ELIZADE UNIVERSITY

ILARA-MOKIN

ONDO STATE

FACULTY: Basic and Applied Sciences

DEPARTMENT: Physical and Chemical Sciences
FIRST SEMESTER EXAMINATIONS
2018/2019 ACADEMIC SESSION

COURSE CODE: AGP 421

COURSE TITLE: BOREHOLE GEOPHYSICS

DURATION: 2 Hours

HOD's SIGNATURE

TOTAL MARKS: 60 MARKS

Matriculation Number: _____

INSTRUCTIONS:

1. Write your matriculation number in the space provided above and also on the cover page of the exam booklet.
2. This question paper consists of 2 pages including this page.
3. Attempt any four questions.

1. (a) Compute the volume of shale at point X in Figure 1. Assume the age of the
       formation to be Pre-Tertiary
    (b) List the three ways by which emitted gamma rays from density logs interact with the
       formation.

                                                                                                    15 Marks

2. (a) Identify the lithology penetrated by the well in Figure 2
    (b) Compute hydrocarbon saturation at point C
    (c) What is your observation concerning the nature of these reservoirs?

                                                                                                    15 Marks

3. The suite of wireline logs in Figure 3 was acquired from a field in a certain locality.
    (a) With reasons, identify the reservoir and the fluids contained in it
    (b) Identify the appropriate fluid contact depth

                                                                                                    15 Marks

4. (a) Calculate the resistivity of mud filtrate (R_{mf}) at the bottom hole temperature (BHT)
       of 155^0F when resistivity of mud filtrate (R_{mf}) at 750F is 0.55 ohm-m.
    (b) Write briefly on the factors limiting neutron log measurements.

                                                                                                    15 Marks

5. (a) Attempt a correlation of the rock units penetrated by the wells in Figure 4
    (b) Briefly describe the correlated section
    (c) State any two criteria used in the correlation exercise of the wells in Figure 4

                                                                                                    15 Marks

6. (a) Determine the true sonic porosity at an interval containing oil with the following
       Parameters; $\Delta t_{log} = 86$ μsec/ft, $\Delta t_{ma} = 55.5$ μsec/ft and $\Delta t_f = 180$ μsec/ft
    (b) List four examples of cased hole logging devices

