NCF-003-0492006 Seat No. _____

B. Sc. / M. Sc. (Applied Physics) (Integrated) (Sem. II) (CBCS) Examination

April / May - 2017

Basic Electronics : Paper - VIII

(New Course)

Faculty Code : 003

Subject Code : 0492006

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.

(2) Symbols have their usual meaning.

(3) Figures on right side indicate full marks.

1 Attempt any **seven** short questions : (two marks each) **14**

(1) What is a Zener diode? Draw V - I characteristics of Zener diode.

(2) Which are the most commonly used semiconductors and why?

(3) Give the names of most commonly used filter circuits.

(4) Give the name of device which works as a voltage controlled capacitance.

(5) Draw the common base and common collector connections.

(6) What is transistor? Explain the construction of transistor.

(7) What is faithful amplification?

(8) Write the advantages of transistor.

(9) Write essentials for a biasing circuit.

(10) Discuss the stabilization of operating point.

2 Write answers of following questions : 14

(a) (1) Draw the symbol of crystal diode and Zener diode. 2

(2) What is the breakdown voltages for Ge and Si. 2

(b) Explain intrinsic and extrinsic semiconductors. 5

(c) What is a ripple factor? Calculate value for a half wave and full wave rectifier. 5

OR

2 Write answers of following questions : 14

(a) (1) Draw the symbol of crystal diode and Zener diode. 2

(2) What is crystal diode? Explain its rectifying action. 2

(b) Explain working of Full wave bridge rectifier with neat sketch. 5

(c) What is a PN junction? Explain the formation of potential barrier in PN junction. 5

3 Write answers of following questions : 14

(a) (1) Draw symbols of LED, Photodiode, Varactor and Shockley diode. 2

(2) Why photodiode is connected in reverse bias? 2

(b) Discuss tunnel diode and explain V-I characteristics of tunnel diode. 5

(c) Explain the working of Photo diode with its applications. 5

OR

3 Write answers of following questions : 14

(a) (1) How LED differs from an ordinary diode? 2

(2) What is an optoisolator? 2

(b) Explain the working of Shockley diode. 5

(c) Explain the working of varactor diode with its applications. 5

4 Write answers of following questions : 14

(a) (1) What do you understand by d.c. and a.c. load lines? 2

(2) Draw the symbol of NPN and PNP transistor. 2

(b) Discuss input and output characteristics of common collector connection of transistor. 5

(c) Compare the various characteristics of CE, CB and CC connections in transistor. 5

OR

4 Write answers of following questions : 14

(a) (1) Write the mathematical relation between β and α. 2

(2) Explain voltage gain in transistor. 2

(b) Discuss input and output characteristics of common emitter connection of transistor. 5

(c) Write short notes on : 5

(1) Advantages of transistor and

(2) Operating point.

5 Write answers of following questions : 14

(a) (1) Give the names of different audio power amplifiers. 2

(2) What is an audio power amplifier? What it its need? 2

(b) Compare the RC coupling, Transformer Coupling and Direct Coupling. 5

(c) Describe potential divider in detail. How stabilization of operating point is achieved by this method? 5

OR

5 Write answers of following questions : **14**

(a) (1) Draw the block diagram of multistage transistor amplifier. **2**

(2) What is the disadvantage of voltage divider biasing? **2**

(b) Discuss RC coupled transistor amplifier. **5**

(c) Give the names of various methods used for transistor biasing. Discuss any one method with its advantages and disadvantages. **5**