BODY TEMPERATURE

1. The part of the brain that regulates body temperature is*:*

a) Pituitary
b) Thalamus
c) Hypothalamus
d) Pons
e) Cerebral cortex

2. Sudden exposure to a cold environment will cause all the following *except:*

a) Cutaneous vasoconstriction
b) Contraction of the erector pili muscles
c) Increase arterial blood pressure
d) Cutaneous vasodilation
e) Shivering

3. Whenever the body temperature is lower than the set point the following are present *except:*

a) Sweating
b) Cutaneous vasoconstriction
c) Contraction of erector pili muscles
d) Accelerated metabolism
e) Shivering

4. The metabolic rate is increased by all of the following *except:*

a) Catabolism of lactate
b) Saturation of myoglobin with O_2
c) Saturation of hemoglobin with O^2
d) Replenishing ATP stores
e) Replenishing phosphocreatine stores

5. Features of a heat stroke include all the following *except*:

a) Hypotension
b) Dehydration
c) Low Cardiac Output
d) Excessive sweating
e) Confusion

6. At an environmental temperature of 37^o C most of the heat is lost from the body by:

a) Radiation
b) Evaporation
c) Conduction
d) Convection
e) Conduction and Convention

7. The metabolic rate is increased by all of the following *except:*

a) Rise in body temperature
b) Rise in environmental temperature
c) Increased sympathetic outflow
d) Starvation
e) Hyperfunction of the thyroid gland

8. Responses to cold exposure include:

a) Opening of cutaneous vascular shunts
b) Increased cardiac output
c) Decreased cardiac output
d) Cutaneous vasoconstriction
e) Tachycardia

9. Responses to heat and cold are:

a) Stimulation of cutaneous thermoreceptors
b) Hypothalamic centers
c) Integration of central & cutaneous receptor inputs
d) Monitoring of the core temperature
e) Mainly regulated by the posterior hypothalamus

10. Heat exposure may lead to:

a) Heat syncope due to damage to hypothalamus
b) Heat cramps due to raised core temperature
c) Heat stroke due to excess water loss
d) Heat exhaustion due to excess water & electrolyte loss
e) Dehydration due to failure of ADH secretion

11. Sudden exposure to a cold enviornment would lead to all the following *except*:

a) Cutaneous vasoconstriction
b) Decreased peripheral vascular resistance
c) Contraction of pili-erector muscle
d) Peripheral cyanosis
e) Decreased skin temperature

12. The body temperature of a patient is 38^{o}C and observed to be rising. The following is true regarding this patient*:*

a) He is unlikely to be sweating
b) His metabolic rate will be higher than normal
c) He is unlikely to be shivering
d) He is unlikely to have respiratory alkalosis
e) His temperature set point is 38^{o}C

13. A thermoregulatory response controlled primarily by sympathetic cholinergic nerves is:

a) Shivering
b) Cutaneous vasodilation
c) Sweating
d) Cutaneous vasoconstriction
e) Piloerection

14. Which of the following is the main customer of energy under basal conditions?

a) Heart beat
b) Respiratory muscle activity
c) Sodium-potassium pump
d) Skeletal muscle activity
e) Pancreas

15. A patient with a body temperature of 34^{o}C is expected to have:

a) High metabolic rate
b) Low oxygen consumption
c) Tachycardia
d) High stroke volume
e) High lung ventilation

16. The body temperature of a febrile patient is found to be 38^{o}C and it has been observed that his body temperature is still rising. Regarding this patient, all of the following are correct except that there will be*:*

a) Cutaneous vasoconstriction
b) A set point higher than 38^{o}C
c) Sweating
d) High metabolic rate
e) Piloerection

17. The most important factor determining the insensible water loss is:

a) Enviornmental temperature
b) Humidity of the enviornment
c) Relative humidity of the enviornment
d) Activity of the sweat glands
e) Respiratory rate

18. Stimulation of which of the following is expected to decrease heat loss from the body*:*

a) Alpha-adrenergic receptors
b) B1-adrenergic receptors
c) B2-adrenergic receptors
d) Muscarinic cholinergic receptors
e) Nicotinic cholinergic receptors

19. The body temperature of a febrile patient is observed to be decreasing. This subject is expected now to:

a) Be sweating
b) Be shivering
c) Have lower than normal metabolic rate
d) To have piloerection
e) Bradycardia

20. The basal metabolic rate*:*

a) Is about 50 kcal/m2/hour in males
b) Per kg lean body mass is equal in males and females
c) Increases with age
d) Is low in febrile patients
e) Is best measured when the subject is sleeping

21. In the thermal balance equation the following is always positive:

a) Conduction
b) Evaporation
c) Metabolic heat production
d) Radiation
e) Convection

22. Evaporating one liter of sweat glands leads to*:*

a) Increased osmolarity of the ECF
b) Decreased osmolarity of plasma
c) Loss of 1000 kcal of heat
d) Decreases plasma viscosity
e) None of the above

23. The basal metabolic rate (per m^2 surface area) is expected to be higher in:

a) Obese females than lean females
b) Lean males than obese males
c) Elderly than young adults
d) Elephants than rats
e) Adults than children

24. The thermoregulatory response that can be blocked by atropine is*:*

a) Shivering
b) Cutaneous vasodilation
c) Sweating
d) Cutaneous vasoconstriction
e) Piloerection

25. A patient with a body temperature of 39^{o}C is expected to have:

a) A low metabolic rate
b) Low oxygen consumption
c) Tachycardia
d) Low stroke volume
e) Hypoventilation

26. The respiratory quotient*:*

a) For fats is greater than for carbohydrates
b) Of the human brain is about 0.7 at rest
c) Of skeletal muscle is close to 1 at rest
d) Of carbohydrates is 1
e) Is equal to amount of oxygen consumed divided by carbon dioxide produced

27. Heat exhaustion differs from heat stroke in that in heat exhaustion there is*:*

a) Hypotension
b) Tachycardia
c) Moist skin
d) Low cardiac output
e) Extensive cutaneous vasoconstriction

28. All of the following statements about brown fat are true *except*:

a) It has numerous mitochondria and a rich blood supply
b) It produces a lot of heat but little ATP
c) It is important for heat production in adults
d) It is abundantly innervated by the sympathetic nervous system
e) It is abundant in the upper part of the body

29. Shivering and vasoconstriction best describe which of the following:

a) Hypotension
b) Onset of fever
c) Sustained fever
d) Rapid reduction of temperature set point
e) Hyperthyroidism

30. Which of the following is not at core body temperature:

a) The brain
b) The hypothalamus
c) The blood
d) The testes
e) The liver

31. The body temperature of a febrile patient is observed to be gradually declining. This subject:

a) Unlikely to be sweating
b) Heat production is greater than heat loss
c) Is likely to be shivering
d) Is likely to have cutaneous vasodilation
e) Is expected to complain of chills

32. Sweat:

a) Is a filtrate
b) Is usually isotonic to plasma
c) Has low sodium concentration when flow rate is slow
d) Has low sodium concentration in un-acclimatized compared to acclimatized people
e) Evaporation depends primarily on air temperature

33. The basal metabolic rate:

a) Is about 40 kcal/m2/hour in an average adult man
b) Is higher than normal in hypothermic people
c) Is higher in obese than lean subjects per unit body weight
d) Should be measured when the subject is asleep
e) Should be measured at room temperature of $37^{o}C$