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|-------------------------------------------|-------------|
| Academic Year                             | 2025-2026   |
| العام الدراسي                             |             |
| Term                                      | 2           |
| الفصل                                     |             |
| Subject                                   | Physics     |
| المادة                                    | الفيزياء    |
| Stream                                    | Advanced    |
| المستار                                   | المتقدم     |
| Number of MCQ<br>عدد الأسئلة الموضوعية    | 15          |
| Marks of MCQ<br>درجة الأسئلة الموضوعية    | 60          |
| Number of FRQ<br>عدد الأسئلة المقالية     | 4           |
| Marks per FRQ<br>الدرجات للأسئلة المقالية | 40          |
| FRQ/المقالية                              |             |
|                                           | 4           |
| Exam Duration - مدة الامتحان              | 60 minutes  |
| Mode of Implementation - طريقة التطبيق    | Paper-Based |
| الالة الحاسبة                             | مسموحة      |

| Question*               | Learning Outcome/Performance Criteria** | Reference(s) in the Student Book ( ARABIC Version)                                                                                                                                                                                                                                                                                  |                                                                                 |
|-------------------------|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
|                         |                                         | المرجع في كتاب الطالب (النسخة العربية)                                                                                                                                                                                                                                                                                              |                                                                                 |
|                         |                                         | Example/Exercise                                                                                                                                                                                                                                                                                                                    | Page                                                                            |
| السؤال*                 | نتائج التعلم/ معايير الأداء**           | مثال/تمرين                                                                                                                                                                                                                                                                                                                          | الصفحة                                                                          |
| الأسئلة الموضوعية - MCQ | 1                                       | Define thermal energy as the sum of kinetic and potential energies<br>Define temperature as the measure of average kinetic energy of the particles in an object<br>number of particles that make up that object                                                                                                                     | Student Textbook<br>141<br>142<br>Figure 1, Figure 3<br>143                     |
|                         | 2                                       | Identify that temperatures do have a lower limit of -273.1 °C (zero on kelvin scale)<br>Differentiate between the three temperature scales: Celsius, Fahrenheit, and Kelvin scales<br>Convert temperatures from Celsius scale to Fahrenheit or Kelvin scales and vice versa                                                         | Student Textbook<br>144<br>Figure 7<br>145                                      |
|                         | 3                                       | Define thermal equilibrium between objects and relate it to their temperature<br>Identify situations where two objects are in thermal equilibrium<br>Explain how thermometers use thermal equilibrium to measure temperature                                                                                                        | Figure4<br>143<br>Student Textbook<br>143                                       |
|                         |                                         | Define and describe thermal energy transfer by (conduction, convection, and radiation)                                                                                                                                                                                                                                              | Figure 8<br>145                                                                 |
|                         | 5                                       | Define the term specific heat (C) and specify its unit (J/(kg.K))<br>Apply the equation Q = mCΔT to solve relevant problems                                                                                                                                                                                                         | EXAMPLE Problem 1<br>148                                                        |
|                         | 6                                       | Identify the three most common states of matter                                                                                                                                                                                                                                                                                     | Figure 12<br>151                                                                |
|                         | 7                                       | Define the melting and boiling points of a substance<br>Relate the changes of state to the heats of fusion and vaporization, while the temperature remains<br>Define the heat of fusion and heat of vaporization of a substance<br>Explain the experimental heating curve for water when thermal energy is added at a constant rate | Student Textbook<br>153                                                         |
|                         | 8                                       | or vaporize a liquid                                                                                                                                                                                                                                                                                                                | Student Textbook<br>153                                                         |
|                         | 9                                       | Apply the first law of thermodynamics in solving problems (ΔU=Q-W)<br>Apply the first law of thermodynamics to a heat engine                                                                                                                                                                                                        | Student Textbook<br>Figure 16<br>155<br>156                                     |
|                         | 10                                      | Define efficiency of an engine as the ratio of useful work to the amount of heat energy (e = W/QH ×<br>Calculate the efficiency of an internal combustion engine                                                                                                                                                                    | Student Textbook<br>157                                                         |
|                         | 11                                      | State and explain The First Law of Thermodynamics                                                                                                                                                                                                                                                                                   | Student Textbook<br>155                                                         |
|                         | 12                                      | Calculate the change in entropy for a given system                                                                                                                                                                                                                                                                                  | PHYSICS Challenge<br>159                                                        |
|                         | 13                                      | which it is applied (P = F/A).<br>Recall that pressure is a scalar quantity measured in pascal (Pa) or N/m2.                                                                                                                                                                                                                        | PRACTICE Problems 2<br>167<br>169                                               |
|                         | 14                                      | State Boyle's laws as PV = constant or P1V1 = P2V2, at constant temperature.<br>State Charles's law as V/T = constant or (V1/T1 ) = (V2/T2), at constant pressure<br>State and apply the combined gas law as (PV/T) = constant or (P1V1/T1) = (P2V2/T2)                                                                             | Student Textbook<br>169<br>170                                                  |
|                         | 15                                      | Describe the property of thermal expansion of matter, specifying some of its applications.                                                                                                                                                                                                                                          | Student Textbook<br>172                                                         |
|                         | 16                                      | Apply the equation Q = mCΔT to solve relevant problems<br>Explain how thermometers use thermal equilibrium to measure temperature<br>Define temperature as the measure of average kinetic energy of the particles in an object                                                                                                      | EXAMPLE Problem 2<br>PRACTICE Problems 4,6 ,7<br>Student Textbook<br>149<br>142 |
|                         | 17                                      | Explain the experimental heating curve for water when thermal energy is added at a constant rate                                                                                                                                                                                                                                    | PRACTICE Problems 21<br>154                                                     |
|                         | 18                                      | which it is applied (P = F/A).                                                                                                                                                                                                                                                                                                      | EXAMPLE Problem 1<br>168                                                        |
|                         | 19                                      | Solve problems on gases by applying the different gas laws.<br>State and apply the ideal gas law (PV = nRT)                                                                                                                                                                                                                         | EXAMPLE Problem 2<br>171                                                        |
| الأسئلة المقالية - FRQ  |                                         |                                                                                                                                                                                                                                                                                                                                     |                                                                                 |
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|                         | *                                       | Questions might appear in a different order in the actual exam, or on the exam paper                                                                                                                                                                                                                                                |                                                                                 |
|                         | *                                       | لقد تظهر الأسئلة بترتيب مختلف في الامتحان الفعلي، أو على ورقة الامتحان                                                                                                                                                                                                                                                              |                                                                                 |
|                         |                                         |                                                                                                                                                                                                                                                                                                                                     |                                                                                 |
|                         | **                                      | As it appears in the textbook, LMS, and (Main_IP).                                                                                                                                                                                                                                                                                  |                                                                                 |
|                         | **                                      | كما وردت في كتاب الطالب وLMS والخطة الفصلية .                                                                                                                                                                                                                                                                                       |                                                                                 |