Q.1 A 54 years male, admitted with history of moderate cough, fever 103°F, decreased appetite for 3 days, altered mental status 1 day. On arrival to ER his BP is 60/44 mmHg, heart rate is 112/min, O₂ sat 80% RA, R/R 42/min. He was transferred to ICU. Before transfer patient was resuscitated with 1 litre normal saline via central line and a-line monitoring started. On arrival to ICU: arterial line tracing is shown below.

Bedside ultrasound showed:

a) What information can you get from these figures in this case?
b) What other bedside maneuver can help you in determining how to manage this case?
c) After an intervention CVP is 15 mmHg, BP is still 70/40 mmHg. What are next steps in management?
Q.2 A 38 years male admitted through ER with history of fever, chill and fascial flushing for 2-3 day. For last 12 hours patient has increasing headache, retro-orbital pain and myalgia. In the ER mild epistaxis was also witnessed. On examination patient has BP 90/60 mmHg, H/R 122/min, fever 101°F, O₂ sat 92% RA, R/R 35/min, maculopapular rash over face and flexion surface with islands of skin sparing. No neck stiffness, chest minimal crackles at bases.

a) What is your most likely diagnosis?
b) What labs will you order and why?
c) How will you manage this patient?
d) What medications will you avoid?

Q.3 A 50 year old smokers weighing 85 kg, height 6 feet is being ventilated for pneumonia with a tidal volume of 500 ml. Figure A is showing his pressure time relationship. Patient is paralyzed and sedated. Tidal volume, flow rate, respiratory rate are unchanged. Figure B shows his pressure time relationship after 90 minutes.

Figure A

Figure B

a) Calculate his dynamic compliance and static compliance based on Fig-A.
b) Calculate his dynamic compliance and static compliance based on Fig-B.
c) What is the explanation for the difference in the 2 graphs?
d) What will you do next?
Q.4 A 65 years male with end stage idiopathic pulmonary fibrosis (IPF), diagnosed 3 years ago who is being treated by his Pulmonologist is now came to ER with fever, increasing shortness of breath and worsening cough. His vital signs showed: BP 90/60 mmHg, O₂ sat 80% on RA, heart rate 112/min, fever 99°F, respiratory rate 44/min. CXR shows changes consistent with advanced UIP and no acute infiltrate. Labs showed: proBNP normal, D.dimer normal, WBC 11,000. Platelet count 199,000. Hb 13.0. ABGs: pH 7.17, PCO₂ 60, PO₂ 55, HCO₃ 22.
How will you proceed with the care of this patient?

Q.5 A 60 year old male admitted to your ICU for management of subarachnoid haemorrhage develops the rhythm shown below on the monitor. He had history of depression for which he was being treated before developing SAH.

![ECG波形图](image)

a) What is this condition and what is your immediate management?
b) What laboratory studies would you order
c) Sinus rhythm is restored, what information will you gather from ECG to determine the underlying abnormality?
d) What additional measures will you take to prevent a recurrence?
Q.6  A 33 years old man was a front seat driver in a car accident. He sustained head injury and multiple rib fractures with lung contusion. He is on a ventilator for 12 hours, pulse is 100, BP 70/50 mmHg on maximum doses of norepinephrine and dobutamine. Hemoglobin is 12 gram/dl and sodium is 128. Cardiac echo has excluded pericardial effusion and shows normal LV function. Brain CT scan is shown in Fig A. He is intubated and ventilated with 70% oxygen with PEEP 4 cm. ABGs shows: pH 7.50, PCO₂ 230 and PO₂ 58.

![](image)

a) Suggest one intervention to improve his physiological parameter keeping in view his brain CT scan and lung contusion. Justify your answer.
b) How is cerebral perfusion pressure measured? What is normal / desirable CPP?
c) Would you adjust peep in this case? What would be your considerations?

Q.7  70 years old known patient of COPD, with History of repeated admission in last 1 year, presented to ER with shortness of breath and fever. Initial evaluation revealed Lower respiratory tract infection. On the 3rd day of admission at pulmonology ward patient condition deteriorated, and he developed altered sensorium with disturbed ABGs. Patient needs ICU admission. You are called to assess the patient & advise before shifting.

a) What is PARS scoring system?
b) How will you proceed with this patient?
c) What are different admission criteria's in an ICU?
Q.8 A 65 yrs old female with chronic myeloid leukemia admitted to ICU after developing respiratory failure secondary to bilateral infiltrates. She received chemotherapy 15 days back. She was neutropenic with coagulopathy. On 2\textsuperscript{nd} day of ICU admission her GCS became 2/10. Brain stem reflexes were absent and she was not triggering ventilator. Her CT scan brain confirms extensive IC bleed with intraventricular spill and midline shift.

a) How would you diagnose brain death in ICU patients?
b) What are pre-requisites for the Apnea test and how is it performed?

Q.9 A 65 years old non smoker lady with NIDDM for 10 years who is on enalapril, aspirin, metformin, simvastatin. She was taking ibuprofen for osteoarthritis and is admitted to the ICU with respiratory distress, abdominal pain, body swelling with pitting edema. Her labs shows creatinine 4.0 (baseline 1.5), sodium 140, potassium 5, chloride 100, HCO\textsubscript{3} 15, amylase 400, lipase 250. ABGs: pH 7.2, PCO\textsubscript{2} 27, PO\textsubscript{2} 90, HCO\textsubscript{3} 14. WBC: 8,000, Hgb 13, plt. 250,000, LFTs normal.

a) What is her acid base disorder?
b) What is the cause of this disorder in this lady?
c) What additional tests would you order to ascertain the cause of her acid base disorder?
d) What are likely reasons for her deterioration?
e) How would you treat this acid base disorder?

Q.10 Recently published PROCEVA trial was conducted to determine the outcome efficacy of prone positioning in the management of ARDS.

a) What were the inclusion criteria?
b) What was the primary outcome variable studied?
c) What were the secondary out comes?
d) What was the conclusion of the trial? Please give salient features only.