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M.Sc. – I (Semester – I) Examination, 2015
APPLIED GEOLOGY (New)
Igneous and Metamorphic Petrology (Paper – II)

Day and Date : Friday, 17-4-2015

Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :**
- 1) Answer **any five** questions.
 - 2) **All** questions carry **equal** marks.
 - 3) Question **1** is **compulsory**.
 - 4) Answer **any two** essay questions from **2, 3, 4**.
 - 5) Answer **any two** short note questions from **5, 6, 7**.
 - 6) Draw **neat** and labelled diagrams **wherever** necessary.

1. Fill in the blanks with correct answer :

14

- 1) Olivine rich meta basalt is
a) Saxonite b) Lherzolite c) Izolite d) Oceanite
- 2) What is the volcanic equivalent of the plutonic rock granodiorite ?
a) Rhyolite b) Trachyte c) Dacite d) Phonolite
- 3) Which of the following is the mineral of highest zone of metamorphism ?
a) Almandine b) Kyanite c) Sillimanite d) Biotite
- 4) The rock which develops during the contact metamorphism _____
a) Buchite b) Skarn rock c) Kimberlite d) Charnockite
- 5) Most volcanic rocks of the calc-alkaline series occur in _____
a) Oceanic ridges b) Subduction zone
c) Hot spots d) Continental rift system
- 6) Identify the granulite rock from the following _____
a) Granite b) Charnockite c) Greenstone d) None
- 7) One of the essential mineral in Khondalite rock is _____
a) Sillimanite b) Omphacite c) Enstatite d) Sanidine
- 8) The wormy looking intergrowth of quartz and oligoclase is termed as _____
a) Graphic texture b) Spherulitic
c) Myrmekite d) Liate texture



- 9) An eutectic situation of a phase system is _____
a) polyvariant b) divariant c) univariant d) invariant
- 10) Find the odd one out _____
a) Zeolite facies b) Greenschist facies
c) Eclogite facies d) Hornfels facies
- 11) Name the rock that essentially consists of Augite and plagioclase minerals

a) Rhyolite b) Pegmatite c) Gabbro d) Granite
- 12) Greenschists are metamorphic rocks of _____ igneous composition.
a) Acidic b) Basic c) Intermediate d) Ultrabasic
- 13) Mylonites are product of which metamorphism ?
a) cataclastic b) contact c) static d) none
- 14) In a QAP triangular classification of plutonic igneous rocks the minimum amount of Qtz, alkali feldspar and plagioclase must be _____
a) 5% b) 10% c) 15% d) 20%
2. Describe mineralogy and origin of kimberlites. Add an account on their distribution in India. **14**
3. Describe various types of igneous rocks in relation to plate tectonic. **14**
4. Explain in brief Eskolas classification of metamorphic facies. **14**
5. Write short notes on : **14**
a) Paired metamorphic belts
b) Greenschist facies.
6. Explain in short **any two** : **14**
a) Crystallisation of magma
b) Lamprophyre.
7. Write note on **any two** : **14**
a) Retrograde metamorphism
b) Granulite facies.
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**M.Sc. - I (Semester – I) Examination, 2015
APPLIED GEOLOGY (Paper – IV) (New)
Structural Geology and Morphotectonic**

Day and Date: Wednesday, 22-4-2015

Max. Marks : 70

Time: 11.00 a.m. to 2.00 p.m.

- Instructions :** 1) Answer **any five** questions.
2) **All** questions carry **equal** marks.
3) Question **1** is **compulsory**.
4) Answer **any two** essay questions from **2, 3, 4**.
5) Answer **any two** short note questions from **5, 6, 7**.
6) Draw **neat and labelled** diagram **wherever** necessary.

