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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech Integrated

SEM: VI - THEORY EXAMINATION (2025 - 2026)

Subject: Advanced Java Programming

Time: 3 Hours

Max. Marks: 100

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.

2. Maximum marks for each question are indicated on right -hand side of each question.

3. Illustrate your answers with neat sketches wherever necessary.

4. Assume suitable data if necessary.

5. Preferably, write the answers in sequential order.

6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

20

1. Attempt all parts:-

- (1.1) Select the correct code to add an attribute in a HTTP Session object in servlets.(CO1,K1) 1
- (a) session.addAttribute(name,value)
- (b) session.setAttribute(name,value)
- (c) session.createAttribute(name,value)
- (d) None of the above.
- (1.2) Which method is used to include the content of another resource during servlet processing? (CO1,K1) 1
- (a) include()
- (b) import()
- (c) use()
- (d) forward()
- (1.3) The following implicit Object is used to get information about the client. (CO2,K2) 1
- (a) request
- (b) response
- (c) out
- (d) application
- (1.4) What happens during the compilation phase of a JSP pages life cycle?(CO2,K1) 1
- (a) The Java servlet is loaded into memory
- (b) The Java code is compiled into bytecode
- (c) The bytecode is executed on the server
- (d) The HTML code is generated for the web page

- (1.5) The constructor mode of autowiring is------(CO3 ,K1) 1
- (a) Autowiring by property name. Spring tries to match and wire its properties with the beans defined by the same names in the configuration file.
 - (b) Spring first tries to wire using autowire by constructor, if it does not work, Spring tries to autowire by byType.
 - (c) Autowiring by property type. Spring tries to match and wire a property if its type matches with exactly one of the beans name in configuration file.
 - (d) Similar to byType, but type applies to constructor arguments. If there is not exactly one bean of the constructor argument type in the container, a fatal error is raised.
- (1.6) The Spring annotation is used to inject the Spring bean (CO3,K1) 1
- (a) @Bean
 - (b) @Autowired
 - (c) @Service
 - (d) @Inject
- (1.7) The port is used by Spring Boot by default, to start the Tomcat (CO4,k1) 1
- (a) 9090
 - (b) 8080
 - (c) 0
 - (d) 4200
- (1.8) Annotation @PathVariable is used to _____.(CO4 ,K1) 1
- (a) Map an entity
 - (b) Map a path URI
 - (c) Map an input param
 - (d) none of the above
- (1.9) Choose attribute of @OneToMany is used to mark an entity as owned.(CO5 ,K1) 1
- (a) cascade
 - (b) mappedBy
 - (c) property Ref
 - (d) None
- (1.10) Annotation to find a transaction and then fail, complaining that no Hibernate session's been bound to the thread.(CO5,K1) 1
- (a) Transaction
 - (b) Transactional
 - (c) Transactions
 - (d) None of the mentioned

2. Attempt all parts:-

- (2.1) Differentiate between SQL Date and java.util.Date in Java. (CO1, K2) 2
- (2.2) Illaborate the purpose of the compilation phase in the JSP life cycle.(CO2,K2) 2
- (2.3) Name some of the important Spring Modules. (CO3, K2) 2
- (2.4) State the difference between RequestMapping and GetMapping(CO4,K4) 2
- (2.5) Contrast how JPA related to ORM?(CO5,K3) 2

SECTION-B

30

Answer any one of the following:-

- (3.1) Discuss the difference between Get and Post method.(CO1,K2) 6
- (3.2) Distinguish between the following interfaces- Statement and PreparedStatement. (CO1,K4) 6

Answer any one of the following:-

- (3.3) Discuss the initialization phase of the JSP life cycle, and explain how it prepares the servlet for execution by initializing all necessary resources.(CO2,K2) 6
- (3.4) Discuss the role of JSP containers in the execution of JSP pages, and explain how they work with web servers to generate dynamic content.(CO2,K2) 6

Answer any one of the following:-

- (3.5) Discuss the importance of Spring bean configuration file. (CO3, K3) 6
- (3.6) Discuss the benefits of Spring Framework. (CO3, K2) 6

Answer any one of the following:-

- (3.7) Discuss about component scans, Configuration in spring boot with example.(CO4,K2) 6
- (3.8) Illustrate with example about spring controllers using @ResponseBody(CO4,K3) 6

Answer any one of the following:-

- (3.9) Explain how EntityManager ensures atomicity, consistency, isolation, and durability (ACID properties) when performing database operations within a transaction.(CO5,K2) 6
- (3.10) Explain JPA Architecture or Explain the core classes and interfaces of JPA API. (CO5,K2) 6

SECTION-C

50

4. Answer any one of the following:-

- (4.1) Describe the Servlet Class Hierarchy with proper diagram. (CO1,K2) 10
- (4.2) Explain the concept of Stored Procedure in JDBC? Discuss the difference between Stored procedure and Function.(CO1,K2) 10

5. Answer any one of the following:-

- (5.1) Develop a JSP application that uses the JSP custom tag library to implement a simple login functionality. Your application should use the JSP custom tags to validate user input and redirect the user to a welcome page if the login is successful. Write a brief report on the steps you followed to create the application, including details on the JSP custom tag library and the JSP tag life cycle.(CO2, K4) 10
- (5.2) Demonstrate the purpose and key features of the PageContext class in JSP development, and provide examples of how it can be used to access JSP-related objects and attributes.(CO2,K4) 10

6. Answer any one of the following:-

- (6.1) Discuss the role of JDBCTemplate also demonstrate update and delete operation on Student(sid, sname, saddress) Table using JDBCTemplate.(CO3, K3) 10
- (6.2) Implement a program using setter injection also discuss how it is different from constructor injection.(CO3,K4) 10

7. Answer any one of the following:-

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| (7.1) | Construct a web based application using concept of Spring MVC for two students and compare their marks.(CO4,K4) | 10 |
| (7.2) | Explain: @RequestParam, @RestController, @ModelAttribute, @Configuration.@PutMapping. (CO4, K3) | 10 |

8. Answer any one of the following:-

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| (8.1) | Derive the need equals()/hashCode(), and how to implement them correctly for JPA entities? (CO5,K4) | 10 |
| (8.2) | Elaborate JPA handle optimistic locking. Can you give an example of how you would implement optimistic locking in JPA? (CO5, K3) | 10 |

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