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RAN-1152

Third Year B. Sc. (Semester-VI) Examination

March / April - 2019

Physics : Paper -XI

(Old or New to be mentioned where necessary)

(New Course)

[Total Marks: 50

સૂચના : / Instructions

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of ☛ signs on your answer book

Name of the Examination:

☛ **Third Year B. Sc. (Semester-VI)**

Name of the Subject :

☛ **Physics : Paper -XI**

Subject Code No.: **1 1 5 2**

Seat No.:

Student's Signature

Instructions:

(1) Draw neat diagrams wherever necessary.
(2) Symbols used in the paper have their usual meaning.
(3) Figures to the right indicate full marks of the question.
(4) Scientific calculator may be used.

1. Answer the following questions in brief: **(08)**

(1) State the cosmological principle.
(2) What is doppler's effect?
(3) What are WIMP's? Give few examples.
(4) What are neutron stars?
(5) What do you mean by a compiler?
(6) What are compound statements in C - language?
(7) What is the significance of writing the void main () statement in a C-program?
(8) What is the significance of the header files in a C - program?

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

(i) Discuss the cosmic microwave background radiation and the present day temperature of the universe.

(ii) Discuss 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: **(04)**

(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.
(1 pc = 3.084 x 10^{11} km ; G = 6.67 x 10^{-11} SI; Mass of Sun = 2 x 10^{30}kg)

(ii) If the approximate value of Hubble parameter is taken as $75 \frac{km/s}{Mpc}$, then estimate the age of universe in years.
(Take 1 yr = 3.15 x 10^7 s & 1 pc = 3.086 x 10^{13} km)

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) Explain the *"while"* loop and the *"for"* loop in C - programming.

(b) Attempt any one of the following: **(04)**

(i) Write a program in C to read the mass and radius of a sphere and hence calculate its density.

(ii) Write the algorithm and draw the flow chart for picking up the largest of three given numbers.

4 Discuss any two of the following in details: **(14)**

(i) Echoes of big bang.

(ii) Expansion of universe on the basis of observed Doppler's shift.

(iii) Operator precedence and the use of parentheses in C programming.

(iv) Output functions in C - programming.

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