

KATHMANDU UNIVERSITY
End Semester Examination [C]
April, 2023

Marks Scored:

Level : B.E.

Course : GEOM 405

Year : IV

Semester: I

Exam Roll No. :

Time: 30 mins.

F.M. : 10

Registration No.:

Date : 07 APR 2023

SECTION "A"

[20Q. × 0.5 = 10 marks]

Encircle the most appropriate alternative from each set of choices.

1. Web maps are the maps _____.
 - a. that can be accessed through the internet
 - b. that can be viewed in web browsers
 - c. that can be accessed by multiple users at once
 - d. all of the above
2. Leaflet is a _____.
 - a. HTML framework
 - b. JavaScript library for displaying map in the web
 - c. Mapping application
 - d. JavaScript library
3. FOSS stands for _____.
 - a. Free and Online Software System
 - b. File Organization Software System
 - c. Free and Open Source Software
 - d. File Open Source Software
4. What makes a web map interactive?
 - a. If the web map can be accessed through internet
 - b. If the web map can be accessed through internet as well as intranet
 - c. If the map user can provide input to the map and the map responds
 - d. If the web map is connected with the database and map is updated with the update in data
5. In a client-server architecture, the server _____.
 - a. Listens to the requests
 - b. Responds to the requests
 - c. Are web browsers
 - d. Makes request to the servers and evaluates the response
6. Web services are _____.
 - a. Always consumed in raw form
 - b. Always encrypted by authentications or tokens
 - c. The technologies that allows applications to communicate without interventions
 - d. Only location-based services
7. One of the options of establishment of web GIS infrastructure is through cloud service called IaaS which _____.
 - a. stands for Software as Service
 - b. is the option to buy and maintain hardware and software
 - c. provides the infrastructure where any GIS application can be installed
 - d. is not applicable when the web GIS application needs many customizations

8. In thin client _____.
- processing is done in the server side
 - most of the processing is done on the server side
 - visualization is done in the server side
 - most of the processing is done in the client side
9. HTTP is _____.
- One of the protocols that is used to communicate webpages and resources over the web
 - The way in which parameters is sent to the server
 - Web address to a website
 - Web location of the server
10. The following snippet of data is _____.

```
{
  "type": "Feature",
  "properties": {
    "name": "Dhulikhel",
    "amenity": "Place",
    "popupContent": "This is where KU is."
  },
  "geometry": {
    "type": "Point",
    "coordinates": [-104.99404, 39.75621]
  }
};
```

- XML data
 - GeoJSON
 - Shapefile
 - GML
11. Which of the following is not true?
- Baselayers are always in vector format
 - Usually vector/raster tiles are used to create baselayers of web maps
 - Baselayers provide the general spatial orientation to the web maps
 - Baselayers usually consists of multiple layers stacked together
12. Which of the following OGC standard is to be followed while developing an analytical web map?
- Web Coverage Service
 - Web Mapping Service
 - Web Display Service
 - Web Processing Service
13. GeoJSON is a _____.
- Database management system
 - JavaScript library
 - Geo JavaScript Objection Notation, an open standard geospatial data interchange format
 - Markup language used for geospatial data interchange
14. WFS delivers _____.
- Geometry and attribute of vector data
 - Static image of the map
 - Result of an image analysis
 - Series of square images

15. GetCapabilities request allows request for _____.
- a. Service metadata
 - b. Map layers
 - c. Raster images
 - d. Web Processing
16. EPSG is used to
- a. define projection
 - b. define style
 - c. define transformation parameters
 - d. convert reference
17. The following URL is consuming _____ service.
`http://15.236.29.28:8080/geoserver/wfs&service=wfs&version=2.0.0&request=GetCapabilities`
- a. Web Map
 - b. Web Feature
 - c. Web Processing
 - d. Web Capability
18. The following URL is retrieving _____ type request.
`http://15.236.29.28:8080/geoserver/wfs&service=wfs&version=2.0.0&request=GetCapabilities`
- a. Get Features
 - b. Get Map
 - c. Get Capabilities
 - d. Get Feature Request
19. Which one of the following is not a HTML element?
- a. html
 - b. head
 - c. body
 - d. service
20. Which one of the following is not an interactive element of web map?
- a. Zoom in/out button
 - b. Events on click of markers in map
 - c. Title of web map
 - d. Search box

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Level : B.E.
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Semester : I
F. M. : 40

SECTION "B"
[6Q × 4 = 24 marks]

Attempt ANY SIX questions.

1. Explain in detail one of the application areas of Web GIS.
2. What are various elements of web maps? Differentiate between base layer and thematic layers. [1+3]
3. What are standards and open standards? What is importance of open standards? [2+2]
4. Describe the client/server architecture. Differentiate between thick and thin client. [2+2]
5. What is distributed GIS. Why do we need distributed GIS? [2+2]
6. What are web services? State the characteristics of web services. [2+2]
7. Write short notes on (*ANY TWO*): [2+2]
 - a. Web GIS Infrastructure
 - b. Leaflet
 - c. Geography Markup Language (GML)

SECTION "C"
[2Q × 8 = 16 marks]

Attempt ANY TWO questions.

8. Briefly explain the types of web maps? What factors would you consider when developing a web mapping application for land use planning in a municipality?
9. Explain the working of Web Feature Service (WFS) in detail with convincing examples.
10. List out Geo-portals in Nepal and describe them in brief including the following topics: dataset, capabilities, and limitations. Suggest improvements you would make in any one of them to improve the applicability.