UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 05 Examination in Engineering: March 2022

Module Number: EE5209   Module Name: Web Application Development

[Three Hours]

[Answer all questions]

Question paper consists of two parts. Part I: MCQ and Part II: Essay.
Answer **Part I** first. Mark the answers on the provided sheet. Time allowed for answering Part I is 45 minutes. The answer sheet of MCQ will be collected 45 minutes after distribution of the paper.

Part I: Multiple Choice Questions

Answer all questions. Time allowed for Part I is 45 minutes. Each question carries 0.5 mark.

1) There are _____ levels of heading in HTML.

   a) Three   c) Five

   b) Four   d) Six

2) Which of the following tags do not require a terminator?

   a) \<u>   c) \<b>

   b) \
         d) None of the above

3) Which one of the following tags is used to insert graphics in the webpage?

   a) \<image>   c) \<img>

   b) \<images>   d) \<graphics>

4) html comment should be enclosed between

   a) \<!- and -- >   c) \<!- and -""

   b) \<! And !>   d) None of the above

5) _____ tag is used before beginning of the paragraph text.

   a) \<textarea>   c) \<p>

   b) \<sup>   d) \<h1>

6) The _____ element can be used to identify your html file to the outside w... 14)

   a) title

   b) body

   c) head

   d) None of the above

7) The tag to give visual division between sections of the page and which causes the b... to draw an embossed line is 15.

   a) <hl>

   b) <hr>

   c) <ur>

   d) None of the above

8) HTML is an acronym for 16

   a) Hypertext marking language

   b) Hypertext making language

   c) Hypertext markup language

   d) Hyper transport markup language

9) HTTP stands for 17

   a) Hyper Text Transfer Protocol

   b) Hyper Text Transfer Process

   c) Higher Text Transfer Process

   d) None of the above

10) URL is the acronym for

   a) Uniform research location

   b) Uniform resource locator

   c) Uniform resource location

   d) Uniform resistor locator

11) What is the correct statement from the followings?

   a) MongoDB is classified as a NoSQL database

   b) MongoDB favours XML format more than JSON

   c) MongoDB is column-oriented database store

   d) All the above

12) Which of the following format is supported by MongoDB?

   a) SQL

   b) XML

   c) BSON

   d) All the above

13) MongoDB Queries can return specific fields of documents which also include ... defined _____ functions.

   a) Javascript

   b) C

   c) C++

   d) All the above

14) MongoDB is a _____ database that provides high performance, high availability, and easy scalability.

a) graph

c) document

b) key value

d) All the above

15) Dynamic schema in MongoDB makes _____ easier for applications.

a) inheritance

c) encapsulation

b) polymorphism

d) none of above.   flexibility

16) Which of the following is not a NoSQL database?

a) SQL Server

c) Cassandra

b) MongoDB

d) none of above.

17) Most NoSQL databases support automatic _____ meaning that you get high availability and disaster recovery.

a) processing

c) replication

b) scalability

d) all the above

18) Which of the following methods returns one document in Mongo?

a) findOne()

c) selectOne()

b) findOne1()

d) none of above.

19) Which of the following query selects documents in the records collection that match the condition { "user_id": { $lt: 42 } }?

a) db.records.findOne({ "user_id": { $lt: 42 } }, { "history": 0 })

b) db.records.find({ "user_id": { $lt: 42 } }, { "history": 0 })

c) db.records.findOne({ "user_id": { $lt: 42 } }, { "history": 1 })

d) db.records.select({ "user_id": { $lt: 42 } }, { "history": 0 })

20) Which of the following command displays the list of databases in Mongo?

a) show db

c) show data

b) show dbs

d) display dbs

21) What would be the appropriate URL for the following method?

```
public class UserController:Controller
{
    public IActionResult CreatetUser(CreateUserRequest user)
    {
        // logic to return add a user to the system
    }
}
```

a) GET /users   c) POST /users

b) GET /users/{userId}   d) All the above

22) What is ActionResult()?

a) It is an abstract Class   c) Both A and B

b) It is a Concrete Class   d) None of above

23) What is JWT?

a) JSON Web Token   c) Javascript Web Token

b) Java Web Token   d) None of above

24) An instance of _____ class represents a session with the underlying database

a) DbContext   c) Entity

b) DbSet   d) DbSession

25) MVC stands for

a) Model, Vision & Control   c) Model, ViewData & Controller

b) Model, View & Controller   d) Model, Data & Controller

26) The correct syntax for do while loop is

a) do; { statement; }while (condition);

b) do(condition) { statement; }while;

c) do { statement; }while (condition)

d) do { statement; }while (condition);

