**Name of the Student**:_____
**Max. Marks : 24 Marks** **Time : 24 Minutes**

## Mark Schemes

## Q1.

(a) B – It is the 2nd contraction / occurs (immediately) after A / occurs after atrium;
Larger / more force / more pressure;

**2**

(b) $\frac{60}{\text{time for 1 cycle}}$

= 37 to 38

*allow 1 mark if correct working shown*

**max 2**

(c) (i) (Heart rate) reduced;
(Stroke volume) no effect;

**2**

(ii) Reduced because C.O. = H.R. x S.V. / connection argument based on reduced H.R;

**1**

(iii) Parasympathetic;

**1**

(d) (i) 1. Coordination via medulla (of brain) / cardiac centre;
2. (Increased) impulses along sympathetic ( / cardiac accelerator) nerve
3. To S.A. node / pacemaker;
4. More impulses sent from / increased rate of discharge of S.A. node / pacemaker;

*Not "beats"; not "speeds up"*

**4**

(ii) In exercise – More energy release / more respiration / actively respiring muscles / for aerobic respiration;
Higher cardiac output – Increases $O_2$ supply (to muscles);
Increases glucose supply (to muscles);
Increases $CO_2$ removal (from muscles) / lactate removal;
Increases heat removal (from muscles) / for cooling;

*If no "increase" – max 2 marks*

**3**

**[15]**

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Q2.

(a) 0.1 – 0.6 seconds;
Volume (in left ventricle) increasing / ventricle filling;

**2**

(b) (i) 2 marks for correct answer of 75 (beats) per minute;
1 mark if heart beat correctly identified as lasting 0.8 seconds;

**2**

(ii) 70 $cm^3$;

**1**

(c) Multiply them;

**1**

(d) 750;

*Accept a small increase – up to 800 $cm^3$*

**1**

(e) (i) 4 : 1 / 4;
*Ratio must be expressed in simplest terms*

**1**

(ii) 18 $cm^3$;

**1**

**[9]**

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