**Unit 3 WRITING AN ABSTRACT**

**1) Do you agree or disagree with the following statements? Give your reasons.**

1. Abstract introduces the topic of your paper
2. Abstract should not contain the description of the method
3. Abstract can contain some tables, figures, illustrations or references to them
4. Abstract serves readers to decide whether the paper is relevant for their interests
5. The focus of your paper is stated at the end of the abstract
6. Abstract is self-contained, it makes sense on its own
7. The function of an abstract is to outline briefly all parts of the paper
8. Abstract should be written before writing your paper
9. It is common to divide the abstract into paragraphs

**2) Listen to and watch the video and list the most common abstract styles and their characteristics.** <https://www.youtube.com/watch?v=JMEnRBss6V4> (0:35-1:10)

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**3) Abstract structure. Each section answers some implied questions. Match the following questions with the sections.**

|  |
| --- |
| Section 1: Purpose and motivation  Section 2: Problem/research  Section 3: Methods/materials/subjects/procedures  Section 4: Results/findings  Section 5: Discussion/conclusions/implications |

1. What was discovered? Section \_\_\_
2. How was the research done? Section \_\_\_
3. What do we know about the topic and why is it important? Section \_\_\_
4. What do the findings mean? Section \_\_\_
5. What is this study about? Section \_\_\_

**4) Parts of the abstract - Listen and complete the notes.**

<https://www.youtube.com/watch?v=JMEnRBss6V4> 1.37 – 6.05

1. Most abstracts contain this number of sections: …
2. The abstract is usually one long paragraph and the sections will flow to each other and create a …………
3. In the first section you write about why…
4. After that you need to state what …
5. Next, you write about methods. You mention only …

which help the reader understand the results…

1. In the results section, you should determine …

You should link these results to …

1. The last section should give an implication…

For example, what the results mean in the context of the problem and what …

**5) Read three abstracts of physics presentations and find the corresponding sections.**

*Polymer nanofibres for bioapplications prepared by electrospinning method (a presentation abstract written by a student)*

This presentation deals with the preparation of polymer nanofibres by the method of electrospinning, which is a fast and effective method to obtain a larger amount of polymer membranes. The purpose of this study and presentation is an investigation of drug-containing polymer nanofibres for antibacterial patches and other bioapplications. Polycaprolactone (PCL) was selected as a polymer matrix for the experiments. It is a synthetic, biodegradable, semi-crystalline polymer very often used in biomedicine. Due to its poor mechanical properties, halloysite (HNTs) was used in the research as a financially undemanding carrier of drugs, thanks to which the material becomes mechanically more resistant. Halloysite should be sterilized in advance because it is a natural material with high humidity. Sterilization can be done by different ways, one of them is dielectric barrier discharge (DBD) plasma treatment. The sterilized halloysite were loaded newly synthesized drugs and then I studied their antibacterial effect on the prepared polymer nanofibres, which were characterized by several physical-chemical methods. The results of hydrophobicity and antibacterial activity show that the drugs can be used in the antibacterial patches and there will be another study further in the future.

*Nathan C. Keim et al.: Memory formation in matter* (Rev. Mod. Phys. 91 (2019)

Many forms of memory can be stored in the materials around us. Examples are hysteresis in magnets, aging and rejuvenation in glasses, shape memory in alloys, and echoes in spin systems and capillary waves. Once the material is fully equilibrated, memory of the system’s initial conditions or previous history is completely lost. Memory is thus intimately connected to out-of-equilibrium behavior. This presentation reviews examples where specific inputs can be stored in condensed-matter systems and then retrieved by appropriate protocols. It describes some common principles and questions that emerge from looking for the underlying shared elements in these apparently disparate systems. If you would like to learn more about this fascinating topic, do not hesitate to attend my talk.

*Using generic algorithm for analysing asteroid light curves* *(a presentation abstract written by a student)*

Small Solar System Bodies and their study is a crucial topic of modern astronomical research. Thanks to modern photometry, we can precisely measure light flux as a function of time and produce asteroid light curves. By analysing asteroid light curves we can study the rotation and shape of asteroids. Most asteroids rotate around the shortest axis with the lowest rotation energy. Asteroids with higher rotation energy are called tumblers. Tumblers have two-periodic light curves. One period represents rotation and the second represents precession.

In this presentation I will talk about genetic algorithms. Genetic algorithms are search and optimization techniques inspired by natural evolution. They use concepts such as mutation, crossover, and selection to improve solutions to complex problems iteratively. We have tested this algorithm on synthetic data, and we found that the genetic algorithm was a useful method. Using this method, we found good fits to the data. An unambiguous determination of the precession and rotation periods would require additional data and more detailed analysis.

