



NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA-769008
MID-SEMESTER EXAMINATION, 2020
SESSION: 2020 – 2021 (Autumn)

B. Tech. 7th Semester / Dual Degree 9th Semester

Subject code: CS 6413 / 614 **Subject Name:** SPPQM (Subjective Type)
No. of pages: 2 **Full Marks:** 50

Dept. Code: CS
Duration: 1 Hour

Answer all the questions
Upload your answers in MS-TEAM within 10 minutes of completion of the examination.

Q. No.	Particulars	Marks																
1.	<div>Calculate net profit, payback period, return on investment (ROI), and net present value (NPV) for the following given project. Assume discount rate is 12%.</div> <table><tr><th>Year</th><th>Project A (Rs.)</th></tr><tr><td>0</td><td>-8,000</td></tr><tr><td>1</td><td>1,000</td></tr><tr><td>2</td><td>2,000</td></tr><tr><td>3</td><td>4,000</td></tr><tr><td>4</td><td>3,000</td></tr><tr><td>5</td><td>9,000</td></tr><tr><td>6</td><td>-6,000</td></tr></table>	Year	Project A (Rs.)	0	-8,000	1	1,000	2	2,000	3	4,000	4	3,000	5	9,000	6	-6,000	10
Year	Project A (Rs.)																	
0	-8,000																	
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2. (a)	<div>Compute the function point value for a project with the following information domain characteristics. Number of user inputs=22 Number of user outputs=15 Number of user inquiries=26 Number of files=46 Number of external interfaces=2 Assume all weighting factors to be average. The various complexity adjustment values are 3, 1, 1, 3, 2, 3, 4, 2, 4, 4, 3, 2, 4, 4.</div>	5+5=10																
(b)	<div>Suppose you have estimated the nominal development time of a moderate-sized software product to be 5 months. You have also estimated that it will cost Rs. 50,000 to develop the software product. Now, the customer comes and tells you that he wants you to accelerate the delivery time by 10 percent. How much additional cost will you charge the customer for this accelerated delivery?</div>																	

3.	<p>Following details for a project are given.</p> <table border="1"> <thead> <tr> <th>Activity</th><th>Estimated Duration (days)</th><th>Predecessor</th></tr> </thead> <tbody> <tr> <td>A</td><td>5</td><td>-</td></tr> <tr> <td>B</td><td>6</td><td>-</td></tr> <tr> <td>C</td><td>3</td><td>A</td></tr> <tr> <td>D</td><td>8</td><td>A</td></tr> <tr> <td>E</td><td>2</td><td>B, C</td></tr> <tr> <td>F</td><td>11</td><td>B, C</td></tr> <tr> <td>G</td><td>1</td><td>D</td></tr> <tr> <td>H</td><td>12</td><td>E</td></tr> </tbody> </table> <p>(i) Draw the Activity Network representation of the project. (ii) Determine ES, EF and LS, LF for every task. (iii) Determine the critical path, critical activities and the duration of the project. (iv) Develop the Gantt chart representation of the project. You may assume that the project will start from 1st June 2021.</p>	Activity	Estimated Duration (days)	Predecessor	A	5	-	B	6	-	C	3	A	D	8	A	E	2	B, C	F	11	B, C	G	1	D	H	12	E	20
Activity	Estimated Duration (days)	Predecessor																											
A	5	-																											
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F	11	B, C																											
G	1	D																											
H	12	E																											
4.	<p>Assume that the likelihood of one of the valuable team members leaving the project midway is 0.5. In case the member actually leaves, there is a 20% chance that the project would miss the delivery date. You consider the customer's consequent displeasure to be equivalent to Rs.1,00,000 in monetary terms. To counter the risk, you can recruit a fresh engineer at a salary of Rs.20,000 per month for four months, to essentially act as a back-up for the valuable team member. Also, assume that the contribution of the back-up engineer to the project, if the regular engineer does not leave, would be 0.4 of the employment duration. After employing the back-up engineer, the probability of missing the project deadline is expected to be only about 5%. Would it be a good idea to employ the back-up engineer? Justify your answer.</p>	10																											

Cont ...

