Students should answer all questions in the scriptbook provided. All questions are of equal weight.

Question 1. (Project Planning)

Planning is a critical aspect of project management. Briefly describe the activities involved in the planning phase, and the likely adverse consequences of inadequate planning.

Question 2. (Performance Monitoring)

Monitoring performance is a critical aspect of project implementation. Briefly describe how this is done to ensure that the project parameters are met.

Question 3. (Electronic Wiring)

1. Draw a **single line** representation of a **sixty-four** (64) bit data bus.
2. Sketch a **crossover**.
3. *Why* should a **four-way junction** be drawn as *two* **three-way** junctions?
4. In the international standard,
   (a) what **letter** represents an **analog** device?
   (b) what letter is used for an **digital** device?

Question 4. (Logic Symbols)

Draw the IEEE standard symbol for:

1. An **inverter**.
2. A 2-input **AND** gate.
3. A 2-input **OR** gate.
4. An **XOR** gate.
5. A ***single*** device that functions as *two* 2-input AND gates in *parallel* followed by *one* XOR gate.

Students should answer all questions in the scriptbook provided. All questions are of equal weight.

Question 5. (Interconnection of Circuits)

1. Compare **breadboards** with **PCBs** for:

   (a) cost;

   (b) reliability;

   (c) prototyping turnaround time.

2. Sketch a **thru-hole** connection on a **two**-layer PCB. Make sure to draw and label all features, including:

   (a) the board,

   (b) the component,

   (c) the thru-hole,

   (d) a pin/leg,

   (e) a pad,

   (f) solder, and

   (g) a track.

Question 6. (Computer Aided Design of Circuits)

1. List **two (2)** advantages of **CAD** over manual drawing when producing a schematic.

2. Give **two (2)** advantages of using **pencil and paper**, instead of CAD.

3. In the Fire Alarm project, it was recommended that you use an **open collector inverter** to drive the Zone 1 LED. In Protel schematic, what were (or would be) that inverter's:

   (a) Library Reference,

   (b) Designator,

   (c) Footprint, and

   (d) Part Type?

END.