|  |  |
| --- | --- |
| Q. 1 | Consider a software program that is artificially seeded with 100 faults. While testing this program, 159 faults are detected, out of which 75 faults are from those artificially seeded faults. Assuming that both real and seeded faults are of same nature and have same distribution, the estimated number of undetected real faults is \_\_\_\_\_\_\_\_\_\_\_\_. |
| Q. 2 | Consider a software project with the following information domain characteristics for calculation of function point metric.  Number of external inputs (I)=30  Number of external outputs (O)=60  Number of external inquiries (E)=23  Number of files (F)=08  Number of external interfaces (N)=02  It is given that the complexity weighting factors for I, O, E, F and N are 4,5,4,10 and 7, respectively. It is also given that, out of fourteen value adjustment factors that influence the development effort, four factors are not applicable, each of the other four factors have value 3, and each of the remaining factors have value 4. The computed value of function point metric is \_\_\_\_\_\_\_\_\_\_\_\_\_. |
|  | To compute function points (FP), the following relationship is used FP = Count - total x (0.65 + 0.01 x ∑(Fi)) where Fi (i = 1 to n) are value adjustment factors (VAF) based on n questions. The value of n is |
| Q. 3 | A legacy software system has 940 modules. The latest release required that 90 of these modules be changed. In addition, 40 new modules were added, and 12 old modules were removed. Compute the software maturity index for the system. |
| Q. 4 | A software project was estimated at 352 Function Points (FP). A four-person team will be assigned to this project consisting of an architect, two programmers, and a tester. The salary of the architect is Rs.80,000 per month, the programmer Rs.60,000 per month and the tester Rs.50,000 per month. The average productivity for the team is 8 FP per person per month. Which of the following represents the projected cost of the project? |
| Q. 5 | Assume that the software team defines a project risk with 80% probability of occurrence of risk in the following manner:  Only 70 percent of the software components scheduled for reuse will be integrated into the application arid the remaining functionality will have to be custom developed: If 60 reusable components were planned with average component size as ' 100 LOC and software engineering cost for each LOC as $ 14, then the risk exposure would be |
| Q. 6 | Consider a project with the following functional units:  Number of user inputs = 50  Number of user outputs = 40  Number of user inquiries = 35  Number of user files = 06  Number of external interfaces = 04  Assuming all complexity adjustment factors and weighing factors as **average**, the function points for the project will be |
| Q. 7 | A software company needs to develop a project that is estimated as 1000 function points and is planning to use JAVA as the programming language whose approximate lines of code per function point is accepted as 50. Considering a=1.4 as multiplicative factor, b=1.0 as exponention factor for the basic COCOMO effort equation and c=3.0 as multiplicative factor, d=0.33 as exponention factor for the basic COCOMO duration equation, approximately how long does the project take to complete? |
| Q. 8 | An experimental file server is up 75% of the time and down 25% of the time due to bugs. How many times does this file server have to be replicated to give an availability of at least 99%? |
| Q. 9 | A server crashes on average once in 30 days, that is, the Mean Time Between Failures (MTBF) is 30 days. When this happens, it takes 12 hours to reboot it, that is, the Mean Time to Repair (MTTR) is 12 hours. The availability of server with these reliability data values is approximately: |
| Q. 10 | The number of function points of a proposed system is calculated as 500. Suppose that the system is planned to be developed in Java and the LOC/FP ratio of Java is 50. Estimate the effort (E) required to complete the project using the effort formula of basic  COCOMO given below:  E = a(KLOC)b  Assume that the values of a and b are 2.5 and 1.0 respectively. |
| Q. 11 | Sixty (60) reusable components were available for an application. If only 70% of these components can be used, the rest 30% would have to be developed from scratch. If the average component is 100 LOC and cost of each LOC is Rs 14, what will be the risk exposure if risk probability is 80%? |
| Q. 12 | A simple stand-alone software utility is to be developed in ’C’ programming by a team of software experts for a computer running Linux and the overall size of this software is estimated to be 20,000 lines of code. Considering (a, b) = (2.4, 1.05) as multiplicative and exponention factor for the basic COCOMO effort estimation equation and (c, d) = (2.5, 0.38) as multiplicative and exponention factor for the basic COCOMO development time estimation equation, approximately how long does the software project take to complete? |