1 Study this diagram of the lifting and rotary systems of an oil rig. Circle T (true) or F (false) next to the statements.

1 The crown block is in the centre of the derrick. (T/F)
2 The travelling block is below the crown block. (T/F)
3 The swivel is between the kelly and the turntable. (T/F)
4 The cable moves diagonally downwards from the winch. (T/F)
5 The hook on the travelling block does not rotate. (T/F)
6 The turntable moves vertically downwards. (T/F)

2 Read the description of the rotary system of an oil rig and match parts with functions in the table below.

The lifting and rotary systems of an oil rig

**Lifting system.** When the winch rotates, it pulls the cable. The two blocks have lots of pulleys. The cable passes round the pulleys in the two blocks. The crown block does not move up or down. It is fixed to the top of the derrick. The travelling block moves vertically up and down. When the winch turns, it raises the travelling block up towards the crown block.

**Rotary system.** The swivel hangs from a hook on the travelling block. The kelly (a long square pipe) is fixed to the swivel at one end. The lower end of the kelly is attached to the drill pipe. It goes through the turntable. The square shape of the kelly slides exactly into the square hole of the turntable. When the engines are on, the turntable rotates. The turntable turns the kelly and the kelly turns the drill pipe. When the drill pipe rotates, the drill bit rotates and cuts the rock.

<table>
<thead>
<tr>
<th>Part</th>
<th>Function</th>
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<tbody>
<tr>
<td>1 The winch</td>
<td>a) turns the kelly.</td>
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<tr>
<td>2 The kelly</td>
<td>b) raises and lowers the rotary equipment.</td>
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<tr>
<td>3 The turntable</td>
<td>c) supports the swivel and the kelly.</td>
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<tr>
<td>4 The engines</td>
<td>d) pulls the cable.</td>
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<tr>
<td>5 The hook</td>
<td>e) turns the drill pipe.</td>
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<tr>
<td>6 The cable</td>
<td>f) drive the turntable.</td>
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</tbody>
</table>
3 Complete the statements with *can* or *can't*, according to the text in 2 and the diagram.

1. The top half of the swivel _________ rotate, but the bottom half _________.
2. The hook _________ move up and down, but it _________ rotate.
3. The crown block _________ move up and down but the travelling block _________.
4. The turntable _________ rotate but it _________ move up and down.

4 Join up parts of the table to make six meaningful instructions. Then write out the full instructions in your exercise book.

1. Slide the handle from the hook.
2. Lower the drill pipe out of the well hole.
3. Turn the kelly into the well hole.
4. Attach the drill pipe of the winch.
5. Raise the swivel to the kelly.
6. Hang the drill pipe into the turntable.

5 Match the first part of each sentence with the second part. Underline the correct verb forms. Then write out the full sentences.

1. You (switches on/switch on) the winch, and ________
2. When the driller (switches on/switch on) the turntable, ________
3. (Turns off/Turn off) the winch, and ________
4. When the drillers (turns off/turn off) the turntable, ________
   A. the cable (doesn’t/don’t) move.
   B. the kelly (rotates/rotate).
   C. the turntable and the kelly (doesn’t/don’t) rotate.
   D. the cable (move/moves) up and down.

6 Complete this description of the lifting and rotary systems. Choose the correct verb and use the correct verb form.

The swivel.

The swivel is an important piece of equipment. It connects the lifting system to the rotary system. The swivel (1) _________ (have/not have) two parts. The top part is fixed. It can’t (2) _________ (move down/rotate), but the bottom half can rotate freely. When the turntable and the kelly rotate, the bottom half of the swivel turns, but the top half (3) _________ (do/not do) rotate. This protects the travelling block and the cable.

How to lower the drill pipe into the well.

The winch turns, and (4) _________ (pull/release) the cable. The cable (5) _________ (rotate/move) diagonally upwards towards the crown block. Then the cable goes round the pulleys of the crown block and the travelling block.

The travelling block moves vertically downwards, and (6) _________ (raise/lower) the kelly into the hole in the turntable. When the diesel engines (7) _________ (start/stop), the turntable and the kelly (8) _________ (move up/rotate) together.
Word list

7 Write the meanings of these words and phrases in your own language.

NOUNS

block

cable

derrick

engine

equipment

hook

kelly

pulley

swivel

system

turntable

winch

NOUN PHRASES

crown block

diesel engine

drill bit

drill collar

drill pipe

lifting system

rotary system

travelling block