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| Hibernia College Planning Form |
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**Session Planning Form**

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| Tutor name: | Kevin O’Brien | | | |
| Delivery date: |  | | | |
| Module title:   |  | | --- | |  | | Mathematics for Computing | | | |
| Session title: | Sets and Binary Operations | | **Session no.** | 2 |
| Prepare | | | | |
| Session study content: | Chapter 2 | | | |
| Essential readings: | This exercise requires a full understanding of material covered in “Sets and Binary Operations” (Chapter 2 of Book 1) | | | |
| Study aims and learning outcomes: | The quiz/knowledge check questions should focus on determining how well the students succeeded in achieving the study aims and learning outcomes. | | | |
| In this part of the session, students will study the relevant chapter(s) in the University of London study guide and read the essential readings for the chapter(s). When they have completed this, they will complete the end-of-session quiz to see how well they know the session content.  If there are any further readings, resources or web sites that you feel would be useful to students for studying this session, please add them in the next row.  None required – demonstration of methods to take place at on-site tutorials. | | | | |
| Additional resources | None |  | | |
| Test yourself | Provide multiple-choice questions that test students on the core session content.  Fill in the quiz template at the end of this document with questions and constructive feedback. | | | |
| Evaluate | | | | |
| In this part of the session, students will engage with tasks and activities that will enable them to evaluate and analyse the session content they have studied.  When developing tasks and activities, think about how you intend for the student to achieve each one – this may be through discussing concepts on a forum, contributing to a wiki , conducting some online research, analysing a case study, studying a video, etc.  Discuss your ideas with the Knowledge Officer who will know the full range of options available and advise on which is most appropriate.  Note: You do not need to provide a task for each of the headings below. The task that you provide will depend on the session content and the workload for the student in that session. Select the most appropriate task(s) based on the session content. | | | | |
| Discuss | ~~Provide a question based on the session content that will generate a discussion on the tutor-moderated forum.~~ | | | |
| Solve | Design a problem-solving exercise or worksheet based on the session content that the students will complete. | | | |
| Research | ~~Ask the student to conduct online research into important areas of the session content such as useful examples or further explanation of the content. The findings could then be shared on a forum/wiki/blog.~~ | | | |
| Assess | | | | |
| Note: The activities in this part of the session will be linked to the synchronous online tutorial and the onsite days. The activities for each session will depend on the scheduling of the tutorials and onsites in the module calendar. These activities will be completed over a number of sessions.  Ideally, the activities in this part of the session should link together and be developed over a number of sessions. | | | | |
| Submit | Prepare an activity/task (for example, answering exam questions) for the students and ask them to submit their responses to the tutor prior to an online tutorial or onsite – this submission could then form the basis of the tutorial/onsite discussion.  The activity/task should be based on the content that they have covered in the sessions prior to the online tutorial or onsite. | | | |
| ***Students attempt a worksheets of questions covering material in Session 2.*** | | | |
| Apply your knowledge | In the online tutorial and onsite day, build on the activity/task that students have prepared and submitted. Students could work together in groups to discuss and solve a problem.  A selection of students should be asked to present their submission in each online tutorial or onsite. This would be a different group of students for each tutorials and onsite so every student gets an opportunity to present. | | | |
| ***Students discuss solutions for worksheets of questions covering material in Session 2.*** | | | |

## Quiz template

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| --- | --- | --- | --- |
| Session title: | Sets and Binary Operations | Session no. | 2 |
| Test yourself:  Each session should have a minimum of 20 questions in total.  What content is tested will depend on the chapter(s) content – some parts may require more questions than others to test the student.  These questions will be used to test students' knowledge and help them to recall the academic content of the chapter(s).  Constructive feedback should be provided for each question to reinforce the learning for the session. | | | |

**Question 1**

The following set A can be defined by a number of methods

A = {1,3,5,7,9…}

Which of the following four rules does not describe A.

1. {n : n is an odd integer}
2. {(-1)n : n0}
3. {2n-1: n and n>1}
4. {n+1: n and n0}

Correct answer: (b) This rule does not describe the members of set A.

**Question 2**

Insert or in the space blank to make the statement true.

