



AD-3218

Third Year B. Sc. (Sem. VI) Examination

March/April – 2015

Physics : Paper - XI : PHY - 6011

(New Course)

Time : Hours]

[Total Marks : 50

Instructions :

(1)

नीचे दृशावेक निशानीवाणी विगतो उत्तरवडी पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
THIRD YEAR B. SC. (SEM. VI)	<input type="text"/>
Name of the Subject :	<input type="text"/>
PHYSICS : PAPER - XI : PHY - 6011 (NEW)	<input type="text"/>
Subject Code No. : <input type="text"/> 3 <input type="text"/> 2 <input type="text"/> 1 <input type="text"/> 8	<input type="text"/>
Section No. (1, 2,.....): Nil	<input type="text"/>
	Student's Signature

- (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.
- (5) Scientific non – programmable calculator may be used.

1 Answer the following questions in brief : 8

- (1) What do you mean by Doppler's shift?
- (2) State the big bang hypothesis?
- (3) What is the significance of Hubble's parameter?
- (4) What are MACHOs?
- (5) What is a preprocessor directive?
- (6) What do you mean by a compiler?
- (7) Write C expressions corresponding to $(4x + 3)(2y + 2z - 4)$.
- (8) Rewrite the input statement `scanf ("%d%d", &p, &q);` for an octal integer.

2 (a) Attempt any one of the following in details: 10

- (i) Discuss in details the cosmic microwave background radiation and the present day temperature of the universe.
- (ii) Explain the circumstances that leads to the prediction of existence of large quantity of invisible matter in galaxies and hence discuss dark matter.

- (b) Attempt any **one** of the following: 4
- (i) If, Sun is at a distance of 8.5 kpc from the center of our Milky way galaxy, and if the mass contained within the region of its circular path is 10^{11} solar masses, then calculate its tangential velocity.
(1pc= 3.084×10^{11} km; $G = 6.67 \times 10^{-11}$ SI;
Mass of Sun = 2×10^{30} kg)
- (ii) The wavelength shift in the light from a particular galaxy indicates a recessional speed of 2.8×10^8 ms⁻¹. Approximately how far from us is the galaxy. Take Hubble's parameter $H = 19.3$ mm s⁻¹ly⁻¹.
- 3** (a) Attempt any **one** of the following in details: 10
- (i) Discuss the different types of numeric constants which are used in C alongwith the rules to be followed.
- (ii) What is a flow chart? Discuss in details the standard convention used in drawing a flow chart by giving an illustration.
- 3** (b) Attempt any **one** of the following: 4
- (i) If the cost of 10 pencils is Rs. 45, then write a program in C to calculate the cost of 15 dozen pencils.
- (ii) Write a program to read the length, breadth and height of a cuboid and compute its volume and total surface area.
- 4** Discuss any **two** of the following in details: 14
- (i) The expansion of the universe and Hubble's law.
- (ii) Cosmology and general theory of relativity.
- (iii) Input and output functions in C program.
- (iv) Conditional statements and their use in C programming.