

Acquisition of English for Specific Purposes (ESP) Vocabulary in Arabic Contexts: the Delimitations of Attrition

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اكتساب مفردات اللغة الإنجليزية للأغراض الخاصة في البيئات العربية: قيود اضمحلال المفردات

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الملخص

اكتسبت اللغة الإنجليزية كما تدرس للأغراض الخاصة مثل الاستخدامات العلمية أهمية خاصة في عالم اليوم. وقد تم تصميم الدراسة الحالية للبحث في ظاهرة استنزاف أو اضمحلال المفردات اللغوية بتأثير عدم الاستعمال. مرور الزمن. وقد انطلقت الدراسة من مسلمات رئيسية، وهي: أن اللغة الإنجليزية كغيرها من اللغات الأجنبية تشتمل على نوعين من المفردات: المفردات النشطة، والمفردات الخاملة. وتسلم الدراسة بأن المفردات الأقل شيوعاً، ومنها مفردات اللغة الخاصة أو ESP Vocabulary، وهذه رغم عدم شيوعها إلا أنها ذات أهمية كبيرة. وقد أصّل البحث الحالي للدراسات التي تناولت الهدر اللغوي أو استنزاف أو اضمحلال المفردات كظاهرة لغوية، وهي دراسات قليلة جداً في أدبيات تدريس اللغة الإنجليزية. وقد عرض البحث لدراسة تجريبية أجريت على عينة من طلاب السنة النهائية بإحدى الكليات العلمية بجامعة الكويت ممن يدرسون الإنجليزية للأغراض الخاصة، قوامها ٣٠ في المجموعة الأولى (طلاب السنة النهائية)، و ٣٠ في مجموعة الدراسات العليا ممن درسوا ذات المقررات، وانقطعت دراستهم بها لمدة طويلة من الزمن. وقد انتهت الدراسة إلى أن الدارسين بالمرحلة الجامعية الأولى كانوا أفضل أداء على اختبار مفردات اللغة الإنجليزية للأغراض الخاصة الذي أعدته الباحثة من المجموعة الأخرى والتي تركت استخدام اللغة لفترة طويلة وتأكلت لديهم المفردات بتأثير عدم الاستخدام. وتوصي الدراسة بضرورة استخدام أنشطة لغوية تنشط فيها المفردات من الحالة الخاصة إلى الحالة النشطة، وضرورة تدريس مفردات اللغة في سياق لغوي وليس في صورة قوائم تحفظ وتُصم.

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Abstract

Acquisition of vocabulary in English for Specific Purposes (ESP) is important for the learning of specialized subject matters. Such learning meets the problem of attrition or word loss due to prolonged time of desuetude. Students in Arabic-speaking classrooms who learn science usually learn English for Specific Purposes to brush up their language as a medium of learning their science courses. During this time, their vocabulary is more active than when they leave college after graduation. This is referred to as vocabulary attrition or word loss. However, a review of literature denotes a problematic vocabulary loss phenomenon in the ESP mental lexicon of students, especially when they do not use the language for a prolonged time span.

This study set out in a Kuwaiti environment taps how vocabulary acquisition is affected by time of disuse and are then attrited. This study outlines the scarce research base that deals with vocabulary attrition; it investigates word attrition as it occurs with ESP vocabulary in senior students at the Faculty of Education, Chemistry Department. It tries to tackle the following question: "How is the state of vocabulary (both general and scientific) of Arabic-speaking students of English after 3-4 years of inert use?"

The subjects of this study were 30 students at Kuwait University in their senior year, and another 30 in their postgraduate study who have their ESP English in use for 3-5 years. They were native speakers of Arabic of both genders. They have had 12-15 years' experience in the least with general English in the average and around three years of ESP. The results of this investigation demonstrate that the ability of the subjects to recall words (both general and scientific) that were learned a few years ago is certainly low in subjects who no longer use the ESP vocabulary for academic purposes.

