

## **TESTERS AND METERS** (тестеры и измерительные приборы)

### **Vocabulary**

| Word                                  | Translation                        |
|---------------------------------------|------------------------------------|
| providing                             | обеспечение                        |
| quality                               | качественный                       |
| offer                                 | предлагать                         |
| high-quality                          | высококачественный                 |
| multimeter                            | мультиметр                         |
| measure                               | измерять                           |
| voltage                               | напряжение                         |
| resistance                            | сопротивление                      |
| current                               | электрический ток                  |
| inductance meter                      | индуктивно-измерительные прибор    |
| capacitance meter                     | измеритель ёмкости                 |
| analog meter                          | аналоговый измерительный прибор    |
| digital meter                         | цифровой измерительный прибор      |
| in stock                              | в наличии                          |
| scope, oscilloscope                   | осциллограф                        |
| provide                               | обеспечивать                       |
| accuracy                              | точность                           |
| spectrum analyzers                    | спектральные анализаторы           |
| logic analyzer                        | логический анализатор              |
| we carry                              | у нас в наличии                    |
| transistor tester                     | транзисторный тестер               |
| frequency counter                     | частотомер                         |
| signal generator                      | генератор сигналов                 |
| employee                              | работник                           |
| isolation transformer                 | разделительный трансформатор       |
| advantage                             | преимущество                       |
| buy one get one half off<br>promotion | купи один - получи половину скидки |
| check                                 | проверять                          |
| inventory                             | каталог                            |
| track                                 | отслеживать                        |
| power input                           | входная мощность                   |
| needle                                | стрелка                            |
| coil                                  | катушка                            |
| to smooth                             | выравнивать                        |
| availability                          | годность, пригодность              |

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## **Glossary**

A **multimeter** is a piece of equipment that can measure voltage, resistance, and current.

A **capacitance meter** is a device used to smooth power output.

An **oscilloscope** is a device that creates a graph showing voltage against time.

A **spectrum analyzer** is a kind of scope that shows voltage against frequency.

A **transistor tester** is a device that measures how well transistors work.

A **frequency counter** is a device that counts a signal's frequency.

A **signal generator** is a device that tests whether electrical equipment is working, by sending a test signal into the equipment.

## **Exercise 1: Listen the text, read and translate it**

### **Meters and Testers**

QMT Readings Providing Quality Meters and Testers for twenty years.

QMT offers high-quality meters. Our best-selling multimeter can measure voltage, resistance, and current! We also sell inductance meters, capacitance meters, and have both digital and analog meters in stock.

Our new oscilloscope provides increased levels of accuracy. QMT listens to our clients. As a result, we recently added spectrum analyzers and logic analyzers to our stock.

We carry transistor testers, frequency counters, and the ever-popular signal generators.

Keep your employees and equipment safe with an isolation transformer. Take advantage of our buy one get one half off promotion.

Our sales representatives are waiting for your calls.

## **Exercise 2: Questions about the text:**

1. What is the name of the company?
2. How long has QMT been providing meters and testers?
3. What can QMT's best-selling multimeter measure?
4. What two types of meters does QMT sell?
5. What does QMT's new oscilloscope provide?
6. Why did QMT add spectrum analyzers and logic analyzers to their stock?
7. What promotion is QMT offering?

## **Exercise 3: True/False**

1. QMT has been in business for ten years.

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2. QMT's multimeter can measure voltage, resistance, and current.
3. QMT only sells digital meters.
4. The new oscilloscope provides increased levels of accuracy.
5. QMT added spectrum analyzers because clients requested them.
6. QMT does not sell signal generators.
7. An isolation transformer keeps employees and equipment safe.
8. QMT has a buy one get one free promotion.

**Exercise 4: Match the product with its function:**

| Product                  | Function                                        |
|--------------------------|-------------------------------------------------|
| 1. Multimeter            | A. Tests how well transistors work              |
| 2. Oscilloscope          | B. Creates a graph showing voltage against time |
| 3. Spectrum analyzer     | C. Counts a signal's frequency                  |
| 4. Logic analyzer        | D. Shows voltage against frequency              |
| 5. Transistor tester     | E. Displays signals in a digital circuit        |
| 6. Frequency counter     | F. Measures voltage, resistance, and current    |
| 7. Signal generator      | G. Sends a test signal into equipment           |
| 8. Isolation transformer | H. Keeps power input and output apart           |

**Exercise 5: Word Bank Fill-in**

*Word bank: logic, isolation, buy, resistance, signal, twenty, digital, accuracy*

1. QMT has been providing quality meters for \_\_\_\_\_ years.
2. The multimeter measures voltage, \_\_\_\_\_, and current.
3. QMT sells both analog and \_\_\_\_\_ meters.
4. The oscilloscope provides increased levels of \_\_\_\_\_.
5. QMT added spectrum and \_\_\_\_\_ analyzers.
6. QMT sells transistor testers, frequency counters, and \_\_\_\_\_ generators.
7. Keep equipment safe with an \_\_\_\_\_ transformer.
8. Take advantage of our \_\_\_\_\_ one get one half off promotion.

