1. Read the following statements a, b and c and identify the mechanism involved i.e., whether positive or negative feedback.
   a. Blood clotting: When the blood vessel ruptures and blooding happens, platelets will get accumulate in the site and release a chemical. This chemical will attract more platelets to adhere the leaky site and forms a plug which stops blooding.
   b. Child Birth: When the baby head pushes the cervix, nerve impulses are created in the cervix which is passed to the brain. Brain initiates the release of oxytocin which causes the uterus to contract which pushes baby further towards the cervix. This causes cervix to create more impulses which is passed on to brain and overall result is the birth of child.
   c. One accidently took a glass of hot water and it fell down the moment it was grabbed.

      A. 'a' and 'b' are negative feedback and 'c' is positive feedback.
      B. 'a' and 'c' are negative feedback and 'b' is positive feedback.
      C. All 'a', 'b' and 'c' are negative feedback
      D. 'a' and 'b' are positive feedback and 'c' is negative feedback.

      ANSWER: 'a' and 'b' are positive feedback and 'c' is negative feedback.

2. Read the following statements and choose correct statement given as 3 choices.
   a. A doctor observed that the ECG measured from a patient has substantial deviations from the ECG of a normal person which helped him to correctly diagnose the cardiac status of the patient.
   b. A medical scientist found from a series of experiment that light at 1100nm can penetrate deep in to the tissue when compared to using a 780nm light source. He deduced that the scattering, in case of 1100nm, is much less which allows this deep penetration.

   A. In 'a', doctor solves an 'inverse problem' and in 'b' scientist develops a forward model
   B. In 'a' doctor develops a "measurement model "and in 'b' scientist develops a measurement model.
   C. In 'a' doctor solves an "inverse problem" and in 'b' scientist also solves an "inverse problem".
   D. In 'a' doctor solves an "forward problem" and in 'b' scientist solves an "inverse problem".

   ANSWER : In 'a', doctor solves an 'inverse problem' and in 'b' scientist develops a forward model

3. If the input intensity of the X-ray irradiating an object is doubled, then in (ideal case)

   [NB: Projection data is $P_\theta(t)$]

   a. Projection data will remain same.
   b. Output (i.e., transmitted intensity) intensity will decrease
   c. Output (i.e., transmitted intensity) intensity will remain same
   d. Projection data will also double.
   Answer : Projection data will remain same.

4.

The absorption coefficient of an object is represented in the matrix form as $A=\begin{bmatrix} a_1 & a_2 & a_3 \\ a_4 & a_5 & a_6 \\ a_7 & a_8 & a_9 \end{bmatrix}$. Then the sum of projection data from each view will be

a. none of the choices.
b. will be different for each view
c. The same

Answer C, the same.

5.

For a 2-D object which is circular in shape with constant absorption coefficient inside the circle, the sinogram will be :

A. Constant function of t but vary with θ

B. Varying function of both θ and t

c. Constant function of θ but vary with t

d. Constant function of both θ and t

Answer : C.