Unit test I Answer Key

Part A

[Question 1-5. Answer provided by Vaibhav nigam]

1. Software crisis is the term used in computer science for difficulty of writing useful and efficient computer programs in the required time. It happens due to the rapid increase in computer power and complexity of problems that could not be tackled.

2. Defects identified in the later stages in SDLC are expensive to fix than defects identified in early stages. A late detection of the error can lead to a delayed delivery of the product and sometimes even a failed project.

3. PERT (Program Evaluation Review Technique) - PERT is a project management technique used to manage uncertain activities of a project. CPM (Critical Path Method) - CPM is a statistical technique of project management that manages well defined activities of a project.

4. Need for task network - A task network makes clear the flow of activities in the project. It shows what activites need to be done, or what requirements need to be satisfied before a particular activity can start. It helps reducing chaos and maintains order through the entire project and is hence needed very much.

5. Known Risk - It can be uncovered after a careful evaluation of the project plan. Eg. Unrealistic delivery date. Predictable risk - Can be predicted / extrapolated from past project experiences. Eg. Staff turnover.

PART - B

[Question 6. Answer provided by Vishalraj N N]

6.) Shortcomings of present software development :-

1. Ubiquitous Computing .
2. Netsourcing .
3. Open source.

b.) Objectives of software engineering : -

1. Software is developed or engineered ; it is not manufactured in the classical sense.
2. Software doesn't wear out . (Give explanation about "bathtub curve")
3. Although the industry is moving toward component –based construction , most software to be custom built.

C.)Life cycle models : -

1. Waterfall model .
2. Incremental model .
3. Spiral model .
4. Concurrent development model.
5. The formal methods model.

Advantages and disadvantages of each model :-

Model	Advantage	Disadvantage
Waterfall model	software requirements are well-defined.	sequential flow , Natural uncertainity,Late working version, Exceed production time.
Incremental model	When staffing is unavailable	Limited set of software functionality
Spiral model	when a change is initiated , the process starts at the appropriate entry point.	Problem is difficulty in risk assessment
Concurrent development model	Applicable to all software development and provides an accurate picture of the current state of a project.	Complex resource allocation, few risk
Formal methods model :	It provides application of mathematical analysis , Program verification – discover and correct errors	Major problem is time consuming , expensive , involve extensive training.

C.) Mapping of SDLC to process model :

Process model	SDLC models
1.)Perspective process model.	Waterfall Model Incremental Process Models Evolutionary Process Models : prototyping, spiral. Concurrent model
2.) Specialized process model.	Component-Based Development Formal Methods Model Aspect-Oriented Software Development

[Question 8. Answer provided by SRINETHE S]

8) (A)Difference between process metrics and project metrics.

PROCESS METRICS	PROJECT METRICS

These are the metrics pertaining to the Process Quality. They measure efficiency and effectiveness of various processes.	These are the metrics pertaining to the Project Quality. They measure defects, cost, schedule, productivity and estimation of various project resources and deliverables
reliability, efficiency, etc., are process metrics	Effort, productivity, lines of code etc., are project metrics

(B) Given: Number of lines of code: 40KLOC, Cost of buying: Rs.5,00,000, Cost per person per month : Rs. 10,000.

Calculation: Assume that the average organizational production is 620 loc/pm.

Effort = (Total lines of code/avg organizational production)

= 40,000/620 = 64.51 = 65 people

Then Cost of in-house production is = (Effort*cost per person)= 65*10,000

= ₨6,50,000

The in-house production cost is greater than buying the product. So it is preferable to buy the product rather than to build it from scratch.

But while buying the product the following conditions must be satisfied:

1. The software bought must work properly in the hardware specified by the client.
2. The software must be reusable.
3. The software must meet all the requirements given by the company and must work in the target environment.

(C) It is important that the cost and schedule estimates should be done at the beginning of the project because of the following reasons.

1. The reason we start a project in the first place is to increase the company's profitability. We estimate to determine the required budget, taking into account both the investment and the future revenue and expenses.
2. By making a cost estimate, a client gains the ability to compare various contractor's estimates. It strengthens our position and the project approval increases.
3. It allows to compare the cost and productivity of the company.