1. Fill in the blanks :

14

- 1) The fault have essentially the same dip and strike, but it may be based on the pattern in the cross section _____
a) Peripheral faults b) En echelon faults
c) Parallel faults d) Radial faults
- 2) The drainage pattern which shows a lack of structural control to the stream flow direction is described as _____
a) Parallel b) Dendritic c) Rectangular d) Trellis
- 3) Circular reefs enclosing a shallow body of water are called _____
a) Barrier reefs b) Lagoons c) Atolls d) Fringing reefs
- 4) _____ is the result of stretching of a competent bed on the limbs of a fold and is parallel to fold axis.
a) Slickensides b) Crinkles c) Boudinage d) None
- 5) The dripstones hanging from the top of the limestone caves are called _____
a) Stalactites b) Stalagmites c) Stylotites d) None
- 6) Factors controlling the behaviour of material under stress _____
a) Confining pressure b) Solution
c) Pore water d) All of the above

P.T.O.



2. Explain linear and areal aspects of the basin. **14**
 3. Discuss in detail various basis used in classification of fault. **14**
 4. What is fluvial geomorphology ? Write in detail account on erosional and depositional features produced by river. **14**
 5. Explain the following : **14**
 - 1) Horst and Graben
 - 2) Lineation and foliation.
 6. Write short note on : **14**
 - a) Coastal geomorphology.
 - b) Glacial landforms.
 7. Discuss in brief : **14**
 - a) Types of folds.
 - b) Classification of joints.
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M.Sc. – I (Semester – II) Examination, 2015
APPLIED GEOLOGY (Paper – V)
Economic Geology (New)

Day and Date : Thursday, 16-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All** questions carry **equal** marks.
2) Attempt **five** questions.
3) Question 1 is **compulsory**.
4) Answer **any two** questions from questions no. 2, 3 and 4.
5) Answer **any two** questions from questions no. 5, 6 and 7.
6) Draw **neat** and labelled diagrams **wherever** necessary.

1. Fill in the blanks with correct choice :

- 1) Pyrite is the primary ore mineral of _____
a) Lead b) Copper c) Zinc d) Iron
- 2) Kudremukh Iron ore deposits lies in _____ State of India.
a) Karnataka b) Bihar
c) Maharashtra d) Orissa
- 3) Most gold deposits of India are _____
a) Epithermal b) Sedimentary
c) Metamorphic d) Meteoritic
- 4) In India most of the baryte occurrences/deposits are of _____
a) Vein type b) Stringer type
c) Fissure type d) Bedded type
- 5) Saddle reef structure commonly shown by _____ deposits.
a) Sedimentary b) Evaporites
c) Cavity filled d) Magmatic segregation



- 6) Which one of these is not a precious metal ?
a) Gold b) Platinum c) Silver d) Aluminium
- 7) Diamond in Kimberlite pipe are good example of _____ deposit.
a) Segregated b) Disseminated
c) Injected d) Filter pressing
- 8) Gossan rocks are good example of _____ deposit.
a) Fumarolic
b) Residual
c) Secondary sulphide enrichment
d) Placer
- 9) Sukinda chromite mine is situated in _____
a) Bihar b) Rajasthan
c) Andrapradesh d) Orissa
- 10) Malachites and Azurites are _____
a) Sulphides b) Carbonates c) Oxides d) Hydroxides
- 11) Supergene sulphide enrichment zone is found _____
a) Above the water table b) Below the water table
c) Near the ground surface d) In oxidising zone
- 12) In the mechanical concentrated deposits _____ minerals are liberated.
a) only lighter minerals b) Heavy
c) Both heavy and lighter d) Gangue
- 13) A mineral is found in sublimated form is _____
a) Mercury b) Sulphur c) Cinnabar d) Realgar
- 14) The ore deposits formed due to weathering do not form any metallogenic epoch because
a) weathering is not a ore forming process
b) The process of weathering as operated at all times in the earth's history
c) Weathering cannot form ore deposits
d) None of the above



2. What do you know about placers ? Write in detail on types of placers.
 3. Discuss significance of texture in ore genesis.
 4. Write a full account on cavity filling deposits.
 5. Write in short on :
 - 1) Strata bound and stratiform ore deposits.
 - 2) Use of microhardness tester and reflectivity.
 6. Write short notes on :
 - 1) National Mineral Policy
 - 2) Fluid inclusion.
 7. Write short notes on the following :
 - 1) Khatri copper deposit
 - 2) Wall rock alteration.
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M.Sc. – I (Semester – II) Examination, 2015
APPLIED GEOLOGY (Paper – VI) (New)
Indian Stratigraphy

Day and Date : Saturday, 18-4-2015

Max. Marks : 70

Time : 11.00 a.m. to 2.00 p.m.

