

EASTERN UNIVERSITY, SRI LANKA

SECOND EXAMINATION IN SCIENCE - 2015/2016

FIRST SEMESTER (PROPER/REPEAT)

(November/December 2017)

PH 202 ELECTRONICS I

Time: 01 hour.

Answer ALL Questions

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1. (i) Explain forward bias and reverse bias operations of a semiconductor junction diode by using appropriate circuit diagrams and energy band diagrams.
- (ii) Draw and explain the significance of the I-V characteristic of Si diode.
- (iii) List three applications of diodes and briefly explain any one of them using appropriate diagrams.
- (iv) The input of a Half-wave rectifier is  $V = 300 \sin 314 t$ . If  $R_L = 1k\Omega$ , and forward resistance of the diode is  $20 \Omega$ , find (a) The dc current through the diode, (b) The ac current in the circuit, (c) output dc voltage, (d) input dc power and (e) rectifier efficiency.

2. (i) Explain the principle of operation of an NPN transistor using appropriate diagrams.

(ii) Using a common-emitter transistor configuration circuit discuss the input and output transistor Characteristics and about the distinguished regions in the output characteristic graph.

(iii) A voltage divider bias circuit is shown below. Draw the d.c. load line and determine the operating point assuming the transistor is made by silicon with base emitter voltage  $V_{BE}$  is 0.7 V.

