

ANSWER

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Round: 9A

1. The Deepwater Horizon oil spill in the Gulf of Mexico was the largest accidental marine oil spill in the history of the petroleum industry. If the discharge rate was $8,400 \text{ m}^3$ per day, how much oil was discharged between April 20 and July 15 (before the well was capped)?

NOTE: Depending on how they count days, the answer is 86 OR 87 (1 pt)

April: 10 days

May: 31 days

June: 30 days

July: 15 days

86 days at $8,400 = 722,400 \text{ m}^3$ OR 87 days at $8,400 = 730,800 \text{ m}^3$ (2 pts)

2. The Gulf of Mexico has sedimentary sequences of sandstone, mudstone, and salt layers (evaporites).

a) When these rocks were originally deposited, which contained the most organic matter?

Mudstone (3 pts)

b) When these rocks were originally deposited, which trapped the oil in place?

Mudstone OR salt (3 pts)

3. Which rock, from Question 2, is most likely to contain oil today? Does this rock have high or low porosity? High or low permeability?

Sandstone (3 pts)

High permeability (1 pt)

High porosity (1 pt)

4. What two (2) past conditions made the Gulf of Mexico favorable for each of the following:

a) development of salt layers?

Any TWO (2) of the following; 1 pt each, 2 pts total:

- Restricted basin,

- Evaporation of saltwater

- Warm temperatures

b) development of oil?

Any TWO (2) of the following; 1 pt each, 2 pts total:

- Warm temperatures

- Organic matter

- Shallow water

- Fauna/organisms

- Sediment influx from surrounding land

5. What two (2) conditions are needed to transform organic matter into oil?

Pressure OR compression (1 pt)

Heat OR high temperatures (1 pt)