**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**JUNE/JULY EXAMINATION**

**COURSE CODE: MTH382**

**COURSE TITLE: MATHEMATICAL METHOD IV (3 units)**

**TIME ALLOWED: 3 HOURS**

**INSTRUCTION: ANSWER ANY 4 QUESTIONS**

1.(a) solve the legendre equation  with singular point  o r  **-10 marks**

 (b) Solve the differntial equation -**7 ½ marks**

2.(a) Solve the differential equation by variation of parameters the equation  - **7 ½ marks**

 (b) Solve the differential equation  -**10 marks**

 3. (a) .Determine the regular singular point of the differential equation- **10 marks** 

 (b)Given that Rodrigues formular  ,show that 

 -**7 ½ marks**

4.(a) Show that  -**7 ½ marks**

 (b)Evaluate (i)  (ii)  -**10 marks**

5.(a) Use the definition of Gamma function,evaluate  -**7 ½ marks**

 (b) Prove that  -**10 marks**

6.(a) Solve the Bessel equation  - **10marks**

 (b) Evaluate  -**7 ½ marks**