**Exercise 6: Choose the Correct Word**

1. QMT Readings has been providing meters and testers for (five / ten / twenty / fifty) years.
2. QMT offers (low-quality / high-quality / used / free) meters.
3. The best-selling multimeter can measure voltage, resistance, and (color / current / weight / sound).

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4. QMT has both digital and (analog / broken / old / free) meters in stock.
5. The new oscilloscope provides increased levels of (color / weight / accuracy / sound).
6. QMT recently added spectrum analyzers and (color / logic / sound / weight) analyzers to their stock.
7. QMT carries transistor testers, frequency counters, and (signal / color / weight / sound) generators.
8. An isolation transformer helps keep employees and equipment (busy / safe / loud / cold).

**Exercise 7: Categorize the products into the correct groups:**

*Products: oscilloscope, signal generator, capacitance meter, isolation transformer, multimeter, logic analyzer, spectrum analyzer, frequency counter, inductance meter, transistor tester*

| Category          | Products |
|-------------------|----------|
| Measuring devices | _____    |
| Analyzing devices | _____    |
| Testing devices   | _____    |
| Safety devices    | _____    |

**Exercise 8: Complete the sales pitch with product names:**

"At QMT, we have everything you need for your electronics lab! Our best-selling \_\_\_\_\_ (1) measures voltage, resistance, and current. For visualizing signals, we offer the \_\_\_\_\_ (2) and \_\_\_\_\_ (3). Need to test digital circuits? Try our \_\_\_\_\_ (4). We also carry \_\_\_\_\_ (5) for testing transistors and \_\_\_\_\_ (6) for counting frequency. Our \_\_\_\_\_ (7) sends test signals, and our \_\_\_\_\_ (8) keeps your equipment safe. Don't forget our \_\_\_\_\_ (9) for coils and \_\_\_\_\_ (10) for power smoothing!"

**Exercise 9. Guess the Term**

1. I measure voltage, resistance, and current.
2. I provide increased levels of accuracy.
3. I analyze frequency spectrum.
4. I analyze logic signals.
5. I generate signals.
6. I keep employees and equipment safe.
7. I test transistors.

**Exercise 10: Listen to the dialogue and fill in the missing words**

**Alex:** Hi, Emma! I need to buy some new test \_\_\_\_\_ (1) for my workshop. Have you heard of QMT?

**Emma:** Hi, Alex! Yes, I have. QMT has been providing \_\_\_\_\_ (2) meters and testers for \_\_\_\_\_ (3) years. They're very reliable.

**Alex:** That sounds great! What kind of products do they offer?

**Emma:** They have a wide range. Their best-selling product is a \_\_\_\_\_ (4). It can measure \_\_\_\_\_ (5), resistance, and current.

**Alex:** That's exactly what I need! Do they have other meters?

**Emma:** Yes, they also sell \_\_\_\_\_ (6) meters and capacitance meters. They have both digital and \_\_\_\_\_ (7) meters in stock.

**Alex:** I also need something to visualize signals. What do they have for that?

**Emma:** They have a new \_\_\_\_\_ (8) that provides increased levels of \_\_\_\_\_ (9). It's really good for detailed work.

**Alex:** What about analyzing signals?

**Emma:** QMT recently added \_\_\_\_\_ (10) analyzers and logic analyzers to their stock. They listen to their \_\_\_\_\_ (11)' needs.

**Alex:** That's impressive! Do they have anything for testing transistors?

**Emma:** Yes, they carry \_\_\_\_\_ (12) testers, frequency counters, and signal \_\_\_\_\_ (13) too.

**Alex:** I also need to keep my equipment safe. Any suggestions?

**Emma:** They have \_\_\_\_\_ (14) transformers. They keep power input and output apart, which protects both employees and equipment.

**Alex:** Are there any special offers?

**Emma:** Yes! They have a \_\_\_\_\_ (15) one get one half off promotion right now. It's a great deal.

**Alex:** That sounds perfect! How do I order?

**Emma:** Just call their \_\_\_\_\_ (16) representatives. They're waiting for calls and are very helpful.

**Alex:** Thanks, Emma! I'll call them today.

**Emma:** You're welcome! I'm sure you'll find everything you need at QMT.

**Exercise 11: True/False Questions about the Dialogue**

1. Alex needs to buy some new test equipment for his workshop.
2. Emma has never heard of QMT.
3. QMT has been providing meters and testers for ten years.
4. QMT's best-selling product is a multimeter.
5. A multimeter can measure voltage, resistance, and current.
6. QMT only sells analog meters.

