

15. (a) Describe briefly bandwidth of an op-amp.

Or

- (b) Explain the non inverting amplifier.

PART C — ( $5 \times 8 = 40$  marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Explain constant current source.

Or

- (b) Write the determination of h parameter.

17. (a) Explain the Tunnel diode with a diagram.

Or

- (b) Explain full wave bridge rectifier.

18. (a) Explain the common base connection of a transistor.

Or

- (b) Explain pushpull amplifier.

19. (a) With a neat diagram explain bistable multivibrator.

Or

- (b) Explain the action of a positive clamper and negative clamper.

20. (a) Explain op-amp with negative feedback.

Or

- (b) Explain bandpass filter.

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SMPH 51

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2019.

Fifth Semester

Physics — Main

BASIC ELECTRONICS

(For those who joined in July 2016 onwards)

Time : Three hours

Maximum : 75 marks

PART A — ( $10 \times 1 = 10$  marks)

Answer ALL questions.

Choose the correct answer :

1. Efficiency at maximum power transfer is \_\_\_\_\_.

- (a) 50% (b) 80%  
(c) 100% (d) None

2. The dimension of  $h_{ie}$  parameter is \_\_\_\_\_.

- (a) ohms (b) volt  
(c) milli volt (d)  $\mu$  mho



3. The knee voltage for Silicon pn junction is \_\_\_\_\_.
- (a) 1.1 V (b) 0.7 V  
(c) 1 eV (d) 0.3 eV
4. Ripple factor of a full wave rectifier is \_\_\_\_\_.
- (a) 0.48 (b) 1.21  
(c) 0.81 (d) 1.40
5. The relation between  $\alpha$  and  $\beta$  is
- (a)  $\alpha = \frac{1-\beta}{\alpha}$  (b)  $\beta = \frac{\alpha}{1-\alpha}$   
(c)  $\alpha = 1 + \beta$  (d) None
6. In Class A power amplifier the operating point  $Q$  is at \_\_\_\_\_.
- (a) DC load line (b) DC power line  
(c) AC load line (d) None
7. Frequency of Hartley oscillator is
- (a)  $f = \frac{1}{2\pi\sqrt{LC}}$  (b)  $\frac{1}{2\pi(C_1 + C_2)}$   
(c)  $\frac{1}{2\pi\sqrt{(L_1 + L_2)C_3}}$  (d) None
8.  $(1 + \beta A) > 1$  where  $\beta A$  is
- (a) current gain (b) loop gain  
(c) voltage gain (d) none
9. The input impedance of an ideal op-amp is
- (a) 0 (b) infinity  
(c) 10 k  $\Omega$  (d) none

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10. The  $Q$ -factor of band pass filter circuit  $Q =$

- (a)  $\frac{f_0}{BW}$  (b)  $f_0 = f_1 - f_2$   
(c)  $f_2 - f_1$  (d)  $BWf_0$

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) State and explain Norton's theorem.

Or

- (b) Discuss the h-parameters of a transistor.

12. (a) Describe the V-I characteristics of PN junction.

Or

- (b) Derive an expression for the efficiency of a full wave rectifier.

13. (a) Describe the operation of transistor as an amplifier.

Or

- (b) Define and explain the terms Class A Class B power amplifier.

14. (a) Explain the action of Colpitt's oscillator.

Or

- (b) With a neat circuit diagram, explain Integrating circuit.

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