 3 4 5
72 1 2 3 4 5
73 1 2 3 4 5
74 1 2 3 4 5
75 1 2 3 4 5
76 1 2 3 4 5
77 1 2 3 4 5
78 1 2 3 4 5
79 1 2 3 4 5
80 1 2 3 4 5
81 1 2 3 4 5
82 1 2 3 4 5
83 1 2 3 4 5
84 1 2 3 4 5
85 1 2 3 4 5
86 1 2 3 4 5
87 1 2 3 4 5
88 1 2 3 4 5
89 1 2 3 4 5
90 1 2 3 4 5
91 1 2 3 4 5
92 1 2 3 4 5
93 1 2 3 4 5
94 1 2 3 4 5
95 1 2 3 4 5
96 1 2 3 4 5
97 1 2 3 4 5
98 1 2 3 4 5
99 1 2 3 4 5
100 1 2 3 4 5

FEED THIS DIRECTION

NAME

PART 2



100-700