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7. QMT has a new oscilloscope that provides increased levels of accuracy.
8. QMT added spectrum analyzers and logic analyzers because they listen to clients.
9. QMT does not sell transistor testers.
10. QMT sells frequency counters and signal generators.
11. An isolation transformer keeps power input and output apart.
12. QMT has a buy one get one free promotion.
13. Emma suggests calling QMT's sales representatives to order.
14. Alex decides not to call QMT.
15. Emma is sure Alex will find everything he needs at QMT.

**Exercise 12: Write your dialogue based on the provided templates.**

Template 1. Dialogue Between a Customer and a Sales Representative

Customer: Hello, I'm looking for a good multimeter. What can you offer?

Sales Rep: Our best-selling multimeter can measure voltage, resistance, and current.

Customer: Do you have digital meters?

Sales Rep: Yes, we have both digital and analog meters in stock.

Customer: What about oscilloscopes?

Sales Rep: Our new oscilloscope provides increased levels of accuracy.

Customer: I also need something for signal testing.

Sales Rep: We carry signal generators, frequency counters, and transistor testers.

Customer: Is there anything for safety?

Sales Rep: Yes, an isolation transformer helps keep employees and equipment safe.

Customer: Do you have any promotions?

Sales Rep: Yes! Take advantage of our buy one get one half off promotion.

Customer: Great! I'll take two.

Sales Rep: Excellent choice! Our sales representatives are waiting for your calls.

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Template 2. Dialogue Between Two Technicians (Max + Lily)

Max: Lily, we need to upgrade our lab equipment. Any recommendations?

Lily: Definitely. Start with a good multimeter. It can measure voltage, resistance, and current.

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Max: We already have one, but it's old. What about accuracy?

Lily: Then you should get a new oscilloscope. The new models provide increased levels of accuracy.

Max: Good idea. What about analyzers?

Lily: We recently added spectrum analyzers and logic analyzers to our stock. They're very useful.

Max: And for testing transistors?

Lily: You'll need a transistor tester. We also carry frequency counters and signal generators.

Max: What about safety?

Lily: Don't forget an isolation transformer. It keeps employees and equipment safe.

Max: Great. Where should we buy all this?

Lily: QMT Readings. They've been providing quality meters and testers for twenty years. And they have a buy one get one half off promotion!

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### Template 3. Interview (Journalist + QMT Manager)

Journalist: Can you tell me about your company?

Manager: Certainly. QMT Readings has been providing quality meters and testers for twenty years.

Journalist: What kind of meters do you offer?

Manager: We offer high-quality meters. Our best-selling multimeter can measure voltage, resistance, and current.

Journalist: Do you have digital meters?

Manager: Yes, we have both digital and analog meters in stock. We also sell inductance meters and capacitance meters.

Journalist: What about oscilloscopes?

Manager: Our new oscilloscope provides increased levels of accuracy.

Journalist: Have you added any new products recently?

Manager: Yes. We recently added spectrum analyzers and logic analyzers to our stock.

Journalist: What else do you carry?

Manager: We carry transistor testers, frequency counters, and the ever-popular signal generators. We also sell isolation transformers for safety.

Journalist: Is there anything special for your customers?

Manager: Absolutely! Take advantage of our buy one get one half off promotion. Our sales representatives are waiting for your calls.

### Useful Phrases for Dialogue Templates

| English                            | Russian                   |
|------------------------------------|---------------------------|
| I'm looking for a good multimeter. | Я ищу хороший мультиметр. |

|                                                                           |                                                                                           |
|---------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| What can you offer?                                                       | Что вы можете предложить?                                                                 |
| Our best-selling multimeter can measure voltage, resistance, and current. | Наш самый продаваемый мультиметр может измерять напряжение, сопротивление и ток.          |
| Do you have digital meters?                                               | У вас есть цифровые приборы?                                                              |
| We have both digital and analog meters in stock.                          | У нас есть и цифровые, и аналоговые приборы.                                              |
| What about oscilloscopes?                                                 | А что насчёт осциллографов?                                                               |
| Our new oscilloscope provides increased levels of accuracy.               | Наш новый осциллограф обеспечивает повышенную точность.                                   |
| I also need something for signal testing.                                 | Мне также нужно что-то для тестирования сигналов.                                         |
| We carry signal generators, frequency counters, and transistor testers.   | Мы продаём генераторы сигналов, частотомеры и тестеры транзисторов.                       |
| Is there anything for safety?                                             | Есть что-нибудь для безопасности?                                                         |
| An isolation transformer helps keep employees and equipment safe.         | Разделительный трансформатор помогает обеспечить безопасность сотрудников и оборудования. |
| Do you have any promotions?                                               | У вас есть акции?                                                                         |
| Take advantage of our buy one get one half off promotion.                 | Воспользуйтесь нашей акцией «купи один — получи второй за полцены».                       |
| I'll take two.                                                            | Я возьму два.                                                                             |
| Excellent choice!                                                         | Отличный выбор!                                                                           |
| Our sales representatives are waiting for your calls.                     | Наши торговые представители ждут ваших звонков.                                           |
| We need to upgrade our lab equipment.                                     | Нам нужно обновить лабораторное оборудование.                                             |
| Any recommendations?                                                      | Есть рекомендации?                                                                        |
| Start with a good multimeter.                                             | Начните с хорошего мультиметра.                                                           |
| We already have one, but it's old.                                        | У нас уже есть один, но он старый.                                                        |
| What about accuracy?                                                      | А что насчёт точности?                                                                    |