Introduction and Background

In recent years, there has been a worldwide increase in demand for English for Specific Purposes (ESP), which is essential for professional development. Experience in the field and a quick reading in the literature denotes that the scope of specialized vocabulary in teaching English for Specific Purposes (ESP) or English for Occupational (EOP) or for Academic Purposes (EAP) is a primary goal. Equally significantly, there is a commonplace assumption that the more words a learner knows, the larger the learner's vocabulary knowledge is.

However, there is another dimension to vocabulary knowledge that should be considered - namely, how a learner knows about the combinatory and derivational possibilities of a word. For any given word, a native speaker also knows a range of other words, which can occur or collocate with it. This is an aspect of vocabulary knowledge that has until recently been largely ignored. Corpus-based studies of vocabulary frequency have a very striking message for vocabulary learning; i.e., in terms of their frequency of occurrence in the language, all words are not created equal. A relatively small number of different words accounts for a very large proportion of the running words in written text or spoken discourse (Nation, 2000). Nation (2000) observes that "the ten most frequent words account for 25 per cent of the words on any page and in any conversation." Furthermore, the 100 most frequent words account for 50 per cent, the 1,000 most frequent words account for 75 per cent, and the 2,000 most frequent account for around 80-90 per cent. These 2,000 most frequent words, the high frequent words, are useful no matter what use is made of the language, and they are essential for normal language use. They are the essential core of any language program (Nation, 1990).

Nation (1990) claims that 570 word-families cover between 8.5 per cent and 10 per cent of the running words in most academic texts. The remaining vocabulary is comprised of low frequency words of the language. There are thousands of these (2000). The high-frequency words of the language need to be learned first. They deserve a lot of attention and, because they are a relatively small group of words, they are a feasible goal for language efforts. The low frequency words are words that have fallen into desuetude due to classroom time constraints. There are so many of them and they are not frequent. However, learners need to learn them (Graves, 1987).

These low-frequency words can be taught, however. Teachers can help learners by training them to use the strategies of guessing from context (Nagy, Herman, & Anderson, 1985), direct learning, using word parts, and dictionary

use (Coady & Huckin, 1997). These include learning through input, learning through output, direct learning and direct teaching, and fluency development (Nation, 2000).

Literature Review

In the past few years, different studies were carried out on Arab learners of English as a foreign language with the purpose of investigating into the mental lexicon and lexical cognition in learners (Al-Hazemi, 1998). Al-Hazemi observed that the inability of some Arab EFL learners to recognize some words was due to the fact that certain words might have been forgotten as well as the possibility that many words might have suffered attrition. This phenomenon of attrition or word loss is worth investigating due to the very few studies launched in this area (Al-Hazemi, *ibid.*). Research in corpus-based studies and on vocabulary acquisition and lexical knowledge indicates that lexical knowledge is the aspect of language learning most susceptible to oblivion and attrition in EFL learners (Weltens & Marjon, 1993).

The perspective of attrition as indicated above has been provocative for applied linguists and psycholinguists to investigate this phenomenon. For instance, Cohen (1989) studied the lexicon of his two trilingual children, finding out that L2 or L3 vocabulary became weak as L1 utterances interfered with L2 words. However, the phenomenon of language interference and language transfer is very well known to language researchers, but less investigated with regard to word attrition. Krashen (1981) and Selinker (1972; 1992) were leading researchers in the field. More relevantly, Cohen (1986) observed that nouns and other origin vocabulary (of which derivatives are made) were liable to attrition, especially if the FL learner is assigned a bulky list of vocabulary at a time. Thus, attrition of productive knowledge was active in FL learners.

Vocabulary is thought to be of a first place priority together with grammar in FL learning. It is important that methodologists call for teaching vocabulary in context, so as the semantic functions of lexes can be clear to learners and prone to activation when prompted; in other words, to avoid later attrition. Lewis (1993) proposed that language teaching must look at grammar and vocabulary as complimentary to one another, arguing that language consists of lexical items. He treats them as belonging to four major categories. A relatively small group of lexical items is the words and polywords. They have usually been considered as essential vocabulary for learners to memorize.

