

# CREATING QUIZ QUESTIONS TESTS ON THEORY OF ELECTRICAL ENGINEERING WITH QUIZCREATOR

*Simona Filipova-Petrakieva*

Theory of Electrical Engineering, Faculty of Automation  
Technical University of Sofia, 8, Kl. Ohridsku, blvd., 1000 Sofia, Bulgaria, Country,  
e-mail: petrakievas-te@tu-sofia.bg

**Abstract:** *Test form of examination is a regular way for assessing the acquired knowledge as a result of the teaching process of the students. To some extent it will take part in the final rate but to what exactly degree it depends on the studying subject. For example in Theory of Electrical Engineering the result from a quiz questions test should to join with 60 % in forming the final rate for the students, because the result from the exam have to contain points from others components as control tests during the tutorials, implementing the labs and self-solving course assessments. It determines of the physical nature of the studying discipline. In the paper are described in details the abilities and specifically features of the QuizCreator for creating different types quiz questions. It is suggested an example variants of test for discipline Theory of Electrical Engineering which includes all types of quiz questions defined in the software product.*

**Key words:** *quiz questions – true/false; multiple choice, multiple response; fill in the blank; matching; sequence; click map; word bank; short essay; blank page, Theory of Electrical Engineering*

## 1. INTRODUCTION

Nowadays the test form of examination is one of the most popular ways for examination the earning knowledge in the learning process of the students. It is in fact because it has a number of advantages as:

1. The global test can range over a large number of subjects in the studying discipline.
2. The answer of each question gives as a conclusion of detail acquainting with the respective considered problem which sometimes requires applying deductive rules and principles for making final decision.
3. Quiz question testing stimulate the human's thinking and eliminate the possibility of learning by head of the material or cheating from the students during the exam.
4. Test form of examination absolutely eliminates subjective factor (as a human's dialog) during the checking the students' knowledge.

Maybe one of the main disadvantages of the testing is the necessary of making different variant for each examined student and changing the variants every time. This will ensure maximally adequate final rate of the students' knowledge and it will eliminate (or decrease to minimum) the possibility for learning by head the answers of test questions or cheating during the exam.

When it creates the testing form of examination the types of quiz questions depends on the nature of studying discipline. For example usually it uses *short essay* questions if the exam is on the humanities as literature, history, psychology, geography and etc. [1]. If the tests are on math it is sufficient to construct quiz questions on types: *true/false; multiple choice; multiple response; fill in the blank; matching; sequence; click map; word bank* [2]. In case of the testing is on physics [3], chemistry [4], theory of electrical engineering [5] or other similar engineering discipline it is necessary to add *short essay* questions, when to describe the essence of the particular method or algorithm for analysis the specific considered problem. Always as an addition benefit of the test is using the *blank page* questions where on the blind page a student can explain on own the considered problem.

Taking in mind the specific character of the courses on Theory of Electrical Engineering the final rate of the students can be formed in the following way: 60 % of the points from quiz question test; 15 % - from the control tests during the tutorials; 15 % - from the self-solving course assessments during the semester and 10 % - from implementing the labs and generalizing the results in the protocols.

The final rate will be finalized as follows:

- 0 – 50 % - weak (2)
- 51 – 65 % - satisfactory (3)
- 66 – 80 % - good (4)
- 81 – 90 % - very good (5)
- 91 – 100 % - excellent (6)

This evaluation scheme has a high degree for adequacy of the final rate to the earning knowledge on the discipline, because the quiz question test takes parts there with 60 % which is sufficient for passing the exam.

The preset paper is organized as follows. It begins with introduction connected with giving an account of the advantages and disadvantages of test examinations based on quiz questions. In the second section are described specifically features of the software QuizCreator which uses for creating the quiz questions tests. The possible types of questions which can be generated by QuizCreator are written up in details in the next section 3. Next, all possibilities of QuizCreator for creating the quiz questions tests are illustrated on the test of the Theory of Electrical Engineering. The paper finished with conclusion remarks about advantages and disadvantages for generating quiz questions test in the discipline Theory of Electrical Engineering.

## 2. SPECIFIC FEATURES OF QUIZCREATOR

Software QuizCreator 4.5.1 of Wondershare is intended for creating quiz questions tests. It can generate quizzes in Word or Excel as well as to import data from Word and Excel (Fig. 1). The tests can be created either with this product as an .exe files or uploaded in Internet and solved online.

