

KATHMANDU UNIVERSITY  
End Semester Examination [C]  
November/December, 2023

Marks Scored:

Level : B.Tech.

Year : III

Exam Roll No.:

Time: 30 mins.

Course : BIOT 314

Semester : II

F. M. : 20

Registration No.:

Date : 1 DEC 2023

SECTION "A"  
[20Q. × 1 = 20 Marks]

Encircle the most appropriate option.

1. According to Libertarian Theories,
  - a. Justice is the same as utility
  - b. Justice as fair process, even if outcomes are uneven
  - c. Justice is equal distribution of goods such as healthcare
  - d. Justice overrides autonomy
2. Which branch of ethics analyses meanings of central terms in ethics, such as right, obligation, good, virtue and responsibility?
  - a. Descriptive ethics
  - b. Metaethics
  - c. General normative ethics
  - d. Practical normative ethics
3. 5-day human embryo has about \_\_\_\_\_ cells most of them trophoblasts, which is the outer layer of blastocyst.
  - a. 10 to 50
  - b. 50 to 100
  - c. 100 to 150
  - d. 200 to 250
4. Medical abortion can be done up to \_\_\_\_\_ of pregnancy, while surgical abortion is delayed later.
  - a. first 4 weeks
  - b. first 7 weeks
  - c. first trimester
  - d. second trimester
5. Abortion is wrong because it deprives an embryo or fetus of a 'future like ours'. This argument was put forward by \_\_\_\_\_.
  - a. Ted Lockhart
  - b. Megan Clancy
  - c. Peter Singer
  - d. Don Marquis
6. Monozygotic twinning is possible until around \_\_\_\_\_ of embryo's development.
  - a. 24 hours
  - b. 2-3 days
  - c. 14-15 days
  - d. 1 month
7. What is considered eugenics?
  - a. Selective abortion of embryos regarded as genetically inferior.
  - b. Killing of a black man by white supremacist.
  - c. IQ testing of children of different intelligence to assign them schools.
  - d. Nazi persecution of the Jews.
8. While calculating basic arithmetic of animal experimentation which of the following values is NOT used?
  - a. Moral value of animal
  - b. The number of humans benefitting
  - c. Moral value of human beings
  - d. The perception by each human

9. Who is the incumbent director-general of the World Trade Organization?  
a. Ngozi Okonjo-Iweala                      b. Roberto Azevêdo  
c. António Guterres                              d. John Maynard Keynes
10. A person must have a law degree and must pass the patent bar exam to be a  
a. patent owner                                      b. patent agent  
c. patent attorney                                  d. licensee

**Fill in the blanks.**

11. \_\_\_\_\_ is an approach in which the physician chooses the treatment for the patient because the physician's professional knowledge, experience and objectivity best qualify him to judge the ideal treatment for the patient.
12. \_\_\_\_\_ stem cells give rise to all the types of blood cells including red blood cells, B lymphocytes, T lymphocytes and natural killer cells.
13. The three Rs that scientists are encouraged to follow in order to reduce the impact of research on animals are \_\_\_\_\_, \_\_\_\_\_ and \_\_\_\_\_.
14. According to the Universal Declaration on Bioethics and Human Rights, the interests and welfare of the \_\_\_\_\_ should have priority over the sole interest of \_\_\_\_\_.
15. Any preventive, diagnostic and therapeutic medical intervention is only to be carried out with the prior, free and informed \_\_\_\_\_ of the person concerned, based on adequate information.
16. Animal rights advocates are campaigning for \_\_\_\_\_ cages, while animal welfarists are campaigning for \_\_\_\_\_ cages.
17. \_\_\_\_\_ is when the fetus first moves in the womb. This happens about 16 to 17 weeks after fertilization.
18. The term of patent in Nepal is for \_\_\_\_\_ years from the date of registration.
19. WIPO stands for \_\_\_\_\_.
20. The \_\_\_\_\_ is an international patent law treaty that makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries.

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Level : B.Tech.  
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Time : 2 hrs. 30 mins.

Course : BIOT 314  
Semester : II  
F. M. : 55

SECTION "B"

[11Q × 5 = 55 marks]

Attempt *ANY ELEVEN* questions. (Question number 13 is compulsory)

1. What do you mean by double effect? Explain with an example.
2. What is utilitarianism? Write the essential features of utilitarianism.
3. Describe abortion in self-defense. How does Islam treat abortion?
4. What are the possible different stages of fetal development when the fetus is believed to have gained the right to live?
5. Differentiate HESCs and adult stem cells in terms of their abilities, isolation, and potential applications.
6. Discuss the ethical debate on the "Respect for human embryos".
7. Explain the concept of "Certain versus potential harm" and "Acts and omissions" on animal experimentation.
8. What could be the alternatives for animal experiments? Explain.
9. What do you mean by IP? What are the four main types of IP? Define them.
10. Describe the controversy surrounding Harvard mouse.
11. Define patent. What are the steps to a patent?
12. In the documentary "The world according to Monsanto" describe the issue of transgenic DNA introgressing into traditional maize landraces.
13. Read the following case and answer the questions below.

**Background**

Scientists reported that a particular variant of the angiotensin-converting enzyme (ACE) gene was associated with superior physical endurance. The variant, known as the ACE insertion polymorphism, was found to be present in a higher proportion of elite endurance athletes, especially long distance runners, than in the general population.

**Vignette:**

Marathon University (MU) is offering full-tuition scholarships and a guaranteed spot on the varsity track team to high school sophomores who "pass" a genetic test. If the parents sign a consent form, University doctors will screen them for the ACE insertion polymorphism.

Answer the following.

- a. Is it likely that a single gene determines physical endurance?
- b. Are other genes likely to be important?
- c. What other factors determine whether a child will grow up to be an elite endurance athlete?
- d. Should parents be allowed to use genetic information to make decisions that will limit their children's choices in adulthood?
- e. What else should MU do if it is concerned about the well being of the future student-athlete?