A second category is collocations. Collocation, the liability of certain words to be seen together, is understood as the way in which words typically occur with

each other, i.e. combinations of words in natural speech with a certain frequency. Native speakers intuitively 'know' which words frequently combine and which do not. Knowing frequent collocations is essential for accurate, natural English. There are specific types of collocations in ESP, which cause students' errors. One of these errors is attrition, which occurs due to the students' inability to find equivalence in their native language to these collocations or is caused by language interference. Teachers must help the learner become familiar with ESP collocations, and such familiarity will develop best when the learner is consciously aware of this tendency of words to go together (Lewis, 1993).

In Lewis's approach, a third category is fixed expressions, and a fourth, semi-fixed expressions. Collocations and expressions are thought to be the most important types of lexical phrases. Native speakers retain many prefabricated lexical items in their memory. Language fluency and accuracy is achieved largely by retrieving and combining ready-made chunks of language. 'The ability to chunk language successfully is central to understanding of how language works' (Lewis, 1997).

In ESP, students have to learn high-priority lexis, which needs to be selected and included into learning materials and class activities. At the beginning of the ESP course, teachers spend sometime on developing learners' strategies for dealing with unknown lexical items. The second step is to help them to identify lexical phrases — whole expressions with high-priority ESP lexis. This stage is very important for developing the learner's ability to recognize chunks. The researcher suggests using a more discovery-based methodology. Experience has proven that traditional 'fill in the blanks' way is effective for checking comprehension as it encourages learners to consider the context of the sentence to work out a probable missing word. At the same time, students are being exposed to the typical linguistic environment for an item. They perceive other words that can co-occur with the target word and grammatical context in which the item can occur.

The estimates (Coady and Huckin, 1997) show that a threshold of general reading comprehension requires 5000 lexical items which cover more than 90 per cent of any text. Consequently, in ESP language high-frequency lexical items should be taught first. They can be classified as a well-known Key Words technique because of their role in conveying a message. It is worth noting that the key-word method of teaching vocabulary has also been recently neglected in spite of its obvious advantages for understanding the gist. However, low-frequency lexical items cannot be ignored either, in order to avoid lack of comprehension.

Berman and Olshtain (1983) in their study observed greater quantitative and qualitative loss of English as a second language among 5- to 8- year-old Hebrew speakers than among older children experiencing similar disuse of the language. This suggests that children suffer greater language attrition in the same period of time than older ones. This could be arguable in terms of the fact that older learners tend to use mnemonics, not to mention their high-capacity memories and relatively longer spans of attention and less fluctuations.

Other studies on lexical attrition demonstrated that lexical knowledge erodes much more easily than phonology and morpho-syntax (Seliger, 1985), since the vocabulary of a language is relatively unstructured (Welten & Marjon, 1993). It can be noticed from the above review of studies on attrition that most studies dealt mainly with children, and few of them tackled this problem with adult learners. This study will examine the problem of word loss of adult EFL speakers of English.

The Layout of the Present Study

Aims of the Study

This study intends to investigate words loss of some students at Kuwait University who must have studied both general and scientific English at high school and freshmen, sophomore and junior years of study. This study will attempt to shed light on how their vocabulary knowledge is affected after 3-4 years of inert use.

The problem

The present study investigates word attrition as it occurs with ESP vocabulary in senior students of the Faculty of Education, Chemistry Department. For the subjects of the study, the lexical items under investigation have been acquired during a prolonged period of time, with the ultimate outcome of having this vocabulary out of use due to desuetude.

Question of the Study

This study tries to tackle the following question:

“How is the state of vocabulary (both general and scientific) of Arabic-speaking students of English after 3-4 years of inert use? Has it been attrited?”

Hypothesis

Undergraduates forming experimental group one would significantly score lower on the MCQ test than the undergraduate students in experimental group two at a significance level of .05.

