(6 pages) Reg. No. : .....

Code No. : 30454 E **Sub. Code : CMPH 51**

B.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

Fifth Semester

Physics — Core

BASIC ELECTRONICS

(For those who joined in July 2021 and 2022 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. If a signal passed through an integrator, it ——— the amplitude of noise signal.

   (a) Enhance (b) Factorizes

   (c) Stabilizes (d) Reduces

2. The ripple voltage of a full-wave rectifier with a 100 μF filter capacitor connected to a load drawing 50 mA is

   (a) 2.4 kV (b) 1.8 kV

   (c) 4.8 kV (d) 1.2 kV

3. Hartley oscillator is a ———

   (a) Phase shift oscillator

   (b) RC oscillator

   (c) Crystal oscillator

   (d) LC oscillator

4. Oscillator operate on the principle of ———

   (a) Positive feedback (b) Negative feedback

   (c) Signal feedthrough (d) Attenuation

5. Multi-vibrators can be used to produce which type of signals ———

   (a) Triangular wave (b) Impulse

   (c) Sine wave (d) Square wave

6. An integrator contains a 100 kilo ohms and 1 μF capacitor. If the voltage applied to the integrator input is 1V, what is the voltage present at the integrator output after 1s?

   (a) 1V (b) 5V

   (c) 2V (d) 10V

7. If a capacitor is placed in the feedback path of an op-amp circuit, then the circuit can act as ————

(a) Integrator (b) Multiplier

(c) Substractor (d) None of the above

8. An op-amp as a voltage follower has a voltage gain of ————

(a) Infinity (b) Zero

(c) Unity (d) Negative value

9. The maximum efficiency of a half-wave rectifier is ————

(a) 50.6% (b) 40.6%

(c) 81.2% (d) 40.2%

10. If the input to differentiating circuit is a sawtooth wave, then the output will be ———— wave.

(a) Square (b) Rectangular

(c) Triangular (d) None of these

PART B — (5 × 5 = 25 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Discuss about the Norton's theorem.

Or

(b) Explain the h parameters of a transistor.

12. (a) Explain the Tunnel diode.

Or

(b) Discuss about the zener diode.

13. (a) Describe the push pull ampifier.

Or

(b) Explain the construction and working function of class B power amplifier.

14. (a) Discuss about the clipping and clamping circuits.

Or

(b) Explain the construction and working of monostable multivibrator.

15. (a) Describe the adder and substractor circuits.

Or

(b) What are the characteristics of ideal operational amplifier?

PART C — (5 × 8 = 40 marks)

Answer ALL questions choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) Explain the conversion of voltage source into current source.

Or

(b) Define the h parameter and explain the thevenin's theorem.

17. (a) Explain the construction and working function of tap full wave rectifier.

Or

(b) Explain the construction and working function of Half wave rectifier.

18. (a) Discuss about the class A and class C power amplifier.

Or

(b) Explain the construction and working function of common emitter and common collector transistor.

19. (a) Explain the construction and working function of Astable multivibrator using transistor.

Or

(b) Discuss about the Hartely oscillator.

20. (a) Explain the low pass and high pass filters.

Or

(b) Describe the inverting and non inverting amplifier.

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