I-Text book:-

Answer the following questions:-

1-What is the difference between conversion of energy and energy conversion?
2-Why does the field of bioengineering needs engineers?
3-What is meant by each of the following terminologies according to mechanical engineering:-
   A) Internal friction
   B) Permeability
   C) Seepage
   D) Shear
   E) Enthalpy
   F) Entropy

II-Structure and Grammar:-

Do as shown in brackets:

1-Did someone clean this room yesterday? (Change into Passive)
2-Ahmed didn't receive his friend at the airport because he was ill. (If…)
3-Someone checks the furnace every month. (The furnace….)
4-They finished their homework. Then they went home. (After …….)
5-Were he perfect, as you think, he (not make) such mistakes. (Correct the verb)

Choose the correct answer:

6-Rember to (un- /mis- /dis- /in- ) engage the gears before starting the engine.
7-If you don't lubricate the mechanism regularly, it might seize (in / down /off /up).
8-I met Ahmed (which /whom /whose /who) father is traveling abroad.
9-We used to be good friends, but we hardly (any/anyone/anything/anywhere/ever) see each other now.
10-The detective was keen (in /on /at /over) finding a clue to solve the mystery of the crime.
(III) Reading Comprehension:
Read the passage and then answer the questions that are followed:

The resistance of metals varies with their temperature. When they get heated their
resistance increases. When they cool their resistance falls. The resistance of some metals and
alloys steadily decreases as their temperature is lowered, then falls suddenly to a negligible value
at temperatures a high degrees above absolute zero (-273°C). In other words, these materials have
almost no resistance to an electric current at very low temperatures. They become almost perfect
conductors. This called superconductivity. It occurs only with certain materials, for example
lead, and only at very low temperatures.

The practical applications of superconductivity are limited because of the very low
temperatures required. A number of uses, however, have been proposed. If a current is induced
by a magnetic field in a ring of superconducting material, it will continue to circulate when the
magnetic field is removed. In theory this could be made use of in the memory cells of
computers, Memory cells made of superconducting materials could store information
indefinitely. Because of the zero resistivity of the cells, the information could be retrieved very
quickly, as fast as 10 seconds .Ninety per cent of the total losses in modern transformers is due
to the resistance of the windings. Transformers could be made with windings cooled to the low
temperatures at which superconductivity occurs. The resistance of the windings would be zero
and the transformer would be almost ideal. Similarly a 100 efficient electric motor has been
proposal using the magnetic field of superconducting coils.

A- Choose the best answer from a, b, c, or d:-
1. One of superconducting materials is……………
   a. Lead    b. copper    c. carbon    d. bronze
2. Materials exhibit superconductivity at very……………temperature.
   a. High    b. certain    c. low    d. valuable
3. Superconductivities at very low temperatures are perfect…………
   a. Materials    b. insulators    c. conductors    d. metals

B. Answer the following questions:
1. What do we mean by Superconductivity?
2-When the transformer would be almost ideal?

(IV) Writing:
Rewrite the passage using one subject form:

We set a candle alight and carefully put an upside-down gas-jar over it until the flame goes out.
Then you take the gas-jar off and I put some lime-water in it. Put a cover over the jar and you
shake it about. The lime-water will turn milky. This shows that there is some carbon dioxide inside.
Then the flame of the candle is let burn against a cool surface You will see some drops of a liquid.
We put some copper sulphate powder into this liquid and you will see that it turns blue. Thus, that
the liquid is water is shown.
Model Answer
Mechanical engineering

I. Text book

A. Answer the following questions:-

1- The conversion of energy is the principle that energy can neither be created nor destroyed. The law of conversion is based on Joul's work.

Energy conversion is a process by which energy is changed from one form to another, as from heat to mechanical work. Joul discovered that in any process energy conversion, the total amount of energy is conserved.

2- The new field needs mechanical engineers to design and develop equipment for use in medical treatment.

3- 
A) Internal friction: the resistance to sliding offered by a soil mass
B) Permeability: the property of soil that allows water to flow through it.
C) Seepage: the movement of liquid through small openings in a material (soil).
D) Shear: the tendency of one layer of soil to slide across another.
E) Enthalpy: the total heat content of a substance. It is the sum of intrinsic energy and the dynamic energy of that substance.
F) Entropy: a measure of the state of disorder of a closed system.

II. Grammar and Vocabulary

Do as shown in brackets:

1- Was this room cleaned yesterday?
2- If Ahmed hadn't been ill, he would have received his friend at the airport.
3- The furnace is checked every month.
4- After they had finished their homework, they went home.
5- Wouldn't make

Choose the correct answer:

6- Dis-
7- Up
8- Whose
9. Anyone
10. on

III. Reading comprehension
A. Choose the correct answer:
1. Lead.
2. Low.
3. Conductors.

B. Answer the following questions:-
1. Materials have almost no resistance to an electric current at very low temperatures. They become almost perfect conductors. This called superconductivity
2. The resistance of the windings would be zero and the transformer would be almost ideal.

IV. Writing a paragraph

Writing is assessed by the examiner.