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Reg. No. : .....

Code No. : 41124 E      Sub. Code : JMPH 51

B.Sc. (CBCS) DEGREE EXAMINATION,  
NOVEMBER 2018.

Fifth Semester

Physics — Main

BASIC ELECTRONICS

(For those who joined in July 2016 and afterwards)

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. A constant current source has \_\_\_\_\_ internal resistance.

(a) High                      (b) Low  
(c) 50%                      (d) 100 Ω

2.  $Z_{in} =$  \_\_\_\_\_.

(a)  $h_{ie}$                       (b)  $h_{fe}$   
(c)  $h_{oe}$                       (d)  $h_{re} h_{fe}$

3. The electric charge on a hole is

(a)  $1.6 \times 10^{-19} \text{ C}$   
(b)  $1.6 \times 10^{-8} \text{ C}$   
(c)  $1.6 \times 10^8 \text{ C}$   
(d) 1.6 C

4. The efficiency of half wave rectifier is

(a) 40%                      (b) 40.2%  
(c) 40.6%                      (d) 81.2%

5. In CE mode the current gain is

(a)  $\beta = \frac{I_C}{I_B}$                       (b)  $\beta = \frac{I_E}{I_B}$   
(c)  $\beta = I_C \times I_B$                       (d) None

6. The input impedance of a JFET is in the range of

(a) Above 2M Ω  
(b) 200 to 400 KΩ  
(c) 20 to 40 KΩ  
(d) Below 2KΩ



7. Brakhausen condition for oscillation is

- (a)  $A\beta = 0$
- (b)  $A\beta = 2$
- (c)  $A\beta = 1$
- (d) None

8. The total phase shift in the Colpitt's oscillator is

- (a)  $180^\circ$
- (b)  $270^\circ$
- (c)  $360^\circ$
- (d) None

9. An ideal op-amp has

- (a) Infinite  $A_v$
- (b) Infinite  $R_i$
- (c) Zero  $R_o$
- (d) All the above

10. The unity gain frequency of an op-amp equal

- (a)  $10^3$  HZ
- (b)  $10^6$  HZ
- (c)  $10^2$  HZ
- (d) 10 HZ

SECTION B — ( $5 \times 5 = 25$  marks)

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

Each answer should not exceed 250 words.

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

Or

(b) Define h-parameter and obtain the expression for voltage gain.

12. (a) Describe the working of p-n junction.

Or

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

13. (a) Describe the transistor action.

Or

(b) Discuss briefly FET parameters.

14. (a) Explain the action of Hartley oscillator.

Or

(b) With a neat circuit explain Differentiating circuit.



15. (a) Write the characteristics of ideal op-Amp.

Or

- (b) Describe the Summing Amplifier.

SECTION C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Explain Maximum power transfer theorem.

Or

- (b) Explain the equivalent circuit of h parameters of a transistor.

17. (a) Discuss the V-I characteristics of Zener diode.

Or

- (b) Explain the centre tap full Wave rectifier.

18. (a) Explain RC coupled amplifier.

Or

- (b) Describe JFET characteristics with a diagram.

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19. (a) Explain phase shift oscillator using transistor.

Or

- (b) Explain clipping and clamping circuits.

20. (a) Describe DC and AC analysis of op-Amp.

Or

- (b) Define Inverting Amplifier and write Input and output impedance of Inverting amplifier.

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