Register Number:

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**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**UG – IV SEMESTER**

**SEMESTER EXAMINATION: APRIL 2018**

**PH OE 4216 : Logic & its Application in the Ascent of Physics**

Time- 1 ½ hrs Max Marks-35

This question paper contains two sections and three pages

**SECTION A**

**Answer all questions from this section. 10 X 1=10**

1. Determine whether an argument or not.

There appears to be a growing happiness gap between men and women. Women today are working

more and relaxing less, while men are working less and relaxing more. Forty years ago a typical

woman spent 40 minutes more per week than the typical man performing an activity considered

unpleasant. Today, with men working less, the gap is 90 minutes and growing.

a. Argument; conclusion: Today ... the gap is 90 minutes and growing.

b. Non argument

c. Argument; conclusion: Forty years ago ... an activity considered unpleasant.

d. Argument; conclusion: There appears to be ... between men and women.

e. Argument; conclusion: Women today are working more and relaxing less.

2. Determine whether an argument or not.

Authoritarian states are characterized by strong central governments that fairly stringently limit the

range of political activity. More often than not, they are one-party states, which means that only one

party, that which supports the government, is allowed to engage in political activity. Free discussion

and association are strictly curtailed in these systems. Anyone who might dare to criticize the

government or to express ideas that are not in conformity with its policies can be severely punished,

even by death.

 ---Robert A. Heineman, Political Science

a. Argument; conclusion: More often than not ... engage in political activity.

b. Non argument.

c. Argument; conclusion: Authoritarian states ... limit the range of political activity.

d. Argument; conclusion: Anyone who might dare to criticize ... even by death.

e. Argument; conclusion: Free discussion and association ... in these systems.

3. Determine the form of argument.

All container ships that are ocean going are air polluters. Hence, all container ships are air polluters.

a) All C are A => All C are O b) All C are A => All C that are O are A

c) All C that are O are A =>All C are A d) All C are O => All C are A

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4. In the above question, which substitution shows that it is an invalid argument?

a) C = husbands, O = married, A = men. b) C = men, O = humans, A = mammals.

c) C = men, O = married, A = husbands. d) C = wives, O = divorced, A = women.

5. Determine the form of argument.

All evangelicals are political conservatives, so some fundamentalists are evangelicals, since some

fundamentalists are political conservatives.

a) All P are E.; Some P are F. => Some F are E b) All E are P; Some F are P => Some F are E.

c) Some F are P.; Some F are E. => All E are P. d) All E are H.; Some F are E => Some F are P

6.Which of the following substitutions proves the argument in the previous question is invalid?

a) E = dogs, P = animals, F = cats. b) E = fish, P = mammals, F = animals.

c) E = dogs, P = animals, F = mammals. d) E = birds, P = dogs, F = fish.

7. Identify the fallacy if any:

Karen argues that it's not right to post the photographs of convicted child molesters on the Internet.

Obviously Karen supports child molestation. But these monsters have completely ruined the lives of

thousands of children. They can't be allowed to wreak their havoc any longer. Clearly, Karen's

argument is misguided.

a) Straw man b) No fallacy. c) Red herring. d) Missing the point

8. Identify the fallacy if any:

Nobody has ever proved that the Big Bang theory of the universe is true. Therefore, we must conclude that the Big Bang theory is false.

a) Complex question. b) No fallacy. c) Missing the point. d) Appeal to ignorance.

9. When we say that electrically charged particles in the atmosphere cause lightning, we mean 'cause' in the sense of :

a. Necessary but not a sufficient condition. b. Necessary and a sufficient condition.

c. Relative and an absolute condition. d. Relative but not an absolute condition.

10. Suppose you are the pilot of a small commercial aeroplane, and you want to ensure that the plane will carry the load. What statistic would be most useful to you?

a) The mean weight of the passengers. b) The median weight of the passengers.

c) The modal weight of the passengers. d) The dispersion of the data representing the weight of the passengers.

**SECTION B**

**Answer any 5 questions from this section 5 X 5 =25**

11. Write an argument for and one argument against the statement

“Doctors should not be allowed to assist terminally ill patients in committing suicide”

12. a) The satellite of Jupiter Io is found to oscillate as shown in the diagram. Find the time period of Io.

IO

b) What is the reason for Io to execute a sinusoidal motion? Explain.

c) Do you expect the other Galilean satellites to execute sinusoidal motion? Why?

13. Write a note on scientific method.

14. Solve the following puzzle.

Alonzo, Kurt, Rudolf, and Willard are four creative artists of great talent. One is a dancer, one is a painter, one is a singer, and one is a writer, though not necessarily in that order.

a). Alonzo and Rudolf were in the audience the night the singer made his debut on the concert stage.

b). Both Kurt and the writer have had their portraits painted from life by the painter.

c). The writer, whose biography of Willard was a best-seller, is planning to write a biography of Alonzo.

d). Alonzo has never heard of Rudolf.

What is each man’s artistic field?

15. Why should an experimental scientist give errors in the measurements?

16. Write a Python programme that will output the multiplication tables of 1 to 10.

17. If we plot a graph of number of people Vs. the age of people, what kind of a graph do we get if the sample size is very large? What is the significance of this graph?