1. Explain the following terminology
   For exploration
   (1) secondary enrichment (3%)
   (2) contact metamorphism (3%)
   (3) anticinal theory for petroleum exploration (4%)
   For mining engineering
   (4) permitted explosives (3%)
   (5) hydraulicking (3%)
   (6) roof control (4%)
   For petroleum engineering
   (7) directional drilling (3%)
   (8) multiple zone completion (3%)
   (9) artificial gas lift (4%)
   For mineral dressing
   (10) contact angle for flotation (3%)
   (11) angle of nip for roll crusher (3%)
   (12) autogenous grinding (4%)
2. Describe the purpose of ventilation and explain the condition of creating a natural ventilation situation in an underground mine. (10%)
3. Explain the relationship between subsidence and underground coal mining, also describe the methods which can be used to reduce the amount of subsidence. (10%)
4. Describe the various types of energy drives which are used to move petroleum out of the reservoirs without artificial forces. (10%)
5. Describe the various well testing methods which can be used to determine the production rates for oil and gas. (10%)
6. List the major minerals in heavy sands and plot a flowsheet to show the process of separating these minerals. (10%)
7. Describe the principles of electrostatic separation and high tension separation. (10%)