You are the consultant in a tertiary ED Trauma Centre. You receive pre-notification of a 29 year old male involved in a high speed motorbike accident colliding with a tree. He has suspected head, chest and abdominal injuries. His right upper limb has been partially amputated.

The paramedics placed a pelvic binder, a cervical collar, and administered a 250ml bolus of Normal Saline through an 18G IV in the patient's left cubical fossa. The right arm has been dressed and splinted. Your Trauma Team has been activated.

Vital signs on arrival:
GCS 8 (E-2, V-2, M-4)
HR - 160
BP - 80/50
SaO2 - 92% 0n 15L oxygen via a non-rebreather mask.

Primary survey reveals:
Airway - patent, receiving 15L O2 via non-rebreather mask.
Breathing - decreased AE bilaterally
Circulation - thready radial pulse uninjured arm. eFAST positive in right upper quadrant. Inconclusive views of pericardium and lungs. Right upper limb partially amputated through the arm with large volume of blood streaming through compression bandage.
D - GCS 8, pupils - 2mm reactive bilaterally.

List six (6) immediate priorities in this patient's management (6 marks):
1. **Tourniquet to Rt upper limb.**
2. **Bilateral finger thoracostomies** (ICCs LATER).
3. Further large bore IV access - central (MAC), Left upper limb (RIC)
4. **Blood product based haemostatic resuscitation** at ratio of 1:1:1. **No further crystalloids** (or bolus of 250ml till blood arrives).
5. TXA 1gr over 10 minutes followed by 1gr infusion over 8 hours.
6. Imaging - CXR / Pelvis - check placement of binder.
7. Alert surgeons / OT for possible rapid surgery.
8. **Delay RSI / ETT till resuscitated -** or at least qualify - post further resuscitation / relaxant only / cold intubation if needed.

Despite your initial management, the patient becomes more tachycardic and hypotensive.
His vitals signs are now:
GCS 4 (E-1, V-1, M-2)
HR 190
BP unmeasurable - just palpable carotid plus.
SO2 - unmeasurable.
A repeat eFAST demonstates pericardial fluid and fluid in the right and left upper quadrants.

List three (3) immediate treatment priorities (3 marks):
1. Call for help - general and CTS surgeon / OT.
2. Re-finger finger thoracotomies to exclude re-accumulation of tension pneumothorax.
3. **Resuscitative thoracotomy - in ED**.
4. Support airway with BVM or cold intubation by airway doctor - but not to disturb with thoracotomy.
5. Continue haemostatic (blood product based) resuscitation.

Regarding trauma patients in general, list three (3) indications and three (3) contraindications for resuscitative thoracotomy (6 marks):
A. INDICATIONS (3marks):
   Consensus based -
   1. Unresponsive hypotension with a systolic blood pressure of less than 70 mmHg and...
   2. FAST positive for pericardial tamponade and...
   3. Cardiac electrical activity must be present

4. Some guidelines - penetrating trauma with witnessed arrest with in 10 minutes of arrival, though currently moving away from these definitions.

B. CONTRAINDICATIONS (3 marks):
   1. No signs of life and pulseless electrical activity (PEA) on hospital arrival. Signs of life include:
      a. Pupillary response
      b. Spontaneous ventilation
      c. Presence of carotid pulse
      d. Extremity movement
   2. Severe / unsurvivable multisystem injury
   3. Severe / unsurvivable head injury
   4. Lack of training in the procedure
   5. Lack of equipment for procedure
   6. Lack of timely cardiothoracic / general surgery back-up following the procedure