**BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE (PILANI), HYDERABAD CAMPUS**

**FIRST SEMESTER 2022-2023**

**BITS F418, Biomedical Engineering**

**Mid semester Examination**

**(Closed book)**

**TOTAL MARKS = 60 Date: 04.11.2022 DURATION: 90min**

1. A. Why is dialysis required? What are challenges faced in developing a dialysis process for long term use? 6M

B. What is CT scan? How is it different from X-ray? Explain. 6M

C. What are the moral and ethical Issues in Biomedical Engineering research? What do you mean by ‘informed consent’? Explain. 6M

1. A. Write the mechanism of animal cell adhesion. What is the difference between 2D and 3D culture of animal cells? Explain. 6M

B. What are the important components of the engineering of tissue constructs, which depends on the specification of the tissue? 6M

C. What are the scaffolds in tissue engineering? Give few example of degradable and non-degradable scaffold. 6M

1. A. What is the conventional methods of scaffold fabrication? What is the difference between additive and subtractive process of scaffold formation technique? 6M

B. What are the various anatomical route of systemic drug delivery? Gives some examples of nano/micro drug delivery system. 6M

1. Match the following: 6 X 1M

Ceramics Resorbable ceramics

Metal Non-degradable polymer

Calcium carbonate Degradable polymer

Polystyrene Protein biomaterial

Poly(glycolic acid) Zirconia

Elastin Cobalt-chrome alloys

1. Writes short notes on: 3 X 2M

Tissue regeneration

Hydrogels

Transdermal Drug Delivery