Answer All Questions.

Each correct answer will carry 1 mark and each wrong answer will attract -0.25 mark.

1. Generally which one of the followings is not part of the business case document
 - a. Information & background to the proposal
 - b. Proposed project
 - c. Quality standards
 - d. Risks
2. Which one of the followings is the proper sequence of undertaking the project portfolio management activities?
 - a. portfolio definition, portfolio optimization, portfolio management
 - b. portfolio management, portfolio definition, portfolio optimization
 - c. portfolio optimization, portfolio definition, portfolio management
 - d. portfolio definition, portfolio management, portfolio optimization
3. Business risk is related to
 - a. threats to successful project execution.
 - b. factors threatening the benefits of the delivered project.
 - c. the potential design, implementation, interfacing, testing and maintenance problems.
 - d. none of the above
4. Which one of the followings is not a tangible cost?
 - a. purchasing hardware or software
 - b. organizing personnel training
 - c. paying employee salaries.
 - d. having lowered company image
5. What will be the ROI for the following project details?

Year	Project 1
0	-120,000
1	30,000
2	30,000
3	30,000
4	30,000
5	75,000

- a. 10%
- b. 10.5%
- c. 12%

- d. 12.5%
6. Which method takes into account the time value of money?
- a. Net profit method
 - b. ROI
 - c. NPV
 - d. None of the above
7. Method of IRR is considered to be inferior to the NPV method, because
- a. it may give multiple rates of return.
 - b. it is relatively difficult to compute.
 - c. it does not indicate the absolute size of the return..
 - d. All of the above
8. Which one of the following risk evaluation methods is suitable when it is required to evaluate whether the risk is important and, decide on a suitable course of action?
- a. Risk identification and ranking
 - b. Cost-Benefit Analysis
 - c. Risk profile analysis
 - d. Using decision trees
9. Benefits that BSNL will get from obtaining local administration approval for constructing a mobile tower in a street, can be
- a. quantified and valued
 - b. quantified but not valued
 - c. identified and easily quantified
 - d. identified but not easily quantified
10. Which one of the following is the correct order in which a software project manager estimates various project parameters while using COCOMO?
- a. cost, effort, duration, size
 - b. cost, duration, effort, size
 - c. size, effort, duration, cost
 - d. size, cost, effort, duration
11. What is the fundamental measure of work?
- a. Cost
 - b. Size
 - c. Effort
 - d. Duration
12. Which one of the following estimating methods is most appropriate when the detailed information is lacking?
- a. Parametric Models
 - b. Basic Expert Judgement Technique
 - c. Analogy-Based Method

d. Price to win

13. Which one of the following statements concerning the way Albrecht's function point measure for a project is computed, is most accurate?
- a. It is computed from the software requirements specification document
 - b. It is computed from the design document
 - c. It is computed from the code implementing the requirements
 - d. It is computed from the configuration control document
14. Consider a project with the following functional units: 70 user inputs, 50 user outputs, 40 user enquiries, 8 user files, 5 external interfaces. What will be the unadjusted function points for the project?
- a. 705
 - b. 805
 - c. 905
 - d. none of the above
15. Which one of the following function points is most suitable for embedded system development projects?
- a. IFPUG function points
 - b. Mark II function points
 - c. COSMIC function points
 - d. None of the above
16. Which one of the followings is an example of organic project?
- a. Accounting system
 - b. Compilers
 - c. Operating systems
 - d. Real-time systems
17. In intermediate COCOMO, if modern programming practices are used, then the initial cost and effort estimates obtained by the basic COCOMO, are
- a. scaled downwards
 - b. scaled upwards
 - c. remained unchanged
 - d. none of the above
18. Application composition model of COCOMO II would be used
- a. when software is composed from existing parts
 - b. when requirements are available but design has not yet started
 - c. to compute the effort of integrating reusable components
 - d. once the system architecture has been designed and more information about the system is available