[Question 10. Answer provided by SRUTHI SREE R M]

10a)

i)Given:

Inputs = 8 simple,3 average,11 complex

Outputs=57 average

Inquiries=9 simple

Files=13 average

Interface=18 complex

Components	Count			Level of complexity			FP
	Simple	Average	Complex	Simple	Average	Complex	
Inputs	8	3	11	3	4	6	102
Outputs	0	57	0	4	5	7	286
Inquiries	9	0	0	3	4	6	27
Files	0	13	0	7	10	15	130
interfaces	0	0	18	5	7	10	180
						TOTAL	724

Unadjusted Function Points=724

ii)

Given:

Adjustment factor=47

No of function points=Total count * [0.65+(0.01*47)]

=724*[0.65+0.47]=810.88

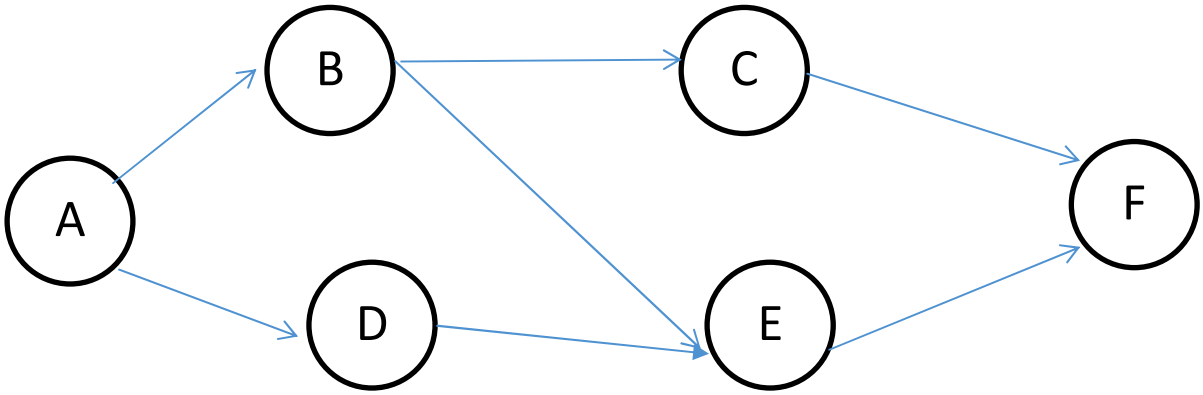
No of function points=810

iii) KLOC is used as a measure to estimate cost even though it differs from one programming language to another because it's a very old method od estimation.

10)b)

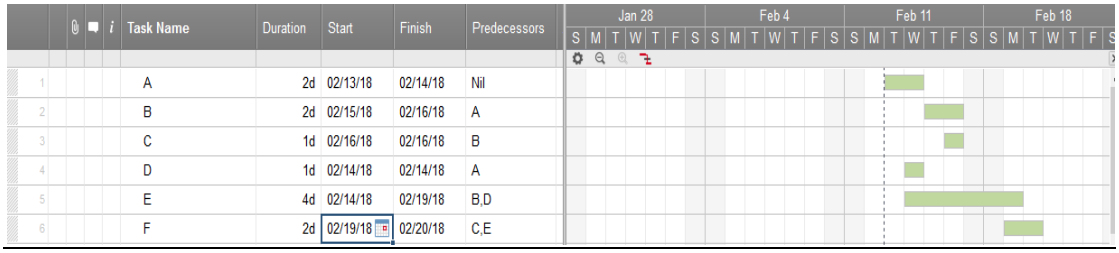
Task	Pred	Duration	Early start	Early finish	Late start	Late finish
A	-	2	0	2	0	2
B	A	2	2	4	2	4
C	B	1	4	5	7	8
D	A	1	2	3	3	4
E	B,D	4	4	8	4	8
F	C,E	2	8	10	8	10

Task Network Diagram:



Gantt Chart :

Total no.of days required to complete the project : 10 days



	Task Name	Duration	Start	Finish	Predecessors
1	A	2d	02/13/18	02/14/18	Nil
2	B	2d	02/15/18	02/16/18	A
3	C	1d	02/16/18	02/16/18	B
4	D	1d	02/14/18	02/14/18	A
5	E	4d	02/14/18	02/19/18	B,D
6	F	2d	02/19/18	02/20/18	C,E

10)c)

PROCESS	PROBABILITY	RISK TYPE	IMPACT	RE
1.Mismatch in the context of spelling.	70%	Technical	9	6.3
2.Proper nouns are interpreted as errors.	20%	Technical	2	0.4
3.Errors in algorithm	70%	Technical	1	0.7
4.Less clarity in UI design	80%	Technical	8	6.4
5.Line Break	40%	Technical	4	1.6
			Total risk exposure	15.4