- Instructions :**
- 1) Answer **any five** questions.
 - 2) **All** questions carry **equal** marks.
 - 3) **Question 1** is **compulsory**.
 - 4) **Draw** neat and labelled diagrams **wherever** necessary.

1. Multiple choice question :

- 1) Pulivendla of Cuddapah supergroup is famous for _____
 - a) Asbestos
 - b) Manganese
 - c) Iron
 - d) Gold
- 2) Kimbertlite of Vindhyan basin is in _____
 - a) Wajrakarur
 - b) Panna
 - c) Chelima
 - d) All of the above
- 3) Index fossil found from Deccan trap is _____
 - a) Trilobite
 - b) Gangmopteris
 - c) Physa
 - d) All the above
- 4) Eparchaeon unconformity is between _____
 - a) Cretaceous-Tertiary
 - b) Carboniferous-Triassic
 - c) Archean-Proterozoic
 - d) All of the above
- 5) Chilpi group predominantly consists of _____
 - a) Low grade metasediments
 - b) Retrograde metasediments
 - c) High grade metasediments
 - d) Migmatites



- 6) Barren measures succeeded unconformably to
- a) Barakar formation
 - b) Karharbari formation
 - c) Khelong formation
 - d) Bhareli formation
- 7) Bairenkonda quartzite belongs to
- a) Papaghani Group
 - b) Nallamalai Group
 - c) Chitravati Group
 - d) Kurnool Group
- 8) Cambrian sea is dominated by the abundance of _____
- a) Cephalopoda
 - b) Trilobites
 - c) Brachiopoda
 - d) Reptiles
- 9) Boulder beds of lower Gondwana are known as
- a) Talchir tillites
 - b) Basal conglomerate
 - c) Tillite
 - d) None
- 10) Find the odd man out
- a) Limestone-Narji
 - b) Tillites-Talchir
 - c) Conglomerate-Banganpalle
 - d) Dolerite-Paniam
- 11) Bababudan group of Dharwar craton is synonymous with
- a) Iron formations
 - b) Zn-Pb deposits
 - c) Cu-Mineralization
 - d) None
- 12) The age of Singhbum granite is _____
- a) 3200my
 - b) 2000my
 - c) 2700my
 - d) 500my
- 13) Alwar series is underlain by _____
- a) Kurnool
 - b) Railo series
 - c) Ajabgarh
 - d) Delhi system
- 14) Age of Deccan trap is _____
- a) 56my
 - b) 65my
 - c) 156my
 - d) 256my



2. Discuss in detail the stratigraphy and Evolution of South Indian Purana Basin.
 3. Explain in brief on Cratons of Indian Shield.
 4. Give an account on classification, tectonic and the environment of deposition of Gondwana formation.
 5. Write briefly on :
 - a) Evolution of Himalayan Mountains
 - b) Origin of Deccan traps.
 6. Write short notes on :
 - a) Eparchaeon unconformity
 - b) Vindhyan basin.
 7. Discuss in short :
 - a) Southern Granulite terrain
 - b) Lameta and Bagh beds.
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M.Sc. – I (Semester – II) (New) Examination, 2015
APPLIED GEOLOGY (Paper – VII)
Hydrogeology

Day and Date : Tuesday, 21-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- N.B. :** 1) Answer **five** questions.
2) **All** questions carry **equal** marks.
3) Question No. **I** is **compulsory**.
4) Answer **any two** questions from **each** Section.
5) Draw **neat** and labelled diagrams **wherever** necessary.

