Assignment 9

The due date for submitting this assignment has passed. Due on 2018-03-28, 23:59 IST.

Submitted assignment

1) Given, \( A^\mu = (x^2 - y^2, yxz, xyz, 0) \). Find the Electric field.

\[
\begin{align*}
&(-2x - yz) \hat{i} + (2y - xy) \hat{j} \\
&(2x - yz) \hat{j}
\end{align*}
\]

No, the answer is incorrect.

Score: 0

Accepted Answers:

\[
(-2x - yz) \hat{i} + (2y - xy) \hat{j}
\]

2) Given \( A^\mu \) in Q-1, find the magnetic field.

\[
\begin{align*}
&-xyt \hat{i} + yxt \hat{j} + (yz - xz) t \hat{k} \\
&xyt \hat{i} + yxt \hat{j} + (yz - xz) t \hat{k} \\
&-xyt \hat{j} - yxt \hat{i} + (xz - yz) t \hat{k}
\end{align*}
\]
(While answering write True or False only. Don’t put any white-space/other characters before or after the answer.)

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) False

4) Given the vector potential, \( A^\mu = e^\mu \cdot e^{-i q \cdot x} \), to represent a photon of four-momentum \( q^\mu = q (1, 0, 1, 0) \). Which of the following is/are possible polarization vector ?

- \( e^0 = (1, 0, 1, 1) \)
- \( e^1 = (0, 1, 0, 1) \)
- \( e^2 = (-1, 0, 1, 0) \)
- \( e^3 = (1, 0, 0, -1) \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( e^0 = (1, 0, 1, 1) \)
\( e^1 = (0, 1, 0, 1) \)

5) Which of the following statements is/are correct ?

- \( \gamma^0 \gamma^1 + \gamma^1 \gamma^0 = 2 \)
- \( \gamma^0 \gamma^1 + \gamma^1 \gamma^0 = 0 \)
- \( \gamma^0 \gamma^1 - \gamma^1 \gamma^0 = 2 \)
- \( \gamma^0 \gamma^0 + \gamma^1 \gamma^1 + \gamma^2 \gamma^2 + \gamma^3 \gamma^3 = 2 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( \gamma^0 \gamma^1 + \gamma^1 \gamma^0 = 0 \)

6) \( \gamma_\mu \gamma^\mu = ........... \)

- 4I, where I is a 4 \times 4 unit matrix.
- 8I, \( \gamma_\mu \gamma_\nu \)
- I
- 2I
No, the answer is incorrect.

Score: 0

Accepted Answers:
4I, where I is a 4 X 4 unit matrix.
\( g^{\mu\nu} \gamma_\mu \gamma_\nu \)