Q] What is the role of static keyword in context of memory

→ - Static key word plays very crucial role in memory allocation

- when we want to share a variable with the class with all the members we use static keyword.

- When a field or method declear with static it get memory while the class loading rathe the on instance creation

- static cdo
- only single copy of static member is created all the field gets memory in the method area & shared all member of class

- redure memory consumption

2] can static methods can be overloaded in java. Method overloading overridden in java

How static variable shared across multiple instances of class ?

→ - yes, Static methods can be overloaded in java. Method overloading occur when method have the same name but differ in the number or type of parameters.

Static methods can be overloaded just like methods.

- No, Static methods cannot be overridden in the same sense that instance method can.

- Static methods belongs to class so they not part of hierarchy.

- if subclass defines a static method with the same signature as one is its superclass as one its superclass, this is known as method hiding.

Static variable are shared across all instance of a class because they are tied to class itself not to any specific object.

So to share variable or access we can directly use it using class name & (.) operator

Q8] What is significance of final keyword in java?

→ - used to apply restrictions to variables, methods, and classes. it ensures that certain aspects of program cannot be changed once they have been declared as final.

- final method cannot be overridden & final class cannot be inherited.

- used to declare constants.

Q9] What are narrowing and widening Conversion in java.?

→ Narrowing: Narrowis the type of converting a datatype into a narrower version or types of in

ex: int to byte
float to int
double to folat

Widening: is the process of converting a primitive data type into its wider data types.

byte → short → int → long - float - double
char → int → . . .

Q8] Examples of Narrowing and widening Conversion Betwe primitive Datatypes :

→ int value = 100;

long longValue = value; (widening)

double myDouble = longValue; (widening)

double myDouble = 100.0d;

long myLong = (long) myDouble; (Narrowing)

int myInt = (int) myLong; (Narrowing)

Q9] How does Java Handle potential Loss of precision During Narrowing Conversion

→ in Java narrowing Conversions involve converting a larger data type into a smaller one, which can lead precision loss.

- So Java to avoid that in doesnot allow narrowing conversions to happen automatically (implicitly)

- It req Explicit casting by, to handle the risk

Q] Explain the concept of Automatic widening Conversion?

→ Automatic widening Conversion refers to the process of implicitly Converting a value from a smaller (or less precise) precise primitive data type to larger one.

- conversion happen automatically, without explicit casting

byte - short → int → long
float → double

or: int myInt = 100;
long myLong = myInt; // Auto widening

Q] What are the implication of narrowing and widening Conversion on type Compatibility and dataloss?

→ narrowing & widning are process of converting data type to smaller & wider types resps.

- widening process is the same process there are no implication there is no data loss or precision loss

- but in narrowing process dataloss & precision loss may happen to handle it we use explict casting