

# Question Paper



## MANIPAL UNIVERSITY

**SCHOOL OF INFORMATION SCIENCE (SOIS)  
SECOND SEMESTER MASTER OF ENGINEERING - ME (COMPUTING  
TECHNOLOGIES & VIRTUALIZATION / EMBEDDED & WIRELESS  
TECHNOLOGY)**

**DEGREE EXAMINATION - APRIL / MAY 2017**

**Friday, 28, 2017**

**Time : 10:00 AM - 1:00 PM**

**Heterogeneous Computing [VIR 616]**

**Marks: 100**

**Duration: 180 mins.**

### **Elective II**

**Answer all the questions.**

- 1) Explain with diagram a generic Many-core Architecture. Where do we use this architecture? (10)
- 2) How does a CPU differ from a GPU? Explain with necessary illustrations (10)
- 3) What is Unified Shader architecture? How does it differ from traditional method? (10)
- 4) How is a CUDA code compiled? Explain with block diagram (10)
- 5) Write a short note on the various hazards (10)
- 6) WAP using CUDA C to multiply two matrices of size 100 X 100 (10)
- 7) Write a short-note on kernel and OpenCL Execution Model (10)
- 8) With diagram discuss the abstract memory model defined by OpenCL (10)
- 9) What are the advantages & disadvantages of Superscalar Execution model in OpenCL (10)
- 10) WAP using CUDA C to add two arrays of at least 100 elements. (10)