Shree H.N.Shukla College of Science Rajkot

B.Sc. (Sem. - III) (CBCS)

[301-PHYSICS]

UNIT TEST-2018

Student's Name: **DATE:-_____**

Roll no.: **Total marks- 28**

Q-1 Givethe followinganswer[08]

1) The value of β range from ___ to _____.
2) What do you mean by transistor biasing?
3) What is faithful amplification?
4) Which transistor bias circuit provides god Q point stability with a single polarity supply voltage?
5) What is condition between I_1 and $I_B$in voltage divider method for better stabilization?
6) Write the product rules for gradients.
7) i.i=___, i.j = ____, i x i =_____,
8) Gauss theorem is passage from _____ to _____integral.

Q-2 Give the followinganswer (Any Two) [04]

1. Write short note on the "operating Point "?
2. Write short note on "Thermal Runway".
3. A change of 200mV in base-emitter voltage causes a change of 100 μA in the base current. Find the input resistance of transistor.
4. What is called vector four product?

Q-3 Give the following answer(Any Two) [06]

1. For voltage divider circuit, calculate emitter current Ic and collector emitter voltage V_{CE}. Giver that R1 =10KΩ, R_E = 5KΩ, V_{CE} = neglected.
2. Derive General expression of stability factor.
3. Explain cut off and saturation region of C-E transistor. (With graph)
4. Describe gradient of a scalar.

Q-4 Give the following answer (Any Two) [10]

1. Describe the emitter bias circuit in detail. How stabilization of operating is achieved by this method?
2. Discuss the performance of transistor amplifier.
3. Prove that $\nabla \times (\vec{A} \times \vec{B}) = (\vec{B} \cdot \nabla)\vec{A} - (\vec{A} \cdot \nabla)\vec{B} + \vec{A}(\nabla \cdot \vec{B}) - \vec{B}(\nabla \cdot \vec{A})$.
4. Describe fundamental theorems of calculus and gradients.