Subjects

The subjects of this study were 30 students at Kuwait University in their senior year, and another 30 in their postgraduate study who had their ESP English in use for 3-5 years. They were native speakers of Arabic of both genders. They have 12-15 years' experience in the least with general English in the average and around three years of ESP (as they study English for science and technology in the cultural component of their curriculum). The first group of students was enrolled in the Chemistry Department at the Faculty of Education, while the second group were postgraduates in the Department of Chemistry.

Method

A pretest and a posttest experimental design were used. The test used in the study employed 500 vocabulary items, 200 of which were general English words (words encountered in the daily situations or in books) and 300 related to science and technology. All these words were randomly selected from the materials that the subjects had studied when they were high school students and from the EFL course in their first three years at college. A test was designed in a multiple-choice format, including 50 ESP words sampling the texts that they formerly used in their studies. The distracters were carefully selected to make sure that they were also understood by the subjects. The test was then shown in its earlier format to a jury for adjudicating its validity for use at that level and for the purposes of the current study, but suggested minor changes for test. The test reliability was verified using the test-retest method, where a sample of 15 students was selected to be tested on the pilot version of the test. An R Pearson reached 0.83, which is a high correlation between the first administration of the test and the second administration, which took place a month after the first one.

The test was handed out to the subjects in both groups, all in the same session under the same testing conditions; and they were told that this was merely a study for research purposes and had nothing to do with summative evaluation at the college. The subjects were instructed not to write their names on the test sheet, in order to reduce their fear of exposing their weak knowledge of English and to insure better results. Instead of the subjects' names, numbers were used to label each case of the data. In addition, they were instructed not to resort to any external assistance or lexical material, (e.g., dictionaries) while taking the test.

Data Analysis

Descriptive statistics (mean scores and standard variations) was used in the treatment of the data. In addition, a t-test was conducted to check the significance of differences between the two experimental groups in this study.

Results of the Study

Both groups {X1 (Undergraduates) with a fresh ESP vocabulary in use and X2 (Postgraduates) with their ESP vocabulary in disuse} were tested under the same conditions and their raw scores were statistically treated and tabulated in the following tables:

Table 1: Mean Scores of the Two Groups

	No	Mean	Std. Deviation	Std. Error Mean
X ₁	30	34.56	2.72	49.
X ₂	30	19.33	5.56	1.01

Table 2: Correlation between the Two Groups

	N	Correlation	Sig.
X ₁ &X ₂	60	.489.	.006

Table 3: t-Test Results

Paired Differences Mean	SD	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
			Lower	Upper			
15.23	4.85	.88	13.42	17.04	17.1	29	.000

The tables clearly show that there are significant differences in the subjects' mean scores. The rise in the scores of the first group (Undergraduates) was due to the fact that the examinees in this group receive an English training course in their senior year in continuation of the last three years. This, in turn, enhanced their vocabulary knowledge which helped them to score better on the ESP vocabulary test. However, the mean scores of the postgraduate group of the students indicate that they performed worse than the others on the MCQ test. The t-test run between X1 and X2 indicates that the differences between the two groups were significantly indicative that the first group whose ESP vocabulary is still fresh due to current use does not suffer attrition induced by language desuetude, whereas the postgraduate group suffered from attrition. The hypothesis of the study is thus verified.

The results of this study are consistent with the findings of a few research studies in the literature. As compatible with the findings in Al-Hazemi (1998), this study found out that postgraduate students with their vocabulary in desuetude, may have either forgotten their vocabulary items on the test or had them attrited. Consistent with some studies (Ginkel et al, 1996), the findings here show that the process of forgetting probably occurs later than three or four years after the university degree, so attrition may be attributable to the longer time the postgraduates spent with their ESP lexicon in desuetude.

Furthermore, to draw on the generalization in Seliger (1985) and the point which Weltens (1993) made in this respect, it could be argued that word loss in the case of postgraduates may have attrited due to the fact that lexicon is the aspect most prone to attrition and more easily erosive than phonology, morphology or syntax. However, further research is needed in order to validate this point. Deplorably, the lack in the studies on attrition makes it hard for the researcher to cross-reference her findings with more research, but this may hopefully be conducive to further research in this area in the future.