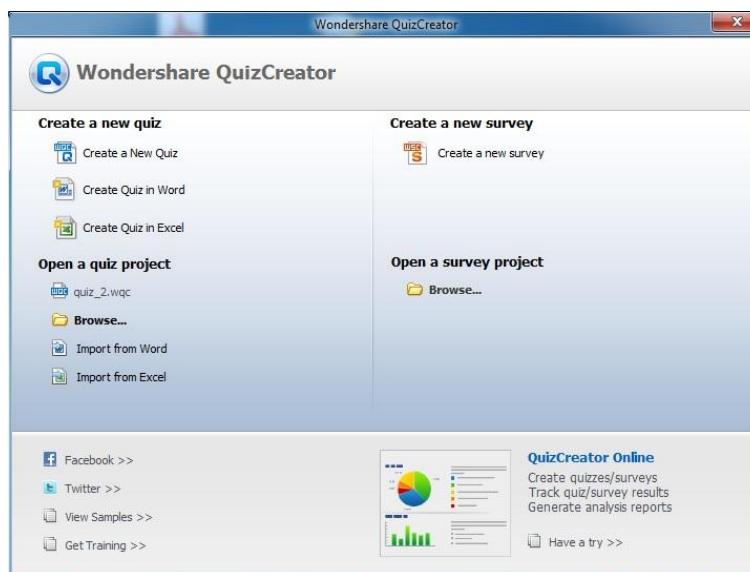


Fig. 1. Initial window of QuizCreator

Main functions of the software for generating the quiz questions are shown on the menu from Fig. 2a. They are following:

- Construct a new question – text + right answer(s).
- Set up the properties of the creating quiz question.
- Choice the desired template for the background of the question.
- Preview either the question or the entire test.
- Publish the ready test in .wqc or .exe file.
- Manage the results from full test – online or by e-mail if the test is upload in Internet.

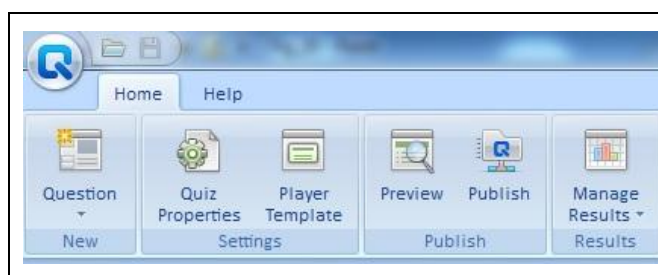


Fig. 2a. Workspace of QuizCreator

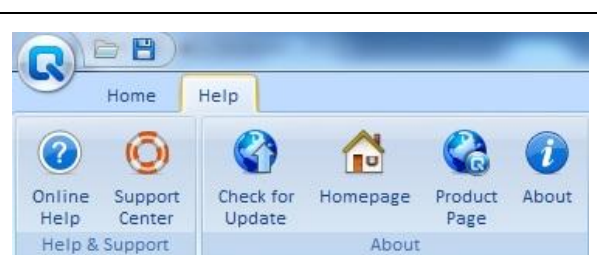


Fig. 2b. Help of QuizCreator

Help functions of QuizCreator are shown on the menu of Fig. 2b, where user can get online help of the product; update it to new versions; product page and information about the current version and the company - producer the software.

### 3. TYPES OF QUESTIONS GENERATING BY QUIZCREATOR

QuizCreator is testing tool for defining the different types of quiz questions (see Fig. 3). Each type gives an opportunity of checking the earned knowledge in different scientific areas. Also it enables to evaluate the same matter from different points of view.

