 Roll No .....

CE - 304

B.E. III Semester

Examination, June 2014

Engineering Geology

Time : Three Hours

Maximum Marks : 70/100

Note: i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

Unit - I

1. a) Write notes on classifications of weathering. 2
   b) Discuss the composition of the earth crust. 2
   c) Discuss the atmosphere of the Earth. 3
   d) Discuss the importance of geology in the field of civil engineering. 7

   OR

   Describe the concept of earthquake. 7

Unit - II

2. a) Explain the term crystal and mineral with examples. 2
   b) Only mention the name, hardness of minerals. 2
   c) Explain the classification of rock forming minerals. 3

   d) Describe the main physical properties of minerals. 7

   OR

   Distinguish between:- 7
   (i) Quartz and Calcite
   (ii) Mica and Telspor

Unit - III

3. a) Discuss the C.I.P.W classification of rocks. 2
   b) Explain porphyritic texture and paklite texture. 2
   c) Explain the term subhedral and anhedral forms. 3
   d) Describe the metamorphic textures and structures. 7

   OR

   Describe different rocks:- 7
   i) Granite ii) Basalt iii) Marble

Unit - IV

4. a) Explain the Dip and Strikes. 2
   b) Explain parts of folds. 2
   c) Draw a diagram of Horst and Garben. 3
   d) Describe the classification of faults (on the basis of Genesis). 7

   OR

   Describe the type of Unconformity. 7

Unit - V

5. a) Define the crushing strategic and Tensile strength. 2
   b) Describe on Artisian wells. 2
   c) Discuss the classification of DAM. 3
   d) Explain the geological classification of Dam site. 7

   OR

   Discuss the different types of water bearing structure. 7

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OR

Evaluate the integral $\int_0^\infty \frac{\cos ax}{x^2+1}dx$. 7

2. a) Determine the Newton - Raphson iterative formula to find the k[th] root of N. 2

b) Find a real root of the equation $x\log_{10}x=1.2$ by regula - falsi method correct to one decimal place. 2

c) Find a real root of the equation $3x=\cos x+1$ by iterative method correct to two decimal places. 3

d) Apply Crout's factorization method to solve the system of equations: 7

$$x-y=0$$
$$-2x+4y-2z=-1$$
$$-y+2z=1.5$$

OR

Apply Gauss-Seidel iteration method to solve the system of equations: 7

$$20x+y-2z=17$$
$$3x+20y-z=-18$$
$$2x-3y+20z=1.5$$

3. a) Prove that: $e^x=\left(\frac{\Delta^2}{E}\right)e^x.\frac{Ee^x}{\Delta^2 e^x}$ 2

b) Derive Newton's forward interpolation formula. 2

c) Evaluate the integral $\int_0^{0.6} e^{-x^2}dx$ by Simpson $\frac{1}{3}$ rule. 3

d) Apply Newton's divided difference formula to find the value of $f(9)$ from the following table: 7

x	5	7	11	13	17
$f(x)$	150	392	1452	2368	5202

OR

Find $\frac{dy}{dx}$ at $x=1.1$ from the following table: 7

x	1.0	1.2	1.4	1.6	1.8	2.0
y	0	0.128	0.544	1.296	2.432	4.000

4. a) Find by Taylor's series method the value y(0.1) correct to three decimal places from the differential equation:

$\frac{dy}{dx}=x^2y-y, y(0)=1$. 2

b) Write the working rule of Runge-Kutta method of fourth order for the numerical solution of differential equation. 2

c) If θ is the angle between the two regression lines show that: 3

$$\tan\theta=\frac{1-r^2}{r}.\frac{\sigma_x\sigma_y}{\sigma_x^2+\sigma_y^2}.$$

d) Using modified Euler's method, find the value of y (0.3) from the equation: 7

$\frac{dy}{dx}=x+y,\ y(0)=1$.

OR