History of the Earth

Que 1: Give a brief note on the significance of fossils. ***Marks :(3)***

Ans: Establishing Geologic time, Determining age of rock strata, Correlation of rock sequences, Identification of chronostratigraphic units.

Que 2: Define the following terms. ***Marks :(3)***

a) Fossils

b) Correlation

c) Palaeontology

Ans: a) Fossils are the remains or traces of ancient life preserved in rocks.

b) Correlation is the process of determining the age relationship between geographically widely separated rock units.

c) The branch of historical geology dealing with the study of fossils is Palaeontology.

Que 3: How are moulds and casts related? ***Marks :(2)***

Ans: A cast may be produced if a mould is filled with sediment or mineral matter (which then hardens). A cast is a replica of the original.

Que 4: a). What does the principle of faunal succession state?

b) How you will determine younger and older rock units in a sequence of strata based on the principle of superposition?

c) Which principle states that "an intrusive igneous body will be always younger than the rock it intrudes or cuts across". ***Marks :(3)***

Ans: a). The principle of faunal succession states that the groups of fossil plants and animals occur in the geologic record in a definite and determinable order.

b). In an undeformed horizontal sequence of sedimentary rocks (or layered igneous rocks), the oldest beds are on the bottom with successively younger layers on top of these and the youngest one will be on the top.

c). The principle of crosscutting relationship

Que 5: a) Differentiate between relative dating and absolute dating.

b) In which type of dating do we rely on fossils?

c) How is absolute dating carried out? ***Marks :(4)***

Ans: a) Relative dating involves placing rocks and events in their proper sequence (ie, with respect to time) of formation. Relative dating tells scientists if a rock layer (or an event) is "older" or "younger" than another.

Absolute dating involves specifying the actual number of years that have passed since an event occurred. In numeric dating, we can assign a number more precisely in years to the amount of time that has passed.

b) Relative dating.

c) Absolute dating is achieved by measuring how much of a rock's radioactive elements have changed since the rock was formed, using the process of radiometric dating.

Que 6: Choose the right word from those given in brackets to mention the following.

(Permineralization, Trace Fossils, Carbonisation)

(a). Signs of the organisms' activity.

(b). Minerals deposited in pores.

(c). Preservation of soft tissues of plants or animals as thin carbon films
Marks :(3)

Ans: a). Trace fossils

b). Permineralisation

c). Carbonnisation

Que 7: What type of preservation is seen in petrified wood? Explain. ***Marks :(3)***

Ans: Replacement.

Simultaneous solution of the original material and replacement by a new substance result in the preservation of original structures in wood. Replacement is the molecule-by-molecule (or atom by atom) substitution of another mineral. The fine details of wood are generally preserved faithfully in petrified wood.

Que 8: How can you substantiate that the Geologic Time Scale signifies the appearance and disappearance of certain fossil species in rock records?
Marks :(3)

Ans: The period boundaries in Geologic Time Scale coincide with smaller extinction events, followed by appearances of new species. Examples:

Age of Man	Quaternary
Age of Mammals	Cenozoic

Que 9: Why do fossils are not found in igneous and metamorphic rocks?
Marks :(2)

Ans: Igneous rocks are formed from molten rock erupting from deep within the and most metamorphic rocks which are formed by tremendous heat and pressure. Therefore, fossils are not usually found in either igneous or metamorphic rocks.

Que 10: What do you mean by the statement "The present is the key to the past"? ***Marks :(2)***

Ans: This is the principle of uniformitarianism. This doctrine holds the view that the processes that are operating during the present are the same processes that have operated in the past. When we look at processes that occur today, we can infer that the same processes operated in the past.

Que 11: Why do all organisms not preserved as fossils? ***Marks :(3)***

Ans: The conditions favoring fossilization depends on several factors. To become preserved as a fossil, an organism must have preservable hard parts. The organism must be rapidly buried by sediment. To become a fossil, the organism must also escape physical, chemical, and biological destruction after burial. Because of these requirements, only a very small number of plants and animals are preserved as fossils.