- I. 1) Evaporation, evapotranspiration, precipitation and runoff are important phases of _____, which occurs continuously in nature.
a) hydrologic cycle
b) groundwater cycle
c) water-environment cycle
d) natural cycle
- 2) Pan coefficient is given by _____
a) Pan evaporation/lake evaporation
b) Lake evaporation/pan evaporation
c) Floating evaporation/pan evaporation
d) Pan evaporation/floating evaporation
- 3) Impermeable formation which may contain water but is not capable to transmit it, is known as _____
a) Aquifuge b) Aquifer c) Aquiclude d) Aquitard
- 4) An surface of water in an artesian well coinciding with the hydrostatic pressure level of the water in the confined aquifer is known as _____
a) Water table b) Phreatic surface
c) Piezometric surface d) Free surface



- 5) The water which has remained out of contact with atmosphere upto present time is known as _____
- a) Juvenile water
 - b) Metamorphic water
 - c) Plutonic water
 - d) Fossil water
- 6) The various factors, which affect the runoff from a drainage basin depends up on the following characteristics _____
- a) Storm and meteorological
 - b) Geological and geomorphological
 - c) Basin and storage
 - d) All the above
- 7) Water in the intermediate zone when it is non moving is called _____
- a) Hygroscopic water
 - b) Capillary water
 - c) Fossil water
 - d) Pellicular water
- 8) Organic matter load in water is determined by _____ value.
- a) BOD
 - b) COD
 - c) Ph
 - d) Eh
- 9) Hardness of water is expressed by the equation _____
- a) $H_r = 6 \text{ mg} + 2 \text{ Ca} + \text{pb}$
 - b) $H_r = 3 \text{ mg} + 3 \text{ Ca}$
 - c) $H_r = 2.8 \text{ Ca} + 4.2 \text{ mg}$
 - d) $H_r = 2.5 \text{ Ca} + 4.1 \text{ mg}$
- 10) $T = \frac{2.30 Q}{4\pi\Delta A}$ and $S = \frac{2.25T \text{ to}}{r^2}$ are the equations to determine aquifer parameters proposed by _____
- a) Them
 - b) Theis
 - c) Chow
 - d) Cooper Jacob
- 11) Which of the following has highest specific yield _____
- a) Lime stone
 - b) Sand stone
 - c) Clay
 - d) Gravel
- 12) The percentage of saline water in the world is about _____
- a) 33.8%
 - b) 71.5%
 - c) 67.1%
 - d) 97.2%
- 13) $\frac{\partial^2 h}{\partial x^2} + \frac{\partial^2 h}{\partial y^2} + \frac{\partial^2 h}{\partial z^2} = 0$ is the equation for potential flow.
- a) Chow's
 - b) Theis
 - c) Cooper-Jacob
 - d) Laplace
- 14) The measurements of draw down below the original static water level (Prior to pumping) during recovery period are known as _____
- a) residual draw downs
 - b) linear draw downs
 - c) alternate draw downs
 - d) parallel draw downs



SECTION – A

- II. Define transmissivity and storage coefficient and describe an method of its determination by pump tests.
- III. Explain different water losses observed after rainfall.
- IV. Give an detailed account of groundwater divisions of India.

SECTION – B

- V. Describe in brief :
 - a) Groundwater tracers
 - b) Concept of artificial recharge.
 - VI. Explain in short :
 - a) Measures of water quality
 - b) Ghyben-Herzberg relationship.
 - VII. Write notes on :
 - a) Darcy's law
 - b) Types of aquifers.
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M.Sc. – I (Semester – II) Examination, 2015
APPLIED GEOLOGY
Geochemistry (New) (Paper – VIII)

Day and Date : Thursday, 23-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All** questions carry **equal** marks.
2) Attempt **five** questions.
3) Question **I** is **compulsory**.
4) Answer **any two** questions from Questions No. **II, III and IV**.
5) Answer **any two** questions from Questions No. **V, VI and VII**.
6) Draw **neat** and labeled diagrams **wherever** necessary.

