INSTITUTE OF AERONAUTICAL ENGINEERING
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Examinations Control Office

Examination	B TECH VI SEMESTER END EXAMINATIONS REGULAR JUNE 2025 REG UG20

Month & Year	1-Jun	Date	25/06/2025

Course Name	SOFTWARE PROJECT MANAGEMENT

Course Code	ACIC05	E-Code	8746

Instructions to Evaluators

- ❖ Evaluators should spend at least 3-5 minutes on one answer booklet during the evaluation.

- ❖ Evaluators should cross check that marks are allotted for all the attempted questions.

- ❖ The marks should be assigned fairly according to the mark distribution specified in the scheme of evaluation.

- ❖ For questions that were attempted incorrectly, evaluators are required to award zero marks.

- ❖ The evaluator must give a proper justification in case of any mistakes identified in the marks provided.

Q.No.

3a)
Ans

A software is a program which has a life cycle model to develop a software.

There are mainly 4 different phases in a software development life cycle. They are:

2) Elaboration
1) Inception
3) Construction
4) Transition

1) <u>Inception</u>:-
This is the fist stage/phase of software development life cycle model. Here the code is intercepted with the use of code interceptors.
We take a section of code from any part of the software in this stage.
We take code and store it for test/transition

2) Elobration:-
This is also one of the critical and important phase in the model. Here the already intercepted code is taken out

we work on that part of code.
The code is elaborated which means
the meaning of the code / The loops and
iterations present in the code are
elaborated into several steps.
The code is broken down into individual
simple steps to easily understand and
identify any errors in given code.

3) Constructions:
   A software model is proposed after
the code is elaborated and analysed
by an experienced software developer.
A development model is proposed.
We check if the software should or
should not be developed in the proposed
development model.
We construct the model after checking if
all the requirements are being met.

4) Transitions:
   This phase is one of the most
important phase in software development

In this phase the software completely modifies into the ~~new~~ new model.

In this phase the software completely shifts from old model into newly constructed model. If there are any errors in the newly transited phase the errors are fixed.

50)
Ans

There are many indicators used in project management. The indicators are mainly classified into 2 different types they are:
1) management Indicators
2) Quality Indicators

1) Quality Indicators

These are the type of indicators which are used in software project management. These indicators are used to check and control the quality of the software project. The quality is preserved by performing various types of testing. By testing the software various times and in different ways we ensure the quality of the software. Some of the different types of testing are:

1) GUI Testing:

This is a type of testing which is used to test the graphics present on the interface of the program.

2) Unit Testing:

This type of testing which is used

to test each and every component and element that is present in the program. This test each component individually.

3) Integration Testing:
This is a type of testing which is used to test the components that are joining the software. This ensures that the proper connectivity between all the individual elements is maintained.

4) J-Unit Testing:
This is a type of testing which is used to test the integrity of the code but only for Java. This testing is specifically designed only of Java language.

Some of the indicators are used in programs where they act as warning signals to if any defect and flaw is found.

2) Management Indicators:
Management indicators are the type

of indicators which are used to maintain and manage the project.

Some of the management indicators are:

1) Lines of code:

LOC or lines of code is one of the most widely used management Indicator. This shows all the Important lines of code or all the line or number of lines the code spens.

2) Line of business:

LOB or Line of business is a type of management. This is one of the most used metric by businesses as it directly show all the important and required information for a business to run. It also shows the cost of expenses to run that project.

3b)
Ans:

There are various kinds of models in
software development. But mode-based architecture
are one of the most prefered models when
it comes to technical perspectives. These are
prefered because these are some of the
most robust models currently used. These
models are easy to access and implement.
These are the models which can be
easily implemented. These models can be
worked by anyone. These models provide
a good security. This kind of security is
very robust. This security is very error free
and very robust.

Doing quality checks and performing tests
would be more in this model. This models
can be easily twisted to be perfect fit
for given model.

We use these models in our day to day
lives so it is not so easy to forget how
this model works.

These models are one of the most secured
and are also not so easy to overrun or
overload on tasks.

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2b)
Ans

Some of the strategies to improve software economics. They are:

1) Cost control: Controlling the cost and minimizing on cost. is one of the basic and straight forward strategy.
It implement this is very straight forward. It is to minimized on spending money.

2) Time management: Controlling the time that is spent on a project is another strategy. In this strategy we pre-plan all the steps of the project and calculate the time before start of the project.
By calculating the time we can allocate the resources required for that project only for that certain amount of time. By this we can work on other projects more efficiently. We can take on more projects.

3) Resource Management: Controlling the flow of all the resources is another type of strategy. In this strategy we control and manage all the available resources.

If we have the total control on the resources we can easily take on more and more projects. Resource management helps one to perform a task using as least number of resources as possible.

4) Effectiveness: The effectiveness or efficiency is an another type of strategy. In this strategy companies main focus is on the efficiency. One needs to improve the efficiency and effectiveness of the code. If this is improved than the company can alocate less number of resource with some or better than current output.

5) Cost cuttings Cost cutting is another strategy. This strategy just as the name says means cutting corners. We can cut corners in many way but cutting costs at necessary problem causes major downfall in software economy.