19. Early design model of COCOMO II is based on
- the number of application points
 - the number of function points
 - the number of lines of code reused or generated
 - the number of lines of source code
20. Which one of the followings is an example of empirical estimation technique?
- Expert judgement
 - COCOMO
 - Halstead's software science
 - None of the above
21. Which one of the following estimation techniques assumes that the relationships that exist among the different project parameters can be satisfactorily modelled using suitable mathematical expressions?
- Expert judgement
 - Delphi cost estimation
 - COCOMO
 - Halstead's software science
22. In Halstead's software science,
- the programming effort varies linearly with the volume.
 - the programming effort varies as the square of the volume.
 - the programming effort varies as the cube of the volume.
 - the programming effort does not vary with the volume.
23. Which one of the following is NOT a reason for late project becoming later due to addition of manpower?
- Increased communication among team members
 - Learning by the added members
 - Increased project scope
 - Limited scope for parallelizing various project activities
24. Suppose the development time of a small software product has been estimated to be one and half year. Then, in order to develop the product in six months, what will be total increase in development effort? (Use Jensen's model).
- 3 times
 - 6 times
 - 9 times
 - 81 times
25. Which one of the followings is a secondary resource?
- money
 - labour
 - space
 - services

26. Given the followings, which represents the correct order of priorities in Burman's priority list?
1. shortest critical activity
 2. critical activities
 3. non-critical activities.
 4. non-critical activity with least float
 5. shortest non-critical activity
- a. 1-2-3-4-5
 - b. 1-2-5-4-3
 - c. 2-1-5-4-3
 - d. 5-4-3-2-1
27. There is a need to prioritize the activities of a project, because
- a. finding the best allocation of resources is time consuming and difficult.
 - b. allocating a resource to one activity limits the flexibility for resource allocation and scheduling of other activities.
 - c. resources can be allocated to competing activities in some rational order.
 - d. all of the above
28. Which one of the followings is the best way of publishing and communicating project schedules?
- a. activity plan
 - b. activity bar charts
 - c. resource histograms.
 - d. work schedule
29. Which one of the followings is the proper scheduling sequence?
- a. activity plan, resource allocation, risk assessment, cost schedule
 - b. activity plan, risk assessment, cost schedule resource allocation,
 - c. activity plan, risk assessment, resource allocation, cost schedule
 - d. activity plan, cost schedule, risk assessment, resource allocation
30. Which one of the followings is an example of oral formal regular reporting method?
- a. Weekly progress meetings
 - b. End-of-stage review meetings
 - c. Through progress reports
 - d. Through exception reports
31. Which one of the followings is the proper sequence of activities in the review process?
- a. Planning, Review preparation, Review meeting, Rework and follow up
 - b. Planning, Review meeting, Review preparation, Rework and follow up
 - c. Review preparation, Planning, Review meeting, Rework and follow up
 - d. Review meeting, Planning, Review preparation, Rework and follow up

32. Review log contains which one of the followings?
- a. the defects that are agreed to by the author
 - b. the data about defects,
 - c. the data about the locations of defects
 - d. criticality of defects
33. Cleanroom technique does not use which one of the following activities?
- a. Code walkthrough
 - b. Code inspection
 - c. Formal verification for bug removal
 - d. Testing of code by executing it
34. Which one of the following types of bugs is unlikely to be found by code inspections?
- a. Array index out of bounds
 - b. Extra functionality implemented
 - c. Requirements that have been omitted
 - d. Some program paths, if taken may lead to incorrect results
35. Which of the following charts show the slippage of the project completion date through the life of the project?
- a. Gantt chart
 - b. Slip chart
 - c. Timeline chart
 - d. PERT chart
36. As part of the implementation of a MIS project, a number of data records have to be manually typed into a database. Which one of the following technique will be most appropriate for assigning earned value to this project?
- a. The 50/50 technique
 - b. The 75/25 technique
 - c. The milestone technique
 - d. The percentage complete technique
37. Suppose, the work with a PV of £40,000 should have been completed by now. In fact, some of that work has not been done, so that the EV is only £30,000. What is the value of SV?
- a. 10000
 - b. -10000
 - c. 70000
 - d. None of the above
38. Which of the following performance statistics, can be derived from the earned value chart?
- a. Schedule variance (SV)
 - b. Time variance (TV)

