

Reg. No:..... Name:.....

BSC DEGREE END SEMESTER EXAMINATION OCTOBER 2015

SEMESTER - 3: PHYSICS (CORE)

COURSE: U3CRPHY3- ELECTRONICS

Time: 3 Hours

Max. Marks: 60

Part A(Answer **all** questions. Each question carries 1 mark)

1. Explain the origin of junction capacitance in a pn junction diode.
2. What are filter circuits?
3. Draw the circuit diagram of a positive clipper circuit.
4. The base of a transistor is made thin. Why?
5. Mention one use of CC amplifier.
6. What is the structural difference between FET and MOSFET?
7. Audio signals cannot be transmitted to longer distances. Why?
8. Draw the circuit diagram of a non-inverting amplifier.
9. Mention any two advantages of negative feedback in an amplifier.
10. Define Peak Inverse Voltage of a pn junction diode.

(1 x 10 = 10)

Part B(Answer **7** questions. Each question carries 2 marks)

11. With a neat diagram explain the working of a positive clamper.
12. Explain thermal run away of a transistor.
13. Explain the regions in the output characteristics of a common emitter transistor.
14. Why emitter follower is so called?
15. What are the various distortions associated with an amplifier?
16. What are the characteristics of an ideal OPAMP?
17. Explain the principle of a diode detector.
18. Explain the principle of a crystal oscillator.
19. What are the advantages of FM over AM?

(2 x 7 = 14)

Part C(Answer **4** questions. Each question carries 4 marks)

20. In a CE transistor the potential difference across the collector resistance is 9V. Find the emitter current and base current. (Given $\beta=75$ and $R_c=4\text{ k}\Omega$)
21. The current limiting resistor and load resistor in a voltage regulator circuits are $10\text{ k}\Omega$ and $5\text{ k}\Omega$ respectively. The zener voltage is 10V. Calculate the zener current if the line voltage is 50V.
22. Distinguish between dc load line and ac load line.
23. Explain h parameters. What are the uses/advantages of h parameters?

24. The input impedance and output impedance of a CE amplifier are $2k\Omega$ and $5k\Omega$ respectively. Gain of the amplifier without feedback is 80. Calculate the input impedance and output impedance when 10% of output is fed negatively to the input.
25. The voltages applied to the terminals of a differential amplifier are 6mV and 2mV respectively. Calculate the output voltage if the voltage amplification of the amplifier is 100.
- (4 x 4 = 16)

Part D

(Answer 2 questions. Each question carries 10 marks)

26. What is meant by rectification? Explain the working of a full wave bridge rectifier. Derive the expressions for its efficiency and ripple factor.
27. What is meant by biasing a transistor? Explain various biasing circuits.
28. What is meant by modulation? Derive the expressions for (i) Amplitude modulated wave and (ii) Power in an AM wave.
29. What is the difference between an amplifier and oscillator? Explain the working of an RC phase shift oscillator.

(10 x 2 = 20)
