(c) Ice kept in a wall insulated thermos flask is an example of which system?
   (i) Closed system
   (ii) Isolated system
   (iii) Open system
   (iv) Non-flow adiabatic system

(d) The long tube that carries water from the dam to the turbine is called
   (i) spillway
   (ii) draft tube
   (iii) surge tank
   (iv) penstock

(e) The processes of generation of steam in the pressure cooker is an example of
   (i) constant pressure process
   (ii) constant volume process
   (iii) constant enthalpy process
   (iv) constant entropy process

(f) In a boiler, the air preheater is invariably located between
   (i) furnace and economiser
   (ii) economiser and chimney
   (iii) economiser and feed pump
   (iv) furnace and feed pump
(a) In an aqua-ammonia absorption refrigeration system, the ammonia vapours are produced at high pressure in the
(i) absorber
(ii) condenser
(iii) evaporator
(iv) generator
(h) The component which maintains a constant angular motion of the crank within a cycle is called
(i) flywheel
(ii) governor
(iii) crankshaft
(iv) connecting rod

(i) In a four-stroke cycle diesel engine, during suction stroke
(ii) mixture of fuel and air is sucked in
(iii) only fuel is sucked in
(iv) only air is sucked in
(v) None of the above

(j) The property of material to resist fracture under impact loading is called
(i) strength
(ii) hardness
(iii) brittleness
(iv) toughness

(2) (a) What are the advantages and disadvantages of renewable sources of energy?
(b) What are the applications of solar energy? Discuss the working of a solar plate collector with the help of a suitable neat sketch.

3. (a) Explain the thermodynamic equilibrium.

(b) Air initially at a pressure of 75 kPa and temperature of 1000 K and occupying a volume of 0.12 m³ is compressed isothermally until the volume is halved. Subsequently, the volume undergoes further compression at constant pressure till it is halved again. Calculate the work done.
4. (a) Define a boiler as per IBR. What are the purposes of steam generation?  
(b) What is natural and forced circulation boiler?  
(c) Explain the working of water level indicator with suitable diagram.

5. (a) Explain the working principle of reaction turbine.  
(b) State the merits of gas turbine over IC engine.  
(c) What are the applications of gas turbine?

6. (a) How do you classify IC engines? Represent Otto and Diesel cycle on $p-v$ and $T-S$ plot.  
(b) Derive an expression for air standard efficiency of Otto cycle.

7. (a) Give the complete layout of steam power plant showing the appropriate position of economiser, air preheater, cooling tower and feed pump.  
(b) What are the advantages and disadvantages of hydroelectric power plant?