I. Choose the correct answer :

14

- 1) According to cosmic abundance of elements which of the following is most abundant in solar system.
a) O
b) H
c) Si
d) He
- 2) Identify the mineral that is a bad conductor of electricity.
a) Mica
b) Limonite
c) Copper
d) None
- 3) Different elements having same atomic weight but different values of neutrons and protons are termed as
a) Isotones
b) Isotopes
c) Isobars
d) None
- 4) E-process is responsible for the nucleosynthesis of the most abundant nuclei between $A = 28$ and $n = 57$ at the Fe peak is also termed as
a) He-burning
b) Si-burning
c) P-process
d) All the above
- 5) Which of the following layers of the earth is referred as oxy-sphere ?
a) Siderosphere
b) Chalcosphere
c) Lithosphere
d) None



- 6) The average chemical composition based on 5159 superior analysis is for
- a) Granite
 - b) Sandstone
 - c) Gneisses
 - d) None
- 7) The environment of precipitation of elements in the secondary environment is largely controlled by
- a) $\frac{Z}{r}$
 - b) E^h
 - c) pH
 - d) All the above
- 8) The diffused layer within the stratosphere that plays a vital part in absorbing ultraviolet radiation is
- a) Tropopause
 - b) Ozonosphere
 - c) Ionosphere
 - d) None
- 9) Dittmar (1884) was the person who proposed the average composition of seawater based on
- a) 77 samples
 - b) 5159 analysis
 - c) 1 : 2 ratio
 - d) None
- 10) Which of the following is used as decay clock rather than accumulation clock for dating relatively recent geological events ?
- a) Carbon – 14
 - b) U – Th – Pb
 - c) Rb – Sr
 - d) None
- 11) Distribution of elements in the earth is controlled by
- a) Atomic weight
 - b) Electronic configuration
 - c) $\frac{Z}{r}$ index
 - d) All of the above
- 12) Which of the following term was introduced by Fersman to define the average percentage of an element in the earths crust ?
- a) Fench diagram
 - b) $\frac{Z}{r}$ index
 - c) Clarke
 - d) None
- 13) Find the odd one out
- a) Pb
 - b) Zn
 - c) S
 - d) O
- 14) Chlorinity is determined by precipitation of halides with
- a) HCl
 - b) HClO_4
 - c) AgNO_3
 - d) NaOH



- II. Discuss various physical and chemical aspects of vertical layers of the atmosphere. Add a note on gain and losses during evolution of atmosphere. **14**
 - III. Discuss in detail the composition of earth using various concepts. **14**
 - IV. Define what are decay clocks. Write various sampling material used in determination of the radioactive age and mention the half life period for radioactive nuclides. **14**
 - V. Write in short on the following : **14**
 - a) Cosmic abundance of elements
 - b) E^h – pH diagrams and their significance.
 - VI. Enumerate on the following : **14**
 - a) Various thermonuclear process in origin of elements
 - b) Primary differentiation of earth.
 - VII. Write in brief on the following : **14**
 - a) Geochemical classification of elements.
 - b) Compositional difference between sea and river waters.
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M.Sc.– I (Semester – II) Examination, 2015
APPLIED GEOLOGY (Old)
Geochemistry (Paper – VIII)

Day and Date : Thursday, 23-4-2015
Time : 11.00 a.m. to 2.00 p.m.

Max. Marks : 70

- Instructions :**
- 1) Answer **any five** questions.
 - 2) **All** questions carry **equal** marks.
 - 3) Question No. 1 is **compulsory**.
 - 4) Answer **any two** questions from **each** Section.
 - 5) Draw **neat** and labelled diagrams **wherever** necessary.