Discussion

The results of this investigation demonstrated that the ability of the subjects to recall words (both general and scientific) that were learned a few years ago is certainly low in subjects who no longer use the ESP vocabulary for academic or communicative purposes. The results also indicated that all members of the two groups, who participated in the test, had about the same lexical knowledge, regardless of the period of disuse of English. The attrition or word loss of our postgraduate subjects, which is clear from the results, may have been attributed to lack of language environment (i.e. the regular use of language in daily situations, and lack of language input). This simply means the inability to remember certain words and recall their meanings. Some learners of English forget most of what they learn gradually as no practice or enough exposure to the English language is available to them. In the case of the postgraduates in this research study, most of the subjects rarely use their English altogether for communication, not to mention their ESP lexicon which is the aspect about their vocabulary most susceptible to oblivion or attrition. It should be emphasized that the length of the period of disuse of English by the subjects of this study accounts only for part of the loss of the words presented in the test. The larger part of attrition, however, can be attributed to the environmental factors (Weltens and Marjon, 1993). This situation occurred as a result of long time of disuse or poor proficiency in

English. It should be borne in mind that attrition occurs quickly; so constant follow-up of what was learned is necessary to maintain good knowledge of new and old words to express ourselves.

Recommendations and Suggestions for Further Research

The findings of the study would lead us to outline some recommendations to tackle the issue of ESP vocabulary loss. It is not important if students do not know which category a lexical item belongs to. What they do need is to develop an ability to notice chunks of different kinds. So, one of the central activities in ESP teaching is to encourage students to identify language items in authentic materials. Another important point is that language units should be learned in context. Contextualised learning is preferable, because learning vocabulary is not a simple memorization of lexical phrases.

Furthermore, vocabulary usage is not the same as vocabulary knowledge. And it is the teacher's job to activate these items in a classroom. This means that learners must process this newly acquired vocabulary. For learners to learn vocabulary against attrition, their teacher needs to teach it in the following sequence:

- checking comprehension of authentic passages;
- providing more practice;
- revision; and
- consolidation.

Oral practice for processing target vocabulary is advisable. Such activities as 'students' projects' or designing tasks for other groups has proved beneficial. Revision and consolidation are a required part of the process of vocabulary acquisition. A learner must use all available methods for developing all language skills, some of which are matching pairs, sorting exercises, pictorial schemata, problem solving tasks, values clarification, discussion, role-play, including oral presentations and writing summaries.

For promoting autonomous learning, which is often called 'learner independence', the researcher advocates for learners' initiated activities, e.g. learners acting as 'teachers' in organizing and checking class activities, learners creating their own materials like posters, flashcards, games or role-plays, learners giving a choice of activities for different pairs/groups, etc. Learners need to be trained in direct learning. Their training must involve use of key word technique (Pressley Levin, & McDaniel, 1987), information about spacing repetition, avoiding lexical sets (Tinkham, 1997) and the use of word part analysis.

Learners can also benefit from the use of a dictionary (Schmitt, & McCarthy, 1997).

The present researcher suggests that vocabulary-teaching methods be varied to adapt to the various needs of various language users. ESP teachers include self-made exercises to activate passive vocabulary of students through extensive exposure to the target language on the part of the students. Textbooks or ESP learning materials should be redesigned to include activities that jog the students' lexical memory. Students need to be assessed and encouraged to use the language at large for communicative purposes, and to use ESP vocabulary when they study science topics in Arabic. This will help them get over translational equivalence problems. They need to be encouraged to do a lot of dictionary work when they study vocabulary. Students should be advised to learn vocabulary in context and never learn it in isolation in word list formats. Contextualised vocabulary learning is conducive to long-term retention.