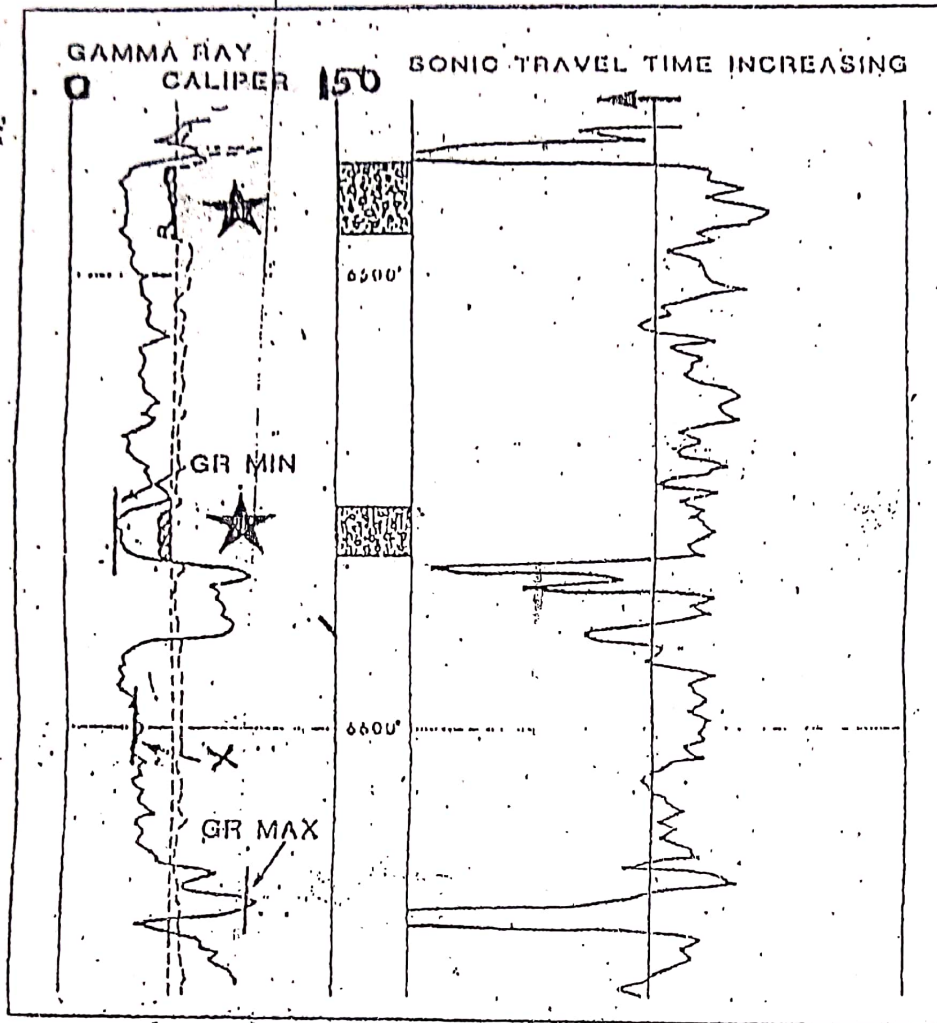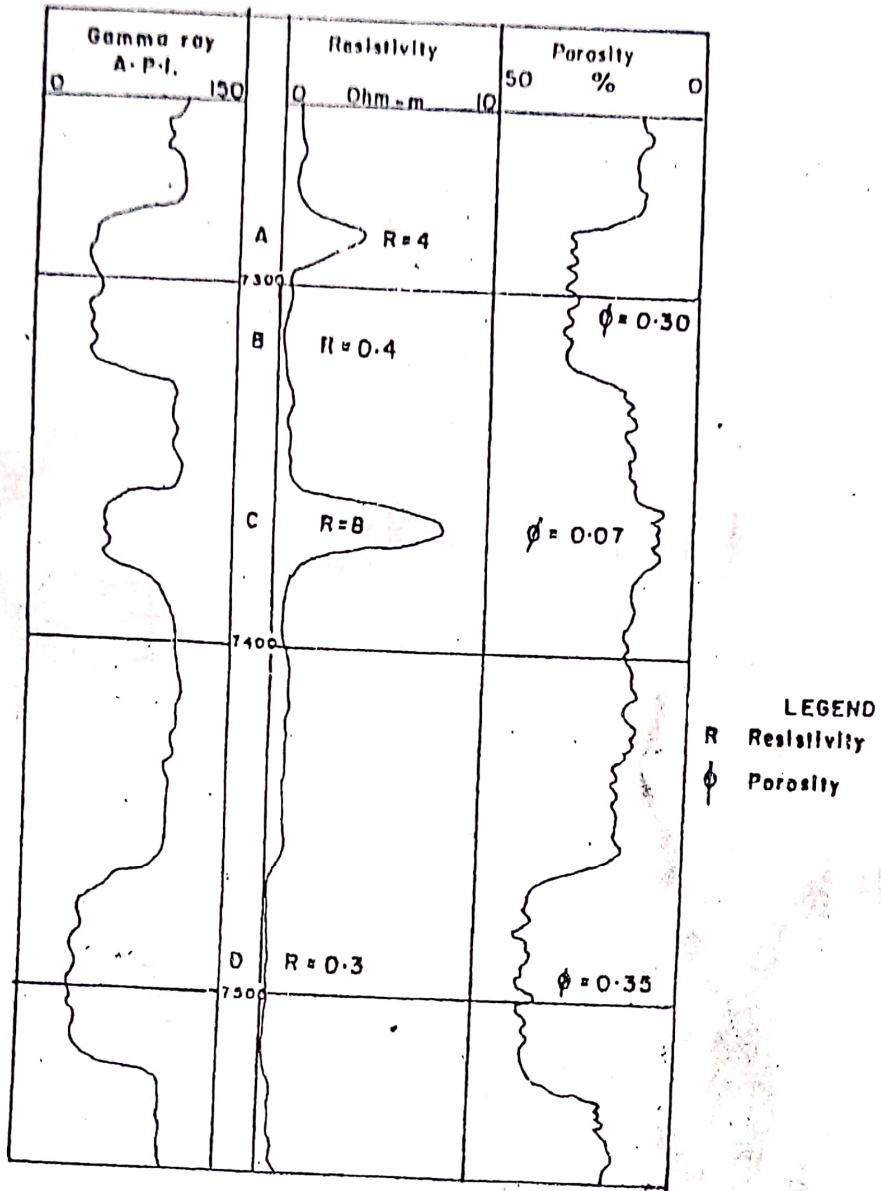   