Physical Education Grade 12 Answer Week1

1.

1. Joint	Synovial Joint Type	Movement at Agonist	Agonist	Antagonist
Knee	Hinge	Extension	Rectus Femoris /Vastus Lateralis / Vastus Intermedius / Vastus Medialis	Biceps Femoris / Semitendinosus / semi-membranosus

2.

Joint Movement	Main agonist muscle	Practical example
Hip Abduction	gluteus medius/minimus	star jump or box splits
Wrist flexion	wrist flexors	follow through after basketball shot

3. (i) circular motion of the arm, thigh, hand, thumb, or finger that is produced by the sequential combination of flexion, abduction, extension, and adduction

(ii) foot movement at the ankle in which the heel is lifted off of the ground

4. Isometric contraction – this involves a muscle producing tension but staying the same length. This occurs when the body is fixed in one position. E,g crucifix position.

5. high aerobic capacity/low anaerobic capacity;

slow contractile speed

high fatigue resistance

low motor unit strength.

6. Slow oxidative : muscle fibres most likely to perform successfully in or choose aerobic or endurance or low intensity, long duration activities.

Fast oxidative glycolytic : Muscle fibres most likely to perform successfully in or choose speed endurance activities or team games

Fast Glycolytic : Muscle fibres most likely to perform successfully in or choose speed endurance activities or explosive or high intensity, short duration activities.

Mix: mix of muscle fibre types may perform successfully in both aerobic and anaerobic activity/they may be good at team games (with varying intensities of activity).

7. The SA node initiates an impulse which travels across the atria causing them to contract and blood is forced actively into the ventricles. This is called atrial systole. The AV node then delays the impulse allowing the atria to fully finish contracting and emptying. The impulse is then sent along the bundle of HIS and Purkinje fibres, causing the ventricles to contract (ventricular systole) and forcing blood actively out of the heart via the arteries.

8. Neural control is under Automic Nervous System

Uses the sympathetic nervous system

<u>Chemoreceptors</u>

Detect increase in pH, lactic acid, carbonic acid

<u>Proprioceptors</u>

Detect motor activity or movement

Baroreceptors

Detect increase in blood pressure

Detect increased blood vessel wall

Cardiac System

Information sent to the cardiac control centre in medulla oblongata

Increase the firing rate or stimulate SA node

Increase heart rate

Increase cardiac output

Respiratory system

Information sent to respiratory control centre in medulla oblongata which stimulates the inspiratory centre

During inspiration

Increased stimulation of contraction of diaphragm

Increased stimulation of contraction of external intercoastals

Stimulation of additional muscles (sternocleidomastoid, pectoralis minor)

Rib cage move up and out

Volume of cavity increases

Pressure inside thoracic cavity decreases

More air rushes in

Increase depth of breathing or tidal volume

Expiration

Expiratory centre stimulated by baroreceptors

Expiration becomes active

Stimulation of obliques, andominals

Rib cage or ribs move down and in

Volume of cavity decreases

Pressure inside cavity increases

Increases rate of breathing

Increases minute ventilation

Effects on endurance performer

Endurance performer relies on supply of oxygen to working muscles or aerobic respiration or the aerobic system.

Increased heart rate or cardiac output means more oxygen or blood to working muscles

Increased tidal volume or minute ventilation means more oxygen inspired or breathed in

Increase in aerobic respiration

Performer will be able to work longer/ greater endurance capacity

Performer will be able to work at higher intensity

Less build up of lactic acid

Delay fatigue

9. (Pocket)Valve.

Skeletal muscular pump.

Respiratory pump.

Venoconstriction/venomotor control/smooth muscle.

Gravity for blood from above heart.

10. Carried in the plasma.

    Combines with haemoglobin.

    Forms oxyhaemoglobin

11. Lungs are pulled outwards (connected to pleural membrane, attached to ribs)

    Intercostals muscles (between ribs) contract - lifts the ribcage up and out - volume inside chest cavity increases

    Diaphragm contracts (flattens) - increases volume inside the chest cavity