I. Choose the correct answer :

- 1) The average composition of igneous rocks was proposed by
 - a) Goldsmith
 - b) Clarke and Washington
 - c) Schonbein
 - d) Todd
- 2) Determination of halides with a silver salt is termed as
 - a) pH
 - b) Eh
 - c) Chlorinity
 - d) Colloids
- 3) A Limestone Fence is controlled by pH =
 - a) 7.0
 - b) 9.5
 - c) 4.2
 - d) 7.8
- 4) Find the odd one out
 - a) K
 - b) Na
 - c) Mg
 - d) S
- 5) The sea water is characterized by
 - a) $\text{CO}_3 > \text{SO}_4 > \text{Cl}$
 - b) $\text{Ca} > \text{Mg} > \text{Na}$
 - c) $\text{Na} > \text{Mg} > \text{Ca}$
 - d) None



- 6) The geochemical character of an element depend upon its
- a) Charge
 - b) Radius
 - c) $\frac{Z}{r}$
 - d) Systematic position in periodic table
- 7) The atmosphere is simple in composition, being made up almost entirely of
- a) N
 - b) O
 - c) Ar
 - d) All the above
- 8) The soil horizons that develop by teaching and mechanical removal resulting from the downward percolation of rain water is
- a) A
 - b) B
 - c) C
 - d) All the above
- 9) The presence of water, organic substance and skeletal matter is characterized in
- a) Biosphere
 - b) Lithosphere
 - c) Hydrosphere
 - d) Atmosphere
- 10) By volume, oxygen occupies about _____ of the continental crust.
- a) 50%
 - b) 98%
 - c) 25%
 - d) 10%
- 11) The carbonates in water produces
- a) Alkalinity
 - b) Permanent hardness
 - c) Temporary hardness
 - d) None
- 12) Cosmic elements are the elements present in
- a) Universe
 - b) Earth
 - c) Sky
 - d) Mars
- 13) Ionic potential is
- a) z/r
 - b) r/z
 - c) $z \times r$
 - d) none
- 14) Most dominant dissolved carbonate species in ground water is
- a) HCO_3^-
 - b) CO_3^{--}
 - c) H_2CO_3
 - d) CO_2



SECTION – A

Attempt **any two** questions from this Section.

- II. Discuss briefly various concepts on the origin of oceans. Add a note on the difference between sea water and river water composition.
- III. Write in detail on the significance of Z_r index and redox potential of elements in sedimentary environment. State how Eh-pH diagrams explain the sedimentary environment.
- IV. What are accumulation and decay clocks ? Write on half life of various radio nuclides and the geological material used to date the events.

SECTION – B

Attempt **any two** questions from this Section.

- V. Write briefly on **any two** of the following :
 - a) Geochemical classification
 - b) Gains and losses to atmosphere
 - c) Gibbs free energy.
 - VI. Enumerate briefly on **any two** of the following :
 - a) Thermal stratification of water in lakes
 - b) Primary differentiation of elements
 - c) Geochemical cycle.
 - VII. Bring out the salient aspects of the following :
 - a) Average composition of crust
 - b) Cosmic abundance of elements
 - c) Geochemical model of earth.
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M.Sc. (Semester – III) Examination, 2015
APPLIED GEOLOGY (Paper – X)
Mineral Exploration

Day and Date : Friday, 17-4-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions :** 1) *All questions carry equal marks.*
2) *Attempt 5 questions.*
3) *Question No. I is compulsory.*
4) *Attempt 2 questions from Q. No. II, III and IV and 2 questions from Q. No. V, VI and VII.*
5) *Neat diagrams should be drawn whenever necessary.*

I. Choose the correct answer :

14

- 1) Large areas of earth's crust characterised by an unusual abundance of ore of a particular metal or ore is termed as
- a) metallogenic province b) petrogenic province
c) productive plutons d) none
- 2) Find the odd one out
- a) Ilmenite-anorthosite b) Au-greenstone
c) Sn-K granite d) Mo-mafic rock
- 3) The ore : ore show ratio is generally accepted as
- a) 1 : 4 b) 1 : 40 c) 1 : 30 d) 1 : 3
- 4) Graphite deposits in the eastern ghats are associated with
- a) charnockites b) khondalites c) granites d) none
- 5) The formula of determining magnetic susceptibility K is
- a) $\frac{H \tan \phi}{C}$ b) $\frac{C \cos \phi}{H}$ c) $\frac{H}{C}$ d) none

P.T.O.