27) What is the method that can remove white space from a string?

a) Split()   c) Trim()

b) Substring()   d) TrimStart()

28) Which of the following is a correct Attribute in Aps.Net MVC?

a) Authorize

c) Validate

b) Display

d) None of the above

29) What is the command for creating a new component Test in Angular?

a) npm new component Test

c) ng g c Test

b) ng generate component Test

d) Both b) and c)

30) Which file is responsible for startup of Angular project?

a) index.js

c) app.ts

b) main.ts

d) None of the above

Part II: Essay questions

Answer all questions. Questions Q1, Q3, Q4, Q5, and Q6 carries 5 Marks each and 10 Marks. Time allowed for part II is 2 hours and 15 minutes.

Q1.   Answer the following using the knowledge on HTTP.

   a)   Name QUIC the new transport layer introduced with HTTP/3.

   b)   Name one of the problems to be resolved with HTTP/3.

   c)   Explain the REST API standards correlating to HTTP protocol.

[3

Q2.   Answer the following using the knowledge on APS.Net and MVC pattern.

   a)   Explain the MVC pattern structure using an example.

[2

   b)   What is dependency injection? Explain using a simple diagram.

[1

   c)   Name and explain the dependency injection scopes in APS.Net Core.

[2.0

   d)   What is scaffolding in ASP.net MVC and how it is useful in rapid app development?

[2.0

   e)   What is the purpose of using Swagger for an API?

[1.

   f)   Explain the use of **appsettings.json** in a ASP.net MVC core project and ma configurations that support by ASP.net by default.

[2.0

Q3.   Answer the following using the knowledge on Entity Framework core.

   a)   Explain DataContext and Migrations.

[1.0

   b)   Write the entity classes for the ER diagram shown in Figure Q3.

[3.0 N

   c)   Write commands for creating migrations and updating the database.

[1.0

4. Explain the following code snippet in Angular.

```
import {Component} from '@angular/core';
@Component ({
      selector: 'my-app',
      template: `<h1>Hello {{name}}</h1>`,
})
export class AppComponent {name = 'Angular'; }
```

[5.0 Marks]

5. Write a small program that can return all Books (entity) in a database using Node.js platform. Use below hints.
   - Use express, body-parser, url, querystring
   - Import Book form models
   - Map '/' path to GET method to return books
   - Listen on port 8080

[5.0 Marks]

6. Answer the following using the knowledge on CQRS.

   a) What does CQRS stand for?

[1.0 Mark]

   b) Explain the behavior of the pattern using a small diagram.

[2.0 Marks]

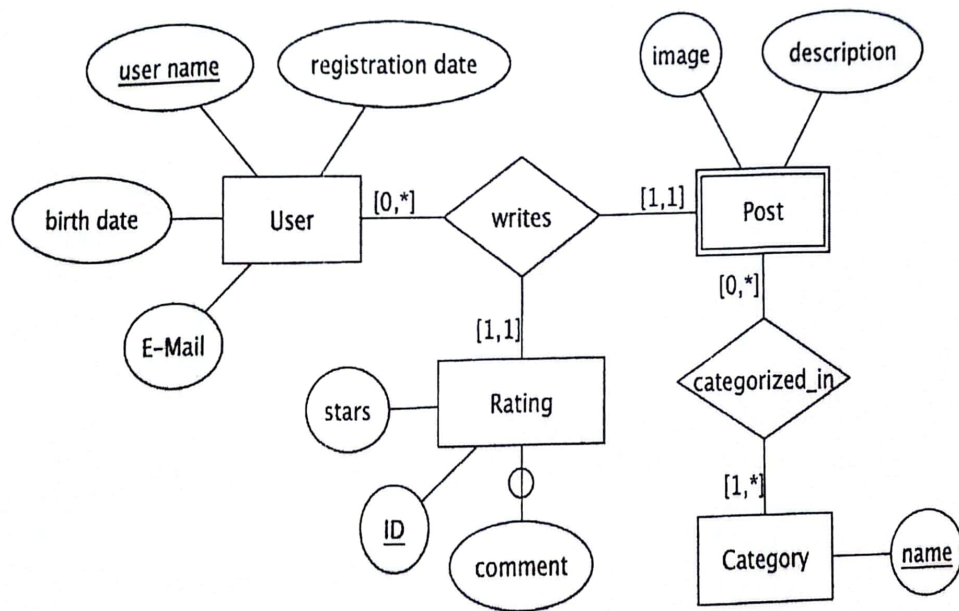   c) Explain a challenge that occurs with the implementation of the CQRS pattern.

[2.0 Marks]

Figure Q3.