**6) Answer the following questions.**

1. Are introductory statements general or specific?
2. Do the authors use the first person or third person style?
3. What tense is used?
4. Which abstract is most closely linked to a presentation?
5. Which verbs/phrases are typically used in individual sections?

Purpose:

Problem:

Methods:

Results:

Conclusion:

**7) Language for presenting the research/purpose**

* Third person style:

The / This paper analyzes, investigates, explores,

article examines, re-examines, outlines,

study describes, shows, introduces,

analysis evaluates, considers …

* First person style:

In this paper analyze, investigate, explore,

article examine, re-examine, outline,

study I / we describe, show, introduce,

analysis evaluate, consider…

**8) Read the sentences below and fill in the gaps with one of the following verbs in the correct form.**

**develop - call - argue - provide - look - consider**

1. This paper \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ an axiomatic basis for a representation of personal preferences in which ...
2. The authors \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a broad class of situations where a society must choose from a finite set of alternatives.
3. This paper \_\_\_\_\_\_\_\_\_\_\_\_\_\_ that the analysis of these games involves a key technical issue.
4. This paper \_\_\_\_\_\_\_\_\_\_\_\_ at the effectiveness of the Environmental Protection Agency (EPA) in reducing the time that manufacturing plants spend in a state of non-compliance.
5. This study \_\_\_\_\_\_\_\_\_\_\_ into question the established view that lack of information on clean-up cost functions represents a serious problem ...
6. This paper \_\_\_\_\_\_\_\_\_\_\_\_\_ a model of corporate hierarchy in which workers accumulate heterogeneous human capital suitable for different positions within the hierarchy.

**9) Sometimes, the Methods section sentences are expressed in the passive form. Rewrite the following sentences using the passive voice.**

1. We compared the alternative methods of storing in condensed-matter systems.
2. We discuss and derive the approximate solution in the form of series with easily computable terms in reproducing kernel space.
3. We presented the best solution to the deterministic problem.

**10) Language for presenting the findings**

The results show, state, suggest, uncover,

findings indicate, imply, provide…

**11) Read the following sentences from different abstracts. Each sentence contains a problem in usage (grammar, vocabulary, …). Identify the problems and if possible, fix them.**

a. In this contribution are described several problems with the Big Bang nucleosynthesis.

b. We are also focused on the implementation of new technologies for the memory storing in new materials.

c. The aim of the paper is to deal with the problematic of stress distribution.

d. f. Laboratory animals are not susceptible to these diseases, so research on them is hampered.

e. Our results are similar to previous studies.

**12) Summary - How to write an abstract**

**Complete the text with the clauses A-I**

1. that is not also in the main text
2. it is not the focus of the paper
3. to summarize your conclusions
4. understandable without reading or looking at anything else
5. it should be featured
6. until after you have written the rest of the paper
7. that contrast with your results
8. then you would include the numerical result and uncertainty
9. it will lose its impact

The primary purpose of the Abstract is (1) \_\_\_\_\_\_\_\_\_. What new and interesting thing are you telling the world? If the whole point is that you have improved the accuracy of some measurement, (2) \_\_\_\_\_\_\_ . Otherwise, you probably wouldn’t include the uncertainty. In fact, the best experiments often lead to Abstracts with no numbers at all! A qualitative conclusion that is interesting enough to be published is usually of wider interest and application.

Along the way, you usually give some description of your equipment or experimental technique. However, this does not need to be detailed if (3) \_\_\_\_\_\_\_. On the other hand, if the point of your paper is that you have designed a new apparatus or made an improvement to some experimental technique, then (4) \_\_\_\_\_\_\_.

There is also an element of marketing in Abstracts. The Abstract is your advertisement enticing anyone doing an abstract search to read your full article. As a result, you often refer to previous work or common assumptions of the past (5) \_\_\_\_\_\_\_\_\_. Or you might explain in one or two sentences why the field is vitally important.

Whatever the focus of your paper is, it should be clear by the second sentence of the Abstract. If you leave it until the end of the Abstract, (6) \_\_\_\_\_\_\_\_\_\_\_\_.

Since the Abstract is a summary, nothing should be in it (7) \_\_\_\_\_\_\_\_\_. An Abstract is not an introduction; the paper should be complete even without the Abstract. One way to ensure this is to leave writing the Abstract (8) \_\_\_\_\_\_\_\_\_ .

The abstract is almost always required to be a single paragraph. It has to be self - contained (i.e., (9) \_\_\_\_\_\_\_\_). It cannot have or refer to any figures or tables – it’s just straight text.

(Physics Writing Guide, available at <http://www.geneseo.edu/~mclean/Dept/JournalArticle.pdf>)