15 Marks
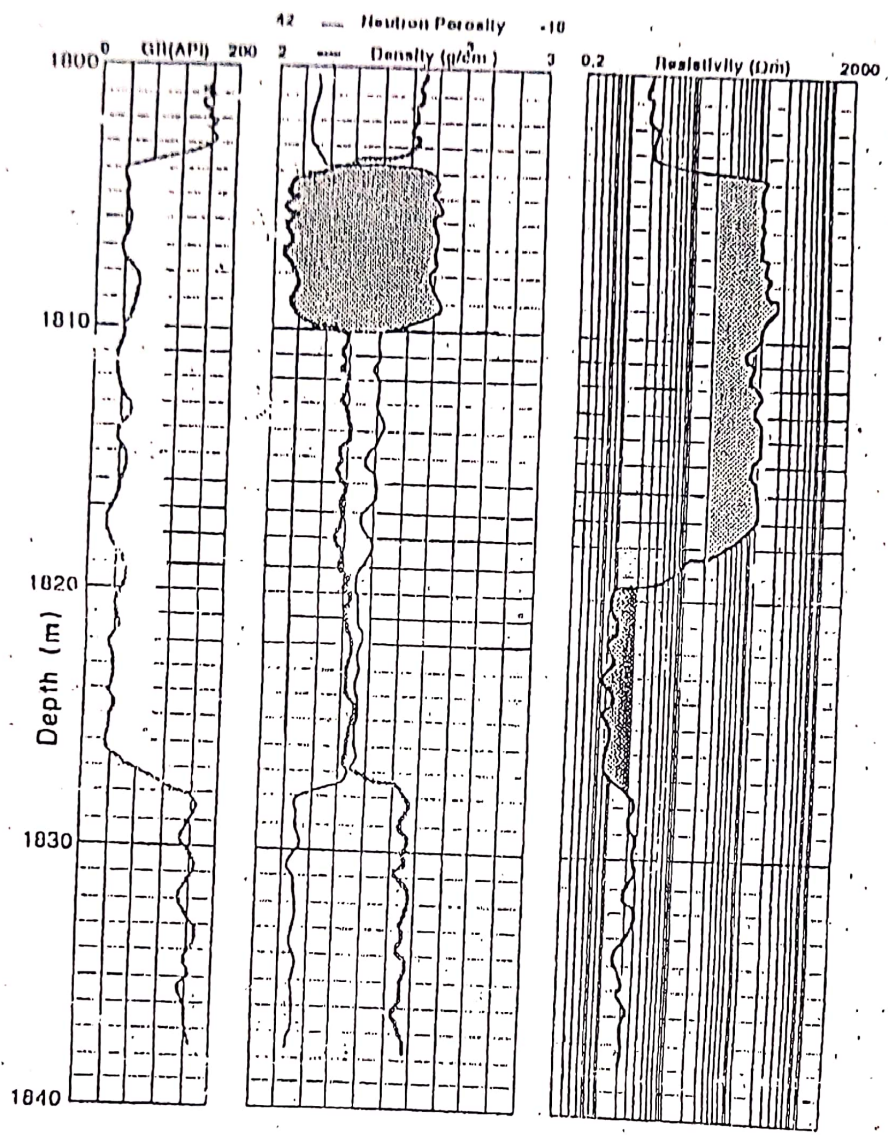