



DHARMSINH DESAI UNIVERSITY, NADIAD

FACULTY OF TECHNOLOGY

B.TECH – SEMESTER – VI, IT

SUBJECT: [IT 618] DESIGN PATTERNS & APPL. FRAMEWORKS

Examination : First Sessional
Date : 08/01/2018
Time : 12:00 to 1:15 PM

Seat No. :
Day : Monday
Max. Marks : 36

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

- Q.1 **Do as directed.** [12]
- (a) What are advantages of using annotations? [2]
- (b) Match the following: (one-to-one) [4]
- | Question | Answer |
|--|--------------------------------|
| 1. A fine-grained instance used for efficient sharing | i. Solution with complete code |
| 2. Design Pattern | ii. Template Method pattern |
| 3. Notifying about changes to a number of objects | iii. Template solution |
| 4. Objects of a single family | iv. Prototype pattern |
| 5. Defer the exact steps of an algorithm to a subclass | v. Builder pattern |
| 6. Clone a fully initialized instance | vi. Memento pattern |
| 7. Separates object construction from its representation | vii. Mediator |
| 8. Simplify communication among classes | viii. Factory pattern |
| | ix. Flyweight pattern |
| | x. Observer pattern |
- (c) Write Javascript code fragment that will get the current date and display it in <p> element having id = 'date'. [2]
- (d) What will be the output of following code fragment? [2]
- ```
var fruits = [];
var x = fruits.push("Kiwi");
document.write(x);
```
- (e) Define and explain usage of <video> HTML tag with example. [2]
- Q.2 Attempt **Any Two** from the following questions. [12]
- (a) Discuss decision points about choosing among an Abstract Class, an Interface, Composition relationship, and Inheritance relationship. Explain each using suitable example. [6]
- (b) Write a Java application using *Generic Containers* to solve the following problem: [6]
- There are programming competitions on the following: C, C++, and Java. We would like to store information about students using appropriate Java containers so that the following operations can be handled efficiently.
- Each student can register for one or multiple competitions. While registration, each student has to specify his/her name, mobileNo, and age. We would like to print three separate lists of participating students for three competitions (C, C++, and Java). At the end of each list, the average age of participating students should be printed.
- (c) Answer the following: [6]
1. We would like to create annotations for the following problem:  
In a university there are IT devices of various categories (e.g., Computer, Printer, Scanner, etc.). Devices used at university level have the following information: name of device, year of purchase, and name of grant. Devices used at department level have the following information: name of device, year of purchase, and name of the department. Use nested annotation concept and write appropriate annotations for the above.
2. Define annotation for Student containing name and roll number. Choose appropriate

Meta annotations such that the defined annotation can be applied on a method only and the information can be retrieved at runtime. Furthermore, use/apply the annotation on the main method, and inside the main method access the annotation information using reflection.

- Q.3 Attempt **ALL** from the following questions. [12]
- (a) Create an HTML page for allowing registration of a user. The page takes Name, Address, City, and Gender as input. Also write JavaScript code that gets called on click event of Submit button. The script ensures that none of the above fields is kept empty, and if any field is kept empty, then the field should be marked with Red Border. [6]
  - (b) Answer the following: [6]
    - 1) Define and explain using proper examples the different level of style sheets available in CSS.
    - 2) Write down advantages and disadvantages of Cascading Style Sheet.
- OR
- Q.3 Attempt **ALL** from the following questions. [12]
- (a) Answer the following: [6]
    - 1. Explain with examples Generic and Pseudo Selectors available in CSS.
    - 2. Define and Explain different List Tags of HTML.
  - (b) Create an HTML page and JavaScript for displaying the current time continuously. Write your code without using Date type that is available in JavaScript. [6]