1c)
Ans

Software is a good when it delivery good performance. To calculate or mesure software performance we use many characesitic analysis to calculate costs performances

1) Correctness:

Correctness is an important characterstic in a good software. It is the asscrance of the software tot that the output of the code would be always correct if the input is given as specified.

2) Robustness Effei Effectiveness:

Effectiveness is an important charoderstic in a good software. It assures the software is effective for the given problem. It solves the given problem.

3) Efficiency:

Efficiency is the most important characterstic while measuring software performance. A software is said to be efficient when the time and space complexity of the code is at its lowest

as possible.

Time Complexity is given the most priority if there is a method with equal time complexity than space complexity would be considered.

4) Error tolerance & Fault tolerance:

This also plays an important role in performance. It makes the software run even while facing errors.

Software economics had evolved rapidly in recent years. Now we can even predict the extexact number of days it would take and built a software. This makes it easy for the companies to manage its resources. Now we are even moving towards future by implementing AI and automation in the software development.

Q.No.	

7b)

<u>Anss-</u>

If the organization with mordern management methods wants to move towards next generation software economics than they have to ~~that~~ catch up with modern trends.

~~By~~ readly analysing the ongoing trends one can easily predict the future of that field.

When it comes to software economics the trend of AI and automation is on boom. If a company wants to survive to another generation than the company has to goo online as fast as possible.

If can enter the market as fast as possible it would have a higher chance of capturing a large market share. It is the first movers advantage.

It can captalize the market for itself The upcoming trend is going to be completely ~~this~~ digital and s̶ smart.

So. if a company wants to survive than it should have to compulsory go online. As online marketing is the new trend and this is completely going to change

the current market dynamics.

Eg: Lets take in Cars until few years
ago like before covid the average
indian consumer would not take
safety rating of a car into consideration
while te buying a car the market
now is totoly shifted by just one
factor now. now a days people
consider safty rating of car before buying
it. (Maruti Suzuki is not no.1 best/most
car sales in an year now it belongs to
Tota Punch).

Another factor to consider is automation.
automation is simply automating the
entire process by a code.

This is a huge game changer. for
companies as this reduces the
cost and expences for a company
and it also reduces the risk of
errors. As there is less human interaction
the risk of errors would also be
greatly reduced

AI & ML will be the next step in software
economics

Q.No.	

Cloud computing is also anther geme changer tech for companies.

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7a) Ans:-	The challenges in future software project managements :-

1) Cost of shifting to the future is too high.

2) The avaliability of resources is very less.

3) The avaliability of ~~goo~~ good work force is not there.

4) The tech is new for every one so no guidance is there.

5) Marketing and making people to ~~g~~ use you tech is difficult.

6) Very difficult to gain a positive impression or ~~g~~ create ~~an line~~ a brand image for customers.

Opportunities:-

1) First mover advantage.

2). Increased productivity speed.

3) Return on investment is guaranteed in a long run.

4) Almost no market penetration (no rivals in the market).

5) Errors and faults are solved as it has been automated with less human intervention.

Modern project profiles are also ~~efficing~~ a big ~~game~~ game changer for companies. As companies are saving a lot of cost just by implementing semi-automatic tools. These tools are not completely automated but they need almost to non human intervention. This increases the productivity and faults and errors are reduced.

Q.No.	

2a)

Ans:

Modern software management revolves around only one important thing that is to increase productivity while also saving costs. Some of the core principles of the modern software management ore:

1) Reduce human intervention. Most of the software companies are tring to reduce the human intervention as this increases efficiency and causes less errors.

2) Less is more. More companies are tring to down size the employees as the less employees with more experience is more than less knowledge more employees.

3) Quality. Now a days people are willing to pay extra for quality so companies are tring to improve quality of their product.

These are some of the principles that company follow in today's software economics.

Peer inspections play an important and critical role in quality assurance.

Peer inspections are inspections /tester which are conducted between the code. During these inspections the code randomly stops and checks the output for that /until that part. This ensures the proper running of the code and even guarantees the result if we use this inspections.

Using this errors are easily identified and corrected.

This interns improves quality in the software and it plays the huge role in quality assurance as it is used it first step to identify errors and at last to check if all errors are solved are not.

1f)

Ans:

Unlike theoretical models pragmatic cost estimation uses different type of metrics to calculate and reduce the cost.

The theoretical models use a structured and well placed steps /stages. Pragmatic cost estimation model also have certain rules. But these rules are not as strict theoretical models.

This model gives the flexiblity to manage cost how ever and where ever the user wants.

It does not have well structured model.

It only focuses on decreasing cost and increasing efficiency.

This is a bit difficult to maintain

5b)
Ans:

Process automation in project organisations is in the begining stages. This automation is only semi automatic and needs a little human intervention.

Now only we can automate the deployment using cd tools, and continous intergration. But in future we can expected where the AI and automated tools would be more and more advanced than today's tools. They might be able to develope a unique code with a fherachive design and deploy if all with a single prompt.

Process automation helps us greatly:

1) It improves the productivity.

2) Reduces errors. as most human errors are reduced.

3) Reduces cost required to run the process greatly.

Management indicators like:
1) Line of business

2) Line of code., etc

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These are some of the meferics to
indicate mangement of resources

Q.No.	

Q.No.	

Q.No.	

Q.No.

Q.No.	

Q.No.

Q.No.

Q.No.

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