B.Sc. VI Semester Examinations - 2020-2021

Computer Science

Paper: CS205

(Software Engineering)

Time: Four hours] **[Full Marks:** 70

Instructions

1. **The Question Paper contains 08 questions out of which you are required to answer any 04 questions. The question paper is of 70 marks with each question carrying 17.5 marks.**

   प्रश्नपत्र में आठ प्रश्न पूँछे गये हैं जिनमें से 4 प्रश्नों का उत्तर देना है। प्रश्नपत्र 70 अंकों का है, जिसमें प्रत्येक प्रश्न 17.5 अंक का है।

2. The total duration of the examination will be **4 hours** (Four hours), which includes the time for downloading the question paper from the Portal, writing the answers by hand and uploading the hand-written answer sheets on the portal.

   परीक्षा का कुल समय 4 घंटे का है जिसमें प्रश्नपत्र को पोर्टल से डाउनलोड करना, हस्तलिखित प्रश्नों का उत्तर पोर्टल पर अपलोड करना है।

3. For the students with benchmark disability as per Persons with Disability Act, the total duration of examination shall be **6 hours** (six hours) to complete the examination process, which includes the time for downloading the question paper from the Portal, writing the answers by hand and uploading the hand-written answer sheets on the portal.

   दिव्यांग छात्रों के लिये परीक्षा का समय 6 घंटे निर्धारित है जिसमें प्रश्नपत्र को पोर्टल से डाउनलोड करना एवं हस्तलिखित उत्तर को पोर्टल पर अपलोड करना है।

4. Answers should be hand-written on a plain white A4 size paper using black or blue pen. Each question can be answered in upto 350 words on 3 (Three) plain A4 size paper (only one side is to be used).
   हस्तलिखित प्रश्नों का उत्तर एक सादे सफेद A4 साइज के पन्ने पर काले अथवा नीले कलम से लिखा होना चाहिये। प्रत्येक प्रश्न का उत्तर 350 शब्दों अथवा A4 साइज के तीन पृष्ठों का होना चाहिये। प्रश्नों का उत्तर कापी के केवल एक पृष्ठ पर ही लिखना है।

5. Answers to each question should start from a fresh page. All pages are required to be numbered. You should write your Course Name, Semester, Examination Roll Number, Paper Code, Paper title, Date and Time of Examination on the first sheet used for answers.
   प्रत्येक प्रश्न का उत्तर नये पृष्ठ से शुरू करना है। सभी पृष्ठों को पृष्ठांकित करना है। छात्र को प्रथम पृष्ठ पर प्रश्नपत्र का विषय, सेमेस्टर, परीक्षा अनुक्रमांक, प्रश्नपत्र कोड, प्रश्नपत्र का शीर्षक, दिनांक एवं समय लिखना है।

Questions

1. a) Which of the process models will you follow for the following projects? Give justifications. (10)
   (i) A simple data processing project.
   (ii) A data entry system for office staff that have never used computers before. The user interface and user-friendliness are extremely important.
   (iii) A new system for comparing finger prints. It is not clear if the current algorithms can compare finger prints in the given response time constraints.
   (iv) An online inventory management system for an automobile industry.
   (v) A flight control system with extremely high reliability.
   b) Describe the unified process model for software development in detail. (7.5)

2. a) Narrate the importance of software specification of requirements. Explain a typical SRS structure and its parts. (10)
   b) Explain the characteristics of a good software engineer. (7.5)

3. a) What are the fundamental concepts considered in a typical software design? Explain in detail. (10)

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b) Explain the various steps involved in requirements engineering. (7.5)

4. a) Explain the COCOMO model in detail. (10)

b) What is cyclomatic complexity? Compute cyclomatic complexity for following code. (7.5)

```
0.  begin
1.  i=1
2.  while(i<=n) do begin
3.    j=I;
4.    while(j<=i) do
5.        ifA[j]<A[i] then
6.              swap (A[j],A[i]);
7.        endif
8.    endwhile
9.  endwhile
10. end;
```

5. a) What is software architecture? Describe the different software architectural styles with examples. (10)

b) Write notes on software design patterns. (7.5)

6. a) Explain the various software cost estimation techniques in detail. (10)

b) What is software quality? Discuss the various activities performed by SQA group. (7.5)

7. a) What is white box testing? Explain the different types of white box testing strategies. (10)

b) What are reviews and what do we look for in reviews? Discuss the objectives and players of a formal technical review. (7.5)

8. a) What is risk analysis in software engineering? Discuss various types of risks in detail. (10)

b) What is software maintenance? Discuss the problems associated with software maintenance. (7.5)
