Semester	: I (New)	Term	: I	Academic Year	:	2019-20
Course No.	: AS-SS 111	Title	:	**Principles of Soil Science**		
Credits	: 2(1+1)					
Day & Date	: Friday, 03.01.2020	Time	: 10.00 to 12.00	Total Marks	:	40

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Enlist different soil forming processes. Describe any one soil forming process.

Q.2 What is soil organic matter? Write down the composition of plant residues.

Q.3 Enlist different soil orders and explain any one of them.

Q.4 Define soil structure and mention their types in detail along with diagrams.

Q.5 How does formation of saline soils take place? Write their reclamation practices.

Q.6 Define igneous rock. Write down their classification with suitable examples.

Q.7 Write short notes.

a) Land capability classification   b) Functions of nitrogen

Q.8 Define ion exchange. Write down the importance of cation and anion exchange.

Q.9 Define inorganic fertilizers and classify them on the basis of nutrient content.

Q.10 Define soil colloids. Write in detail different types of soil colloids.

SECTION "B"

Q.11 Match the following pairs.

'A'	'B'
1) Streak	a) $dS\ m^{-1}$
2) Acidic rock	b) Lime
3) Acid soils	c) Granite
4) EC	d) Powder of mineral

Q.12 Fill in the blanks.

1) Conversion of shale to slate is an example of _____ rock.

2) In _____ like soil structure, the horizontal dimensions are much more developed than the vertical axis resulting in a flattened, compressed or lens like appearance of peds.

3) Soil air contains _____ % CO_2.

4) _____ is an example of calcareous rock.

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MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END THEORY EXAMINATION
B.Tech.(Agril. Engg.)

Semester	: I (New)	Term	: First	Academic Year	: 2022-23
Course No.	: AS-SS 111	Title	: **Principles of Soil Science**		
Credits	: 2 (1+1)				
Day & Date	: Tuesday, 18.04.2023	Time	: 10:00 to 12:00 hrs.	**Total Marks**	: 40

Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
2. All questions from SECTION 'B' are compulsory.
3. All questions carry equal marks.
4. Draw neat diagram wherever necessary.

SECTION 'A'

Q.1 Classify inorganic fertilizers with suitable examples.

Q.2 What is soil taxonomy? Write down the structure of soil taxonomy.

Q.3 Enlist factors of soil formation and explain any two of them.

Q.4 What are the characteristics of salt affected soil?

Q.5 Write down the functions and deficiency symptoms of nitrogen and phosphorous in plants.

Q.6 What is weathering? Give the types of weathering and write oxidation of chemical weathering.

Q.7 Enlist physical properties of soil and give the classification of soil separates.

Q.8 Write in brief about colloidal properties of soil.

Q.9 Enlist specific pedogenic processes and describe in detail laterization.

Q.10 Define mineral. Give the classification of minerals with appropriate examples.

SECTION 'B'

Q.11 Fill in the blanks:

1) The unit of electrical conductivity is _____.

2) Residual sodium carbonate = _____.

3) The red colour of soil is developed due to _____ mineral.

4) The acidic pH range of soil is _____.

Q.12 Define the following terms:

1) Infiltration   2) Soil   3) SAR   4) Pedoturbation

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Semester	: I (New)	Term	: First	Academic Year	: 2022-23
Course No.	: REE 111	Title	: Engineering Chemistry		
Credits	: 2 (1+1)				
Day & Date	: Wednesday, 12.04.2023	Time	: 10:00 to 12:00 hrs.	Total Marks	: 40

Note :
1. Solve ANY EIGHT questions from SECTION 'A'.
2. All questions from SECTION 'B' are compulsory.
3. All questions carry equal marks.
4. Draw neat diagram wherever necessary.

SECTION 'A'

Q.1 Give the comparison between solid and gaseous fuels.

Q.2 State the characteristics of good fuel.

Q.3 Give the classification of coal by rank.

Q.4 Describe 'Bomb Calorimeter' with well labeled diagram.

Q.5 Enlist the corrosion control methods.

Q.6 What are the disadvantages of hard water?