- 6) Which of the following methods is adopted for identification of wall rock alteration ?
- a) secondary anomalies b) hydromorphic anomalies
c) lithogeochemical surveys d) none
- 7) During an exploration work the expected financial returns 'E' is equal to PV and if $P = O$ then E will be
- a) ore deposit b) not finding ore deposit
c) excess of gangue d) none
- 8) The difference between magnetic equator and magnetic poles is
- a) 200 gals b) 10000 m. gals c) 5300 m. gals d) none
- 9) The application of geophysical logging is for
- a) discovery b) correlation c) identification d) all the above
- 10) Observed gravity plus free air correction minus Bouguer correction plus topographic correction minus theoretical gravity is a formula for calculating
- a) Free-air anomaly b) Geodic anomaly
c) Bouguer anomaly d) None
- 11) The geobotanical indicator of sulphide deposit are
- a) Selenium flora b) Galmei flora
c) Halophytic flora d) All the above
- 12) The continual changes of the earth's magnetic field is called as
- a) secular variation b) diurnal variation
c) magnetic storms d) none
- 13) According to the theory of elasticity the energy in a medium travels as
- a) P-wave b) S-wave c) L-wave d) All the above
- 14) Quantitative interpretation of electrical resistivity data is done by
- a) carve matching b) inverse slope
c) auxiliary point d) all the above



- II. Discuss various geological criteria of exploration of ore deposits citing suitable Indian examples. **14**
 - III. Compare Wenner and schlumberger configuration of electrical resistivity sounding and add a note on their limitations. **14**
 - IV. What are the geochemical signatures associated with Sn-bearing granite pluton and porphyry copper bearing granites. **14**
 - V. Write short notes on the following : **14**
 - a) Path finders and mobility of elements
 - b) Well logging methods.
 - VI. Write the salient aspects of the following : **14**
 - a) Relationship between magnetic elements.
 - b) Gravimeter.
 - VII. Write briefly on the following : **14**
 - a) Geobotanical Indicators.
 - b) Radio active surveys.
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M.Sc. – II (Semester – IV) Examination, 2015
APPLIED GEOLOGY (Paper – XIII)
Environmental Geology and Disaster Management

Day and Date : Thursday, 16-4-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 70

- Instructions:** 1) **All** questions carry **equal** marks.
2) Attempt **five** questions.
3) Question **I** is **compulsory**.
4) Answer **any two** questions from Question Nos. **II, III and IV**.
5) Answer **any two** questions from Question Nos. **V, VI and VII**.
6) Draw **neat** and labeled diagrams **wherever** necessary.

I. Choose the correct answer :

14

- 1) A typical example of geothermal energy is _____
a) Hot springs b) Petroleum c) Coal d) Tar
- 2) The mean thickness of hydrosphere is _____
a) 17 km b) 20 km c) 3.8 km d) None of the above
- 3) Find the odd one out
a) CO₂ b) CFC c) CH₄ d) O₂
- 4) Where do sinkholes occur
a) Sulphate rocks b) Phosphate rocks
c) Carbonate rocks d) None
- 5) Excess consumption of fluoride causes
a) Necrosis b) Cardiac attack
c) Fluorosis d) None
- 6) Ozone hole is observed at
a) Polar region b) Himalayas c) Equator d) None
- 7) _____ is one of the most violent storms on earth.
a) Hurricanes b) Hail c) Tornado d) Faiman
- 8) _____ is the example of terrestrial hazard.
a) Landslide b) Flood c) Cyclone d) Heat waves

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- 9) The enlarge form of volcanic vent is called
a) Cone b) Crater c) Pipe d) None of the above
- 10) Which one of the following pollution has acquired regional and global dimensions ?
a) Water pollution b) Air pollution
c) Land pollution d) None of the above
- 11) The transfer of energy from one tropic level to another constitute the
a) Food chain b) Biochemical cycling
c) Energy flow d) None of the above
- 12) Genesis of soil is governed by
a) Organic activity b) Climatic conditions
c) Topography d) All of the above
- 13) The typical citation of Reservoir Induced Seismicity (RIS) of India is
a) Koyna dam b) Srisailam dam
c) Jayakwedi dam d) Almatti dam
- 14) Air pollution with HCl, SO₄ NOX and CO etc. results to
a) Acid rain b) Lighting c) Cloud burst d) None

