

Roll No. ....  
500 -/-/15/20

**January 2018**  
M. Sc. IIIrd Semester Examination

**PHYSICS**  
Third Paper : Digital Electronics

Time 3 Hours]

[Max. Marks : Regular 85 / Private 100  
[Min. Marks : Regular 28 / Private 33

Note : This question paper is meant for all Regular and Private students. Answer all five questions. All questions carry equal marks. The blind candidates will be given 60 minutes extra time.

1. (a) Convert binary number 11011110 into its decimal equivalent.  
(b) Work out the value of each digit of decimal number 5032.074 and show that when the positional values of each digit are added up the result tallies with the given decimal number.

OR

- (a) Convert the hexa decimal (A6F.CD)<sub>16</sub> into octal number.  
(b) Add the following BCD numbers :  
(i) 1001 and 0100 and  
(ii) 00011001 and 00010100.

2. Using Boolean algebra, verify :  
(a)  $(A + B)(B + C)(C + A) = AB + BC + CA$   
(b)  $(A + B)(\bar{A} + C) = AC + \bar{A}B + BC$ .

OR

Simplify the following expression using the Karnaugh map for the 4-variables A, B, C and D:

$$Y = m_1 + m_3 + m_5 + m_7 + m_8 + m_9 + m_{12} + m_{13}$$

3. (a) Explain briefly the BCD-to-Seven segment decoder.  
(b) What is a multiplexer ? Explain two-channel and four- channel multiplexer.
- OR
- (a) Explain how a J-K flip-flop can be converted into a D-flip- flop.  
(b) Explain the working of serial in-parallel out shift register with logic diagram and waveforms.
4. (a) Explain the difference between the performance of asynchronous and synchronous counters.  
(b) What factors determine whether a counter operates as a count-up or count-down counter?

OR

- (a) Draw the logic diagram of a MOD-10 count-up ripple counter using count reset.  
(b) What is the procedure for designing a synchronous counter ?
5. (a) What do you understand by offset error in a D/A converter ?  
(b) Distinguish between the full-scale error and the linearity error of D/A converter.

OR

- (a) What are different types of A/D converters ?  
(b) How do you classify the A/D converters based on their operational features ?

http://www.davvonline.com

Whatsapp @ 9300930012

Send your old paper & get 10/-

अपने पुराने पेपर्स भेजे और 10 रुपये पायें,

Paytm or Google Pay से