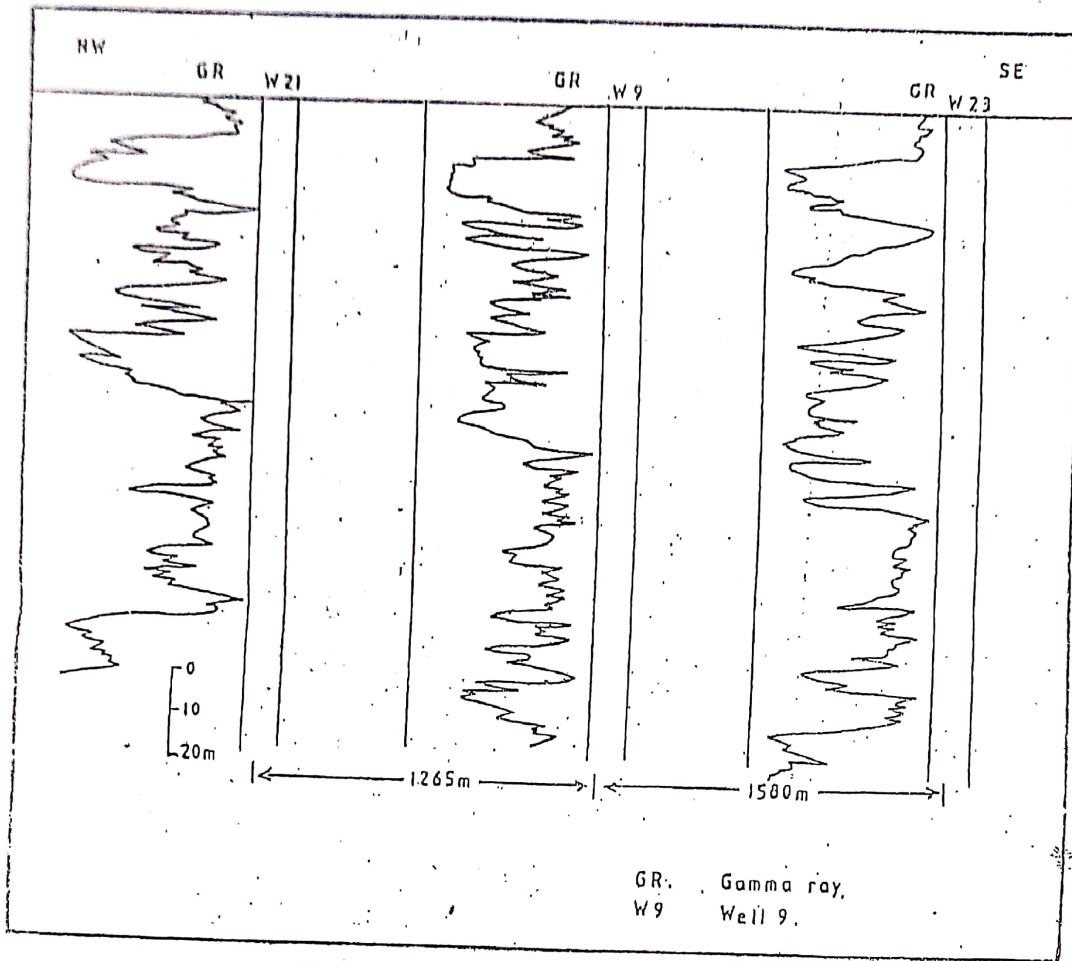
Figure 1.

Figure : 2.

Figure : 3.

Figure : 4