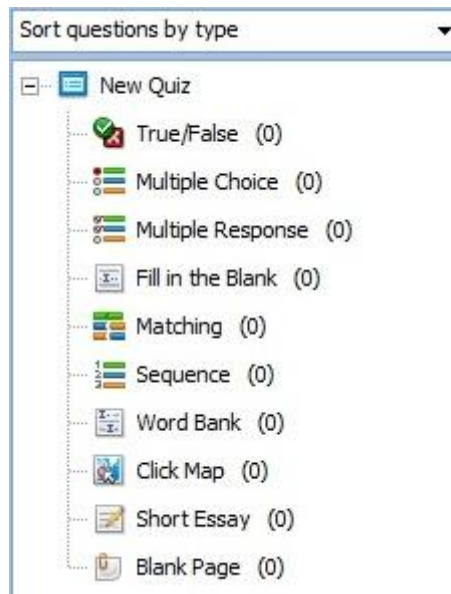


Fig. 3. Workspace of QuizCreator

- *True/False* question – the result is only “True” or “False”.
- *Multiple Choice* question – in this situation it has to choose only one right answer from given multiple choices.
- *Multiple Response* question – here it can choose more than one right answer from given multiple choices.
- *Fill in the Blank* question – in this question it has to fill a missing word or phrase in the respective sentence.
- *Matching* question – the user has to match the phrases from the left side with the associated phrases from the right side.
- *Sequence* question – the separately phrases have to order in right sentence.
- *Word Bank* question – previously defined word or phrase has to fill on the right places in the respective sentences so that the latter to get the semantic meaning.
- *Click Map* question – in this situation it has to click the right parts on preliminary defined map.
- *Short essay* question – the answer of this question has to be presented as essay. This type of questions uses when it is necessary to give the definitions of some base quantities – constants or variables.
- *Blank Page* question – it is unrestricted form for presentation of the learning on the respective area, where the user can expose either shorter or longer (of his/her own choice) his earned knowledge.

#### 4. ILLUSTRATIVE EXAMPLE OF QUIZ QUESTIONS TEST ON THEORY OF ELECTRICAL ENGINEERING

Theory of Electrical Engineering is a fundamental discipline from the bachelor's course of the students. The studied matter is the closest to the physics because on one side it has theoretical bases but the other – they confirms of the experiments. Then in this case the theory and the practice go hand-in-hand. When creates test on this discipline it can be applied almost all possible types of questions in QuizCreator - *True/False*, *Multiple Choice*, *Multiple Response*, *Short essay*, *Fill in the Blank*, *Matching*, *Sequence* and *Word Bank*. *Click Map* question is not appropriate in this situation. *Blank Page* can be used as a question (out of the test), where the students will have to describe in details the main steps of some algorithm for analysis of the electric circuit for example. It will be taken with 25 % from the total points forming the final rate (which will be maximum 100 %). An illustrative example of quiz questions test on Theory of Electrical Engineering is following:

ID	Type	Question	Feedback	Group	Points	Media
1	True/False	The definition of the Ohm's law is: "The voltage across the conducting material is undirectly proportional to the current flowing through it."	By Question	Group1	5	
2	Fill in the Blank	The definition of Kirchhoff's Current Law is: "The ... of the currents entering any node in the studied circuit is zero."	By Question	Group1	5	
3	Word Bank	Passive elements - (1) - (2) the energy, but active elements - (3) - (4) energy.	By Question	Group1	5	
4	Multiple Response	Which elements are reactive and uncontrolled?	By Question	Group1	5	
5	Multiple Choice	Which pair of elements consume energy?	By Question	Group1	5	
6	Multiple Choice	What is the draw of voltage source by European standart?	By Question	Group1	5	
7	Multiple Choice	What is the formulae describing Kirchhoff's Current Law?	By Question	Group1	5	
8	Matching	Which definition is match with the respective formulae of the each considered law?	By Question	Group1	10	
9	Sequence	What is the correct order of the phrases in the sentence?	By Question	Group1	10	
10	Short Essay	What is the sence of the electric current?	None	Group1	20	

Quiz title: TEST 2    Questions count: 11    Passing rate: 80%    Total points: 75pts

Fig. 4. Quiz questions test on Theory of Electrical Engineering

First seven types of questions are weighted with 5 points because they are easier for solving than the next questions from the test. *Matching* and *Sequence* questions give 10 points because it requires more efforts for answering. Last question is the most difficult because it is defined as an essay where have to reproduce the definition of the one of the base quantity in Physics and Theoretical Electrical Engineering – electric current. Of course this question gives the most points of the test.

## 5. CONCLUSION

The suggested quiz questions test on Theory of Electrical Engineering illustrates the applicability of this form of examination the students of this discipline. But the results this test is not enough for getting the maximum final rate. Maximum rate from the test will guarantee passing the exam (but unfortunately with minimum rate). The students can get the maximum rate if they have the maximum points on the other components of the exam as control tests during the tutorials (15 %), self-solving course assessments during the semester (15 %) and implementing the labs and generalizing the results in the protocols (10 %). So the excellent presentation on the quiz question test is a sufficient condition for passing the exam but for more ambitious students the final rate is not appropriate and they have to make their control tests on tutorial, self-preparing course assessments and labs very precise according to get higher final rate of the exam.

## References

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*Reviewer: Assoc. Prof. PhD S. Guninski*