

# 272-R02

## BCTHS MECHATRONICS TECHNOLOGY

NAME: \_\_\_\_\_

START DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

COMPLETION DATE: \_\_\_\_/\_\_\_\_/\_\_\_\_

**TASK:** R02 Transmission Lines and Antennas

**PERFORMANCE OBJECTIVE:** Given an antenna, cable, and necessary hardware, the student Will install unit according to the guidelines in the video to 100% accuracy

**ENABLING OBJECTIVE:** Complete learning guide R01

**TOOLS REQUIRED:** Antenna, coax, connectors, videos, and basic hand tools

**SAFETY FACTORS:** *Complete Q01-Q02 and observe all school/classroom safety rules at all times*

### ACADEMIC ANCHORS:

*M11.A.1.1.2 Express numbers using scientific notation*

*M11.A.2.1.1 Solve problems operations with rational numbers using rates and percentages*

*R11.A.1.3.5 Demonstrate after reading understanding of non-fiction text*

*R11.A.2.1.2 Identify meaning of content specific words used in text*

### CAREER & WORK ANCHORS:

*13.2.11.E Demonstrate essential workplace skills.*

### PERFORMANCE CHECKLIST:

STUDENT CHECK	TASK TO BE COMPLETED	TEACHER SIGN OFF
_____	1. Identify academic anchors and complete learning guide AA01	_____
_____	2. View Information Sheets	_____
_____	3. View antenna video	_____
_____	4. Complete Performance Sheets	_____
_____	5. View ladder safety video	_____
_____	6. Install antenna and have instructor check installation	_____

MASTERY      SATISFACTORY      FAMILIARIZATION      INSTRUCTED/CANNOT PERFORM

BUCKS COUNTY TECHNICAL SCHOOL – June 17, 2021

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*INSTRUCTOR'S SIGNATURE*

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## **INFORMATION SHEET**

### **POPULAR COAXIAL CABLES AND THEIR USES**

TYPE	DIAMETER	IMPEDANCE	TYPICAL USE
RG-59/U	.242 in.	75 Ohms.	Video, CATV, TV & FM antennas and computer networking
RG-6/U	.275 in.	75 Ohms.	Same as above but lower loss factor
RG-11/U	.41 in.	75 Ohms.	Same as above but lower loss factor
RG-58/U	.242 in.	50 Ohms.	Communications, two way radio, computer networking
RG-8/U	.41 in.	50 Ohms.	Same as above but lower loss factor

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## PERFORMANCE SHEET

ANSWER THE FOLLOWING QUESTIONS.

1. Where should a signal amplifier be placed in an antenna system?

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2. What is a drip loop?

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3. List five different antenna mounts.

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4. How much loss does RG59 coax have for every 100 feet?

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5. What is the minimum gauge ground wire that can be used in an antenna installation?

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## **PERFORMANCE SHEET**

6. What does a balun do?

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7. List two types of directional antennas?

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8. What is the impedance of television type coaxial cables?

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9. What is the impedance of communication type coaxial cables?

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10. Why do thinner coaxial cables have more loss than thicker cables?

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## **PERFORMANCE SHEET**

11. What is the insulator in a coaxial cable called?

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12. What is the braided wire covering on the insulator of coaxial cable called?

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13. What type of connectors are used on TV type coaxial cables?

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14. What is cable leakage?

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15. What is the lowest loss transmission line used for TV?

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## **PERFORMANCE SHEET**

16. What are the disadvantages of using the above transmission line?

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17. What are the advantages of using coaxial cable?

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18. What are the disadvantages of using coaxial cable?

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19. What type of antenna should be used to eliminate ghosting of TV broadcasts?

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20. What is the advantage of a vertical type antenna?

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### PERFORMANCE SHEET

Get an antenna, mast, mount, coax, connectors, grounding equipment, and tools from your Instructor. Following all installation and safety guidelines shown in the videos, install the antenna. The installation should be functional, safe, properly grounded, give sufficient signal strength, and be oriented in the proper direction. After the installation is complete, have your Instructor check it for proper operation.

**REMINDER:** Follow all safety guidelines outlined in the videos. You will be working with ladders and on a roof – there is no room for errors.

#### GRADING RUBRIC

	Instructed/Cannot 0 points	Familiarization 1 point	Satisfactory 2 points	Mastery 3 points
Safety	Student rarely follows industry standard safety rules	Student needs to be frequently reminded to follow industry standard safety rules	Follows all industry standard safety rules, but required one reminder.	Student always follows all industry standard safety rules
Task	Student is unable to complete task	Student requires frequent assistance to complete task, and/or is familiar with some parts of the task	Student requires very little assistance to complete task, or has only completed task once or twice, but completed it satisfactorily with little to no assistance	Student can perform task with no assistance and has completed the task many times with no errors.

Mastery = 6 points

Satisfactory = 4-5 points

Familiarization = 2-3 points

Instructed cannot perform = <2 points