{2, 4, 7, 9}………. {2,4,5,7,9}

a)

b)

Correct answer: (a) {2, 4, 7, 9}{2,4,5,7,9}

**Question 3**

Let B be the set of all letters used to spell the word "mathematics". What is the cardinality of B?

a) 9

b) 11

c) 10

d) 8

Correct Answer: (d) There are 8 distinct letters used to spell the word "mathematics". B = {m,a,t,h,e,i,c,s}

**Question 4**

The finite set C has the elements {u, v,w, x, y, z }. How many subsets of C are there?

a) 16

b)32

c)64

d) 128

Correct Answer: (c) There are 6 elements (so n=6) and so 26 = 64 possible subsets.

**Question 5**

If the cardinality of set A is 10, the cardinality of B = 6, and the cardinality of is 2, then what is the cardinality of ?

a) 16

b) 18

c) 14

d) 30

Correct Answer: (c) There are 14 elements in AUB.

**Question 6**

If the cardinality of set A is 14, the cardinality of B = 9, and the cardinality of is 20, then what is the cardinality of ?

a) 5

b) 23

c) 43

d)3

Correct Answer: (d) There are 3 elements in AB.

**Question 7**

The set A = { x: x<3 and x > 5} is

1. an infinite set
2. a power set
3. a null set
4. a finite set

Correct Answer: (c) A null set. It is not possible for a value of x to be less than 3 and greater than 5.

**Question 8**

If F is the set {*x| x is a vowel, x is not "a" or "i"*} then F =

1. {a,e,i,o,u}
2. {a,i}
3. {e,u,o}
4. {e,u}

Correct answer: (c) The set of the remaining vowels.

**Question 9**

If D is any set, then (D/)/ is equal to

1. D/
2. D
3. The null set
4. U

Correct Answer: (b) (D/)/ = D

**Question 10**

In a class of 50 students, 24 enrolled for both Mathematics and Programming with 38 enrolled in the Programming class in total. If the students of the class enrolled for at least one of the two subjects, then how many students enrolled for the Mathematics class?

1. 12
2. 36
3. 26
4. 58

Correct Answer: (b) There is 36 students enrolled in the Mathematics class.

**Question 11**

In a class of 50 students, 24 enrolled for both Mathematics and Programming with 38 enrolled in the Programming class in total. If the students of the class enrolled for at least one of the two subjects, then how many students enrolled for **only** Mathematics (and not Programming)?

1. 12
2. 36
3. 24
4. 58

Correct Answer: (a) There is 12 students who are enrolled in the Mathematics class only.

**Question 12**

The set E = { 1,2,3,4,5}, which of the following statements is incorrect?

1. 5 E
2. {3,5} E
3. 3 E
4. {3}A

Correct answer: (c) 3 is an element of E, so the operator should be “

**Question 13**

Given that the universal U = {1,2,3,4,5,6,7,8,9} and A={1,3,5,7,9} , determine the A/ ( the complement of A).

a) {2,4,6,8}

b) {2,6,8}

c){1,3,5,6}

d){1,2,6,7}

Correct answer (a)

**Question 14**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine AUB

a) {1,2,3,4,6,7}

b) {2,4,6,8}

c) {1,2,3,5,7,9}

d){1,3,7}

Correct answer (c)

**Question 15**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine

a) {1,2,3,4,6,7}

b) {1,3,7}

c) {1,2,3,5,7,9}

d){1,2,5,9}

Correct answer (b)

**Question 16**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine /

a) {9}

b) {1,3,7}

c) {1,2,5,9}

d){ 4, 6 ,8}

Correct answer (a) / ={4, 6, 8, 9}

**Question 17**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine )/

a) { 2, 4 ,6, 8, 9}

b) {1,3,5,7}

c) {1,3,4,5,9}

d){ 1,3,7}

Correct answer (a)

**Question 18**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine

a) {6, 8, 9}

b) {1,3,7}

c) {1,3,4,5,9}

d){ 2,9}

Correct answer (d) ={2,9}

**Question 19**

Given that A={1,3,5,7,9} and B={1,2,3,5,7}, determine

a) {2,9}

b) {2,4,6,8}

c) {9}

d){ 2}

Correct answer (d) = {2}

**Question 20**

)/ is equivalent to which of the following, according to De Morgan’s Laws:

1. AUB
2. A’UB’
3. )/
4. A/ B/

Correct Answer (b)