- II. What are floods ? Explain causes and suggest mitigation measures. **14**
- III. Discuss various types, sources and causes of pollutants and controlling measures. Cite suitable Indian examples. **14**
- IV. Discuss in detail various aspects of atmosphere.
- V. Write briefly on the following : **14**
a) Seismic zones of India
b) Soil salinity and alkalinity.
- VI. Write short notes on the following : **14**
a) Causes of landslides
b) Prediction of earthquake.
- VII. Write briefly on the following : **14**
a) Volcanic hazard
b) Monitoring of coastal hazard.
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Seat No.	
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M.Sc. II (Semester – IV) Examination, 2015
APPLIED GEOLOGY (Paper – XIV)
Energy Resources

Day and Date : Saturday, 18-4-2015

Max. Marks : 70

Time : 3.00 p.m. to 6.00 p.m.

- N.B. :** 1) *Objective question is **compulsory**.*
2) *All questions carry **equal** marks.*
3) *Answer **any two** questions from **2, 3 & 4**.*
4) *Answer **any two** questions from **5, 6, 7**.*
5) *Draw **neat** sketches **wherever** necessary.*

1. Fill in the blanks with correct choice :

14

- 1) Peat is a variety of _____ rank of coal.
a) highest b) lowest c) medium d) none of these
- 2) The minimum temperature required for the formation of petroleum in the basin is _____ temp.
a) diagenetic b) metagenetic c) maturation d) ketagenetic
- 3) The rock which covers the oil pool and holds is termed as
a) Cap rock b) Reservoir rock
c) Trap rock d) None
- 4) The map showing equal thickness contours is called as _____ map.
a) Isolith b) Isocare c) Isopac d) None of these
- 5) A type of coal preferred for industrial purpose should have
a) high carbon, low moisture
b) high moisture high mineral matter
c) low carbon high moisture
d) high mineral matter



- 6) The quality of oil is decided on _____ property.
a) viscosity b) density c) API gravity d) colour and smell
- 7) Most accepted theory of origin of petroleum oil is from _____ rocks.
a) Enogenic b) Exogenic
c) Sedimentary basinal d) Alkaline
- 8) Solar and wind energy resources are of _____ type.
a) Conventional b) Non conventional
c) Non renewable d) None of these
- 9) Coal and hydrocarbon resources are of _____ type.
a) Renewable b) Non renewable
c) Non conventional d) None of these
- 10) A processes in which a complex compound breaks into smaller hydrocarbon is called as
a) Cracking b) Melting c) Setting d) Isomerization
- 11) In India maximum production of coal is consumed by
a) Brick manufacturing b) Railways
c) Domestic fuel d) Thermal power plants
- 12) Which one of the following is not a structural trap ?
a) Anticline b) Dome
c) Fault d) Ancient shore line
- 13) Zaria the most important coal field of India lies in _____ state.
a) Maharashtra b) Karnataka c) Bihar d) A. Pradesh
- 14) Incipient fracture porosity is exhibited by _____ rocks.
a) Granite b) Basalt c) Shale d) Limestone
2. Write an essay on migration of petrolieum. **14**
3. Describe in detail coal formation. How coals are classified ? **14**
4. Write an detail on productive basins of India. **14**



5. Write short notes on **any two** : 14
- a) Reservoir rock
 - b) Isopatch maps
 - c) Structural traps.
6. Write in brief on **any two** : 14
- a) Macerals
 - b) Proximate analysis
 - c) Physical properties of crude.
7. Write short account on **any two** : 14
- a) Porosity and permeability
 - b) Tarsand
 - c) Cap rocks.
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