|                                                                     |                                                                   |
|---------------------------------------------------------------------|-------------------------------------------------------------------|
| Then you should get a new oscilloscope.                             | Тогда вам стоит приобрести новый осциллограф.                     |
| What about analyzers?                                               | А что насчёт анализаторов?                                        |
| We recently added spectrum analyzers and logic analyzers.           | Мы недавно добавили анализаторы спектра и логические анализаторы. |
| And for testing transistors?                                        | А для тестирования транзисторов?                                  |
| You'll need a transistor tester.                                    | Вам понадобится тестер транзисторов.                              |
| Don't forget an isolation transformer.                              | Не забудьте про разделительный трансформатор.                     |
| Where should we buy all this?                                       | Где нам всё это купить?                                           |
| They've been providing quality meters and testers for twenty years. | Они поставляют качественные приборы уже двадцать лет.             |
| Can you tell me about your company?                                 | Можете рассказать о вашей компании?                               |
| What kind of meters do you offer?                                   | Какие приборы вы предлагаете?                                     |
| We offer high-quality meters.                                       | Мы предлагаем высококачественные приборы.                         |
| What about oscilloscopes?                                           | А что насчёт осциллографов?                                       |
| Have you added any new products recently?                           | Вы недавно добавили новые товары?                                 |
| What else do you carry?                                             | Что ещё вы продаёте?                                              |
| Is there anything special for your customers?                       | Есть что-то особенное для ваших клиентов?                         |

### Exercise 13: Instruction: How to Repair Equipment

*Word Bank: soldering iron, signal generator, Identify, multimeter, alcohol, desolder, reassemble, logic analyzer, test, disconnect, oscilloscope, transistor tester, solder, desoldering iron, frequency counter*

1. First, \_\_\_\_\_ the equipment from the power source.
2. \_\_\_\_\_ the problem by testing the equipment.
3. Use a \_\_\_\_\_ to measure voltage, resistance, and current.
4. If the problem is not found, use an \_\_\_\_\_ to see voltage over time.
5. Use a \_\_\_\_\_ to check signal frequency.

6. Use a \_\_\_\_\_ to test if transistors are working properly.
7. If you find faulty components, \_\_\_\_\_ them carefully.
8. Use a \_\_\_\_\_ to remove old solder.
9. Clean the area with \_\_\_\_\_ to remove dirt and grease.
10. Apply new \_\_\_\_\_ to the joint.
11. Use a \_\_\_\_\_ to heat the solder and join components.
12. After repair, \_\_\_\_\_ the equipment to make sure it works.
13. Use a \_\_\_\_\_ to send a test signal into the equipment.
14. Use a \_\_\_\_\_ to check signals in a digital circuit.
15. If everything works, \_\_\_\_\_ the equipment and test it again.

### **Exercise 14: Report: Equipment Repair Work**

*Word Bank: multimeter, resistance, voltage, capacitor, resistor, solder, continuity, fault, replacement, manual, safety, test*

#### **Introduction**

This report describes the repair of an electronic device. The repair was done following the (1) \_\_\_\_\_ rules.

#### **Diagnosis**

First, I used a (2) \_\_\_\_\_ to measure the (3) \_\_\_\_\_ and (4) \_\_\_\_\_ in the circuit. I checked for (5) \_\_\_\_\_ to make sure the circuit was not broken.

#### **Finding the Fault**

I found a burnt (6) \_\_\_\_\_ on the main board. I also found a damaged (7) \_\_\_\_\_. Both components needed (8) \_\_\_\_\_.

#### **Repair**

I removed the damaged parts using a soldering iron. Then I installed new components and used (9) \_\_\_\_\_ to fix them in place.

#### **Testing**

After the repair, I used the multimeter again to (10) \_\_\_\_\_ the circuit. I checked the voltage and resistance to make sure everything worked correctly. I also looked up the call numbers in the service (11) \_\_\_\_\_.

#### **Conclusion**

The repair was successful. The (12) \_\_\_\_\_ was fixed, and the device worked properly again. Following the correct procedure and using the right tools are very important for a successful repair.