- c. Cost variance (CV)
 - d. All of the above
39. At any time during a project execution, Earned Value (EV) helps to provide answer to which one of the following questions?
- a) What is the value of work that should have been completed to date?
 - b) What is the value of work that has been completed to date?
 - c) How much money has been spent to date?
 - d) How much money should have been spent to date?
40. Assume that a medium-sized project is experiencing considerable schedule slippage. Which one of the following may not help to shorten the critical path?
- a. Allow staff to work overtime
 - b. Re-allocate staff from less pressing work
 - c. Buy in more staff
 - d. Split the activities
41. Which one of the following is usually NOT a purpose of Software Configuration Management?
- a. Handling problems associated with concurrent access
 - b. Handling the variants and helping fix bugs in them
 - c. Carrying out feasibility study of the software to be developed
 - d. Determining the project status
42. Which one of the following is an important purpose of software configuration management?
- a. Replace the need for program management
 - b. Help avoid multiple copies of the same information
 - c. Eliminate “firefighting” during the development life cycle
 - d. Ensure that adequate test cases are developed
43. SCCS tool can handle which one of the following?
- a. executable files
 - b. Media files
 - c. files containing diagrams
 - d. Text files
44. Which one of the following is a limitation of fixed price per unit delivered contracts?
- a. customer can understand how the price is calculated
 - b. comparability between different pricing schedules
 - c. emerging functionality can be accounted for
 - d. calculating prices for the changed requirements
45. Which one of the following is not an objective of the post-implementation review?
- a. To review the qualitative and quantitative data about the project

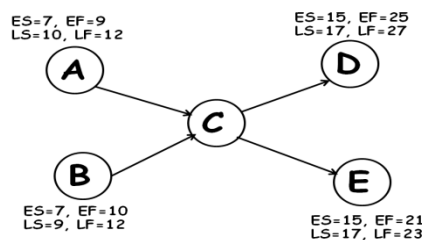
- b. To determine which practices worked well and which did not
- c. To fix accountability for performance shortfalls
- d. To suggest means to fine tune various techniques used for project estimations

46. Consider the data regarding the activities, their duration, and precedence for a certain project given in the following table. What is the total project duration?

Activity	Duration	Predecessors
A	14	-
B	13	A
C	20	A
D	10	B,C

- a) 37
- b) 44
- c) 47
- d) 57

47. Consider a portion of a PERT network diagram given below. What is the LF of activity C?



- a) 10
- b) 11
- c) 16
- d) 17

48. In a PERT chart, if the optimistic, Most likely, and Pessimistic time estimates for a certain task are 18, 25, and 38 hours, what is the expected time for the task completion?

- a) 20 Hours
- b) 25 Hours
- c) 26 Hours
- d) 28 Hours

49. A software organization has been assessed at SEI CMM Level 4. Which one of the following does the organization need to achieve, for satisfying one of the KPAs of CMM Level 5?

- a) Defect detection
- b) Defect prevention
- c) Defect isolation
- d) Defect localization

50. Which one of the following SEI CMM maturity levels should be recommended to a small startup company that focuses on outsourced software development and software maintenance work.

- a) Level 1
- b) Level 2
- c) Level 4
- d) Level 5