

Θέμα 1 (i: 2 μονάδες, ii: 2 μονάδες):

Παραθέτουμε ένα στιγμιότυπο της Gene Ontology:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE go:go PUBLIC "-//Gene Ontology//Custom XML/RDF Version 2.0//EN"
"http://www.geneontology.org/dtd/go.dtd">
<go:go xmlns:go="http://www.geneontology.org/dtd/go.dtd#"
xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#">
  <rdf:RDF>
    <go:term rdf:about="http://www.geneontology.org/go#GO:0000001">
      <go:accession>GO:0000001</go:accession>
      <go:name>mitochondrion inheritance</go:name>
      <go:synonym>mitochondrial inheritance</go:synonym>
      <go:definition>The distribution of mitochondria, including the
mitochondrial genome, into daughter cells after mitosis or meiosis,
mediated by interactions between mitochondria and the cytoskeleton.
</go:definition>
      <go:is_a rdf:resource="http://www.geneontology.org/go#GO:0048308" />
      <go:part_of rdf:resource="http://www.geneontology.org/go#GO:0009530" />
      <go:negatively_regulates
rdf:resource="http://www.geneontology.org/go#GO:0006312" />
    </go:term>
    <go:term rdf:about="http://www.geneontology.org/go#GO:0000002">
      <go:accession>GO:0000002</go:accession>
      <go:name>mitochondrial genome maintenance</go:name>
      <go:definition>The maintenance of the structure and integrity of the
mitochondrial genome; includes replication and segregation of the
mitochondrial chromosome.</go:definition>
      <go:is_a rdf:resource="http://www.geneontology.org/go#GO:0007005" />
      <go:dbxref rdf:parseType="Resource">
        <go:database_symbol>InterPro</go:database_symbol>
        <go:reference>IPR009446</go:reference>
      </go:dbxref>
      <go:dbxref rdf:parseType="Resource">
        <go:database_symbol>Pfam</go:database_symbol>
        <go:reference>PF06420</go:reference>
      </go:dbxref>
    </go:term>
    <go:term rdf:about="http://www.geneontology.org/go#GO:0000003">
      <go:accession>GO:0000003</go:accession>
      <go:name>reproduction</go:name>
      <go:synonym>GO:0019952</go:synonym>
      <go:synonym>GO:0050876</go:synonym>
      <go:synonym>reproductive physiological process</go:synonym>
      <go:definition>The production by an organism of new individuals that
contain some portion of their genetic material inherited from that
organism.</go:definition>
      <go:is_a rdf:resource="http://www.geneontology.org/go#GO:0008150" />
      <go:dbxref rdf:parseType="Resource">
        <go:database_symbol>Wikipedia</go:database_symbol>
        <go:reference>Reproduction</go:reference>
      </go:dbxref>
    </go:term>
  </rdf:RDF>
</go:go>
```

i) Να καταγράψετε σε έναν πίνακα της παρακάτω μορφής τις τριπλέτες {Subject, Predicate, Object} μόνο για τις περιπτώσεις που το {Object} είναι Resource (δηλ. όχι Literal):

Subject	Predicate	Object
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ii) Σχεδιάστε τον γράφο που προκύπτει από τις τριπλέτες του παραπάνω ερωτήματος.

Θέμα 2 (i: 2 μονάδες, ii: 2 μονάδες):

```
<procedure v="biopsy" code="UMLS:C0005558/UMLS:C0184921" idref="p12" occurrence="343">
  <bodyloc v="breast" code="UMLS:C0006141/UMLS:C1268990" idref="p2" occurrence="343">
    <region v="right" occurrence="343"></region>
    <code v="UMLS:C0222600" idref="p2 p5"></code>
  </bodyloc>
  <descriptor v="needle core" idref="p8" occurrence=343></descriptor>
  <code v="UMLS:C0405348" idref="p2 p12"></code>
  <code v="UMLS:C0405352" idref="p2 p12"></code>
</procedure>
```

Ο παραπάνω κώδικας XML, μοντελοποιεί τα δεδομένα μίας συγκεκριμένης εξέτασης (Breast Biopsy with FNA).

- i) Σε έναν πίνακα δύο στηλών, καταγράψτε ανά γραμμή τα XML Elements (1^η στήλη) και δίπλα (2^η στήλη) το/τα XML attribute/s τους. Αν ένα XML element δεν έχει attribute αφήστε κενή την 2^η στήλη.
- ii) Σχεδιάστε το αντίστοιχο XML Schema χρησιμοποιώντας ελλείψεις για τα XML Elements και παραλληλόγραμμα για τα XML Attributes.