



DG-3120
Third Year B. Sc. (Sem. V) Examination
March / April - 2016
PHY - 5010 : Physics : Paper - X
(Instrument and Digital Electronics)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

<p>नीचे दर्शावेक निशानीवाणी विगतो उत्तरवकी पर अवश्य लपनी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : Third Year B. Sc. (Sem. V)</p> <p>Name of the Subject : PHY - 5010 : Physics : Paper - X (Instru. and Digital Electro.)</p> <p>Subject Code No. : 3 1 2 0 Section No. (1, 2,.....): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p>Student's Signature</p>
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- (2) Draw neat diagrams wherever necessary.
(3) Symbols used in the paper have their usual meaning.
(4) Figures to the right indicate full marks of the question.

1 Answer the following as required in brief : 8

- (i) Output $Y = 1+A =$ _____.
- (ii) Write Boolean expression of Exclusive OR gate .
- (iii) State De-Morgan's First theorem .
- (iv) Define packing fraction .
- (v) Define binding energy of nucleus.
- (vi) Give the full form of TTL.
- (vii) Why glass is not used for work in the ultraviolet region ?
- (viii) Which are universal gates ?

2 (a) Answer any one of the following in detail. 10

- (i) Describe construction and working of the Dempster mass spectrograph . Discuss its uses.
- (ii) Describe construction and working of an electron microscope with necessary diagram.

- (b) Attempt any one of the following : 4
- (i) Explain ultraviolet spectroscopy .
 - (ii) Explain constant Deviation spectrograph .
- 3 (a) Answer any one of the following in detail. 10
- (i) Discuss simplification of Boolean function using K-map.
 - (ii) What is NOR gate? Shows the circuit symbol and truth table for 2-input NOR gate. Explain TTL NOR gate in detail.
- (b) Attempt any one of the following : 4
- (i) Draw neatly the circuit diagram for realizing OR gate using diode and explain their operation.
 - (ii) Explain briefly sum –of –Products method.
- 4 Answer any two of the following . 14
- (i) Realize the following function using only NOR gates

$$Y = (A+C) (\bar{A}+B)$$
 - (ii) Realization of basic gates using NAND gates.
 - (iii) Explain Bain bridge's mass spectrograph.
 - (iv) Explain in detail quartz spectrograph for near Ultra violet region.
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