The researcher suggests that further research needs to look into the attrition phenomenon of learners of English, using more subjects and larger vocabulary items in future testing. Further research is also required to determine the effects of collocations on word retention and word retrieval. Also needed is research for determining which aspect about language is more prone to erosion and attrition: lexicon, morphology or syntax.

Conclusion

ESP lexical phrases may be treated similarly as other chunks, as ready-made or prefabricated language units. Once they are learnt, are easily retrievable and accessible. Moreover, they are context-bound and occur quite frequently, which makes them highly memorable for learners. However, they are prone to attrition upon desuetude.

In this study, attrition or word loss of some students was investigated. The results indicated that more than 50% of the items tested were forgotten by the subjects. The latter were not able to provide the correct answers to all the vocabulary items given on the test.

The period of English disuse did not seem to have any great impact on the amount of lexical items lost. This was an indication of a dissimilar level of lexical proficiency, regardless of the period of disuse.

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Appendix: ESP Vocabulary Test

Write your number in this box

Choose the right word from a, b, c, or d which matches the word meanings in the following fifty questions:

1. Chisel:

- a) chemistry of changing baser metals into gold.
- b) agent to speed up chemical reaction without changing.
- c) sharp-edged tool used for cutting.
- d) application that helps soothe or soften.

2. Clavicle:

- a) opening or gap.
- b) small pricking tool for piercing holes.
- c) post-mortem or examination of dead body.
- d) collarbone.

3. Eddy:

- a) swirling motion of water or air.
- b) substance producing condition of no sensation.
- c) formal discourse or essay.
- d) lizard noted for changing color to surroundings.

4. Ignite:

- a) set fire to or kindle.
- b) polish by friction or rub to make shiny.
- c) calculate or reckon.
- d) grow bud or shoot.

5. Disseminate:

- a) spread or scatter (like seeds).
- b) divide into two branches or fork.

- c) squander or waste away.
- d) polish by friction or rub to make shiny.

6. Caulk:

- a) polish by friction or rub to make shiny.
- b) seal seams to make watertight.
- c) approach or tend to come together.
- d) build or invent.

7. Accelerate:

- a) force or thrust out.
- b) move faster or speed up.
- c) increase toughness by gradual heat reduction.
- d) build or invent.

8. Magnitude:

- a) size or extent.
- b) navigational instrument for angular measurements.
- c) optical illusion due to atmospheric conditions.
- d) substance which provides nourishment.

9. Transpire:

- a) endure effects of atmosphere or forces.
- b) pass through pores; happen.
- c) echo or reflect sound, light or heat.
- d) reverse in relation or order.

10. Reverberate:

- a) introduce into a larger body or unite.
- b) make valid or confirm.
- c) exhaust vigor of or undermine.
- d) echo or reflect sound, light or heat.

11. Wane:

- a) interject or insert between.
- b) decrease in size or strength.
- c) wet completely or soak with.
- d) echo or reflect sound, light or heat.

12. Anthropomorphic:

- a) opposite or inverted in relation or order.
- b) confirmed or recurring as a disease.
- c) damp or moist.
- d) having human form or personality.

13. Elliptical:

- a) having indigestion.
- b) infinitely small or very tiny.
- c) shaped like an oval; ambiguous or baffling.
- d) next to or adjoining.

14. Abstract:

- a) theoretical and not concrete.
- b) inferred by reasoning; derived as conclusions.
- c) existing from birth.
- d) glowing with heat.

15. Determinate:

- a) having a fixed order or nature.
- b) limited or bounded.
- c) cold like ice.
- d) surgically sterile or preventing infection.

16. Omnivorous:

- a) incomplete or biased.
- b) rash or hasty.
- c) for a short time or momentary.
- d) devouring all food; not fastidious.

17. Prophylactic:

- a) marked with ridges or parallel grooves on surface.
- b) used as preventive for spread of disease.
- c) best or most favorable.
- d) without parallel or equal; one of its kind.