Q.7 What are the properties of lubricating oil?

Q.8 Explain the mechanism of lubrication.

Q.9 Explain in detail the scale and sludge formation.

Q.10 What is lubricant? What are the functions of lubricant?

SECTION 'B'

Q.11 State True or False:
1) Unit of calorific value is kcal/kg.
2) The decomposition of bigger hydrocarbons molecules into simpler, low boiling hydrocarbons of lower molecular weight is called refining of crude oil.
3) Calorific value of diesel oil is 11,000 kcal/kg.
4) The temperature at which the oil ceases to flow is called pour point.

Q.12 Fill in the blanks:
1) The net heat produced, when the unit mass/volume of fuel is burnt completely and the products are permitted to escape is called _____.
2) _____ is the property of the liquid or fluid by virtue of which it offers resistance to its own flow.
3) The total quantity of heat liberated, when the unit mass of the fuel is burnt completely is called _____.
4) _____ is the combustible substance, containing carbon as a main constituent, which on proper burning gives large amount of heat, which can be used economically for domestic and industrial purposes.

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B.Tech. (Agricultural Engineering)

Semester	: I (New)	**Term**	: I	**Academic Year** :	2019-20
Course No.	: REE 111				
Credits	: 2(1+1)	**Title**	: Engineering Chemistry		
Day & Date	: Wednesday, 01.01.2020	**Time**	: 10.00 to 12.00	**Total Marks** :	40

Note :
1. Solve **ANY EIGHT** questions from **SECTION "A"**.
2. All questions from **SECTION "B"** are compulsory.
3. All questions carry equal marks.
4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1   State the characteristics of a good fuel.

Q.2   Compare liquid and gaseous fuels.

Q.3   a) Distinguish between gross and net calorific value of fuel.

   b) A 0.72 gram of a fuel containing 80% carbon, when burnt in a bomb calorimeter, increased the temperature of water from 27.3^0 to $29.1\ ^0C$. If the calorimeter contains 250 grams of water and its water equivalent is 150 grams, calculate the HCV of the fuel.

Q.4   Draw a well labeled diagram of fractional distillation of crude petroleum.

Q.5   Distinguish between producer gas and biogas.

Q.6   What is natural gas? Name the different types of natural gas. Give the uses of natural gas.

Q.7   a) What are the factors which affect corrosion?

   b) List corrosion control methods.

Q.8   Describe galvanic corrosion with its mechanism and well labeled diagram.

Q.9   a) Explain clearly the importance of viscosity in selecting a lubricating oil for particular use.

   b) An oil of unknown viscosity –index has a Saybolt universal viscosity of 58 seconds at 210^0 F and of 580 seconds at 100^0F. The high viscosity –index standard (i.e. Pennysylvanian) oil has Saybolt universal viscosity of 58 seconds at 210^0F and 430 seconds at 100^0F. The low viscosity –index (i.e. Gulf oil) has a Saybolt universal viscosity of 58 seconds at 210^0F and 780 seconds at 100^0F. Calculate the viscosity-index of unknown oil.

Q.10   Write short notes. (Any Two)

   a) Classification of coal by rank   b) Pitting corrosion

   c) Scale and sludge formation in boiler   d) Graphite

SECTION "B"

Q.11 Define the following terms.

1) Cracking   2) Knocking

3) Corrosion   4) Lubricant

Q.12 Choose the correct answer.

1) The calorific value of coal sample is higher, if its_____.

a) Moisture content is high   b) Ash content is high

c) Volatile matter is high   d) Fixed carbon is high

2) For improving anti-knock property of petro, it is mixed with_____.

a) Lead bromide   b) Allyl bromide

c) Tetra ethyl lead   d) Tetra ethyl lead and ethyl bromide

3) During electrochemical corrosion in acidic environment_____.

a) Oxygen evolution occurs   b) Oxygen absorption occurs

c) Hydrogen evolution takes place   d) Hydrogen absorption takes place

4) The single most important property of lubricating oil is its_____.

a) Fire-point   b) Cloud- point

c) Oiliness   d) Viscosity- index

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