Question 1:

Intent : Learn the basics of how web applications are built and what technologies could be used for web applications. Suppose you were given to build a web application for https://www.boats.com/ from scratch as a startup . Imagine you would be solely responsible to build it's frontend, backend, design database, setup media storage, deployment, ci/cd automation and everything else. Thus, do some research on your part and write down your response to the following questions.

a. Which backend framework would you prefer to use and why?

Ans: Using the right backend frame work can make a huge differnce in the amout of effort and time put in to develop a website. One of the popular ones used as of today is Django.
A python based backend framework, Django enables rapid development and designing of a website and makes the whole process hassel free.
Python as a programming language has a better learning curve, so implementing the python concepts become much easier for even an ameture developer.
Django also provides with a number of builtin featuers that allows one to easily connect any Database service and make sure managing the data is also very easy.
Django also follows a model-view-controller pattern which partitions the data, the UI and the connections between them.
And with a massive community that developes new features and constant bug updates Django can be considered as one of the best and easiest frameworks for backend developmemnt.

b. Which frontend framework would you prefer to use and why?

Ans: Bootstrap, a framework with a combination of HTML, CSS and Java Script is a powerful and easy to use tool even for a developer with just basic knowledge of HTML structure, CSS linking and JavaScript to start building a responsive web design.
Bootstrap comes with a strong grid system I.e It is extreamely easy to allign the web content beased on any screen size.
Bootstrap also comes with all the basic elements and templates that can be used to build a website so one does not have to build every thing form sctrach.
Regardless of screen szie it is very easy to size the interface using bootstrap. With a massive community about 22% of all websites use Bootstrap as their front end framework it is safe to say the bootstrap is a very effective way to design a good lookng highly functional frintend.

c. Which database would you prefer to use and why?

Ans: PostgreSQL is an open-source, object relational database manage system. As the name suggests it is a derivative of the SQL language with additional unique features added on top. Being open source, It is a cost effective option when compared to other proprietary tools in the market. PostgreSQL provides a bunch of operations and a rich set of features that are supported only through DJango framework making it a very effective combo to use along side DJango. PostgreSQL also won the database of year award for the past 2 years. So using such a stable RDBMS along side a robust framework such as Djongo works wonders when it comes to web development.

d. What would you use for version control of the codebase ?

Ans: A virsion control system records and changes done to a file so that one can revoke any version whenever required. Say as a web developer one needs a way to store images and videos but keeps updating once in a while, it can be very helpful to use Git inorder to store the images and files that can be rovoked to its previous version when needed. Git is open source and works with multiple programming languages and operating systems. One of the advantages of Git is the branching system. These branches are easy to merge and provide an isolated environment for every update or change in ones codebase.

e. Which platform would you prefer for media storages

Ans: Amazon Web Services or AWS is a cloud web service platform by Amazon. AWS provides a lot of services, Amazon S3 (Simple storage stervice) in perticular is an amazing way to store any form of data be it text or images and videos. AWS offers S3 storeage buckets costing per GB per month. Although it's a paid service the other servics that AWS provide make it a great investment. One can edge locations to quickly load the static data to a request happening on the other end of the world and not experience delay of any sort. AWS also provides multiple security features like IAM roles, groups and such allowing all the data to be safe and blocks any sort of cyber attacks on the bucket itself.

f. Where would you deploy your application and which web server would you use and why?

Ans: Going with the previous answer AWS provides great services such as Amazon EC2 or elastic cloud compute which allows the user to set up a server in any of the regions provded by AWS. EC2 provides user with a lot of options such as number of CPUs, CPU type, OS type and much for making for amazing customization options. Using load balancers and auto scaling one can scale up or down servers depending on the traffic. User need not worry too mcuh about creating new servers to accommodate the traffic.
If the user does not want to go through the hassel of setting up the server Elastic Beanstalk is an amazing tool where AWS itself takes care of creating a server, the user only has to worry about the forntend and the backend code. Import it to Elastic beanstalk and the webiste is ready to be hosted. AWS also allows the user to install the preffered verision control system and DBMS in the server leading to more cusyomizability and with other AWS services such as Amazon aroura - an AWS based RDBMS and Redshift - a data warehouse in case large amout of storage is needed AWS acts as a great platform create a server and host a wrbsite.