18. Noxious:

- a) pertaining to poison.
- b) (of some body organ) capable of grasping.
- c) pertaining to the internal body organs.
- d) harmful or poisonous.

19. Visceral:

- a) used as preventive for spread of disease.
- b) pertaining to earthquakes.
- c) pertaining to the internal body organs.
- d) sound or logically convincing.

20. Pyro-, as in pyromania or pyrolatry, means:

- a. fire
- b. destroy
- c. flame
- d. smother

21. Mal-, as in malfesance or malevolence, means:

- a. best
- b. bad
- c. good
- d. wrong

22. Spec-, as in spectator or retrospect, means:

- a) search
- b) look
- c) glasses
- d) see

23. Post-, as in postscript or posterior, means:

- a) against
- b) after
- c) write
- d) behind

24. Nocti- or noct-, as in noctiphobia or nocturnal, means:

- a) strange
- b) night
- c) day
- d) late

25. Mnem-, as in mnemonics or amnesia, means:

- a) memory
- b) forget
- c) illness
- d) remember

26. Pot-, as in potent or impotent, means:

- a) power
- b) hemp
- c) strength
- d) marijuana

27 Sol-, as in solarium or parasol, means:

- a) sun
- b) one
- c) shade
- d) helio

28. -Cise or -cide, as in incision or excide, means:

- a) cut
- b) clean
- c) death
- d) slit

29. The lead of a pencil mainly contains:

- a) plastics
- b) carbon Black
- c) lead
- d) graphite

30. What gas is evolved when dilute sulphuric acid is added to Zinc?

- a) sulphur dioxide
- b) hydrogen Peroxide
- c) hydrogen
- d) argon

31. The lead of a pencil mainly contains:

- a) plastics
- b) graphite
- c) lead
- d) carbon Black

32. A substance which speeds up a chemical reaction without itself getting affected is known as a:

- a) nucleus
- b) counter Ion
- c) catalyst
- d) cation

33. If no more solute can be dissolved in a solvent at a given temperature then that solution is called:

- a) a saturated solution
- b) an unstable solution
- c) a dispersed solution
- d) a real solution

34. Aureole:

- a) mutual relation.

- b) continuous flow or series of changes.
- c) animals of a region or era.
- d) halo or circle of light.

35. Narrow opening or crevice:

- a) fissure
- b) apothecary
- c) extrapolation
- d) converse

36. Attrition by rubbing or disagreement:

- a) flux
- b) consistency
- c) friction
- d) extrapolation

37. Small planet:

- a) dissection
- b) conifer
- c) anemia
- d) asteroid

38. Lowest point in wave; shallow receptacle:

- a) solstice
- b) symmetry
- c) trough
- d) terminology

39. Substance which provides nourishment:

- a) nutrient
- b) phenomenon
- c) matrix
- d) solstice

40. Quantity that can be defined or that can limit:

- a) miasma

- b) synthesis
- c) strut
- d) parameter

41. Reduce the concentration or strength:

- a) dilute
- b) embed
- c) eclipse
- d) emanate

42. Remove foliage or leaves:

- a) chisel
- b) agglomerate
- c) cauterize
- d) defoliate

43. Form into grains:

- a) diverge
- b) agglomerate
- c) granulate
- d) ignite

44. Echo or reflect sound, light or heat:

- a) precipitate
- b) reverberate
- c) partition
- d) ossify

45. Pierce or make hole(s) in:

- a) infer
- b) incubate
- c) integrate
- d) perforate

46. Having common center:

- a) contiguous
- b) brackish
- c) concentric
- d) hermetic

47. Of exterior curvature or bulging outwards:

- a) feasible
- b) embryonic
- c) convex
- d) graduated

48. Secure or resistant to:

- a) immune
- b) concentric
- c) derivative
- d) astringent

49. Penetrable or allowing fluids to pass through:

- a) oblique
- b) permeable
- c) soluble
- d) precise

50. With only one color:

- a) translucent
- b) monochromatic
- c) repellent
- d) transient

Good luck with your test