| <b>Master of Science – I (Applied Geology)</b>   |   |   |  |            |           |  |  |  |  |
|--|---|---|--|------------|-----------|--|--|--|--|
| Exa  | amination:  | Oct / Nov   | 2016 Semester – I  | (New CBC   | <u>S)</u> |  |  |  |  |
| SLR No.  | Day &<br>Date   | Time  | Subject Name   | Paper No.  | Seat No.  |  |  |  |  |
| SLR – SE<br>-31  | Wednesday<br>16/11/2016   | 10.30 AM<br>to<br>01.00 PM                        | Mineralogy and Optics  | AGT 101    |           |  |  |  |  |
| Instructions:1) Answer any five questions.2) All question 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 labeled diagrams wherever necessary.Total Marks:70 |   |   |  |            |           |  |  |  |  |
|  | a) Aquama<br>c) Both a &  | s the gemstone<br>trine<br>& b<br>tion cut across | e variety of beryl<br>b) Emerald<br>d) None                    | nature.    | 14        |  |  |  |  |
|  | 3) The Refract<br>a) 1.65<br>c) 2.65  | ive Index of e                                    | xtra ordinary ray of light in<br>b) 1.48<br>d) 2.48            | calcite is |           |  |  |  |  |
|  | <ul> <li>4) Uniaxial fig</li> <li>a) Cubic sy</li> <li>c) Section</li> <li>c-axis</li> </ul>  | /stem   | wed in m<br>b) Section perpen<br>d) Both a & b                 |            | S         |  |  |  |  |
|  | <ul><li>5) ISO tropic r</li><li>a) No chan</li><li>c) Interference</li></ul>  | ge in color                                       | microscope do not show _<br>b) Pleochroism<br>d) All the above |            |           |  |  |  |  |
|  | <ul><li>6) Following is</li><li>a) Emerald</li><li>c) Aquama</li></ul>  | l   | y of corundum.<br>b) Ruby<br>d) Topaz                          |            |           |  |  |  |  |
| ,  | <ul><li>7) Find the odd</li><li>a) Chest</li><li>c) Apatite</li></ul>   | l one out   | <ul><li>b) Quartz</li><li>d) Agate</li></ul>                   |            |           |  |  |  |  |
| :  | <ul> <li>8) Which of the following property belong to state of aggregation?</li> <li>a) Amorphous</li> <li>b) Crystalline</li> <li>c) Crypto crystalline</li> <li>d) Stalactitic</li> </ul> |   |  |            |           |  |  |  |  |
|  | <ul><li>9) Which of th</li><li>a) Zeolite</li><li>c) Zircon</li></ul>   | e following is                                    | e)<br>a rock farming mineral?<br>b) Rutile<br>d) Biotite       |            |           |  |  |  |  |
|  |   |   |  |            |           |  |  |  |  |

10) Metamorphic quartz showsextinction.a) Straightb) Inclined

c) Wavy d) None

|     | 11) Which of the following is a Zeolite  | ?                                  |    |
|-----|--|------------------------------------|----|
|     | a) Natrolite   | b) Stilbite                        |    |
|     | c) Apophyllite   | d) All the above                   |    |
|     | 12) Difference in Refractive Index is kn   | nown as                            |    |
|     | a) Pleochroism   | b) Birefringence                   |    |
|     | c) Dispersion  | d) Isotropism                      |    |
|     | 13) Illite is a variety of group   | o of minerals.                     |    |
|     | a) Zeolite   | b) Quartz                          |    |
|     | c) Clay  | d) Mica                            |    |
|     | 14) The mineral $\infty$ - quartz represents _   | silica.                            |    |
|     | a) Low temperature   | b) High Temperature                |    |
|     | c) Medium temperature  | d) None                            |    |
| Q.2 | Describe the behavior of light under mi  | croscope.                          | 14 |
| Q.3 | Describe crystal structure, chemistry ar Amphiboles.   | d diagnostic properly of           | 14 |
| Q.4 | Describe the use of optical accessories minerals. Cite suitable examples.                                  | in determing optical properties of | 14 |
| Q.5 | <ul><li>Write short notes on:</li><li>1) Feldspar</li><li>2) Types of gemstones</li></ul>                  |                                    | 14 |
| Q.6 | Explain in short:<br>1) Alumino - Silicates<br>2) Mica   |                                    | 14 |
| Q.7 | <ul><li>Write notes on:</li><li>1) Optical properties of Epidote</li><li>2) Interference figures</li></ul> |                                    | 14 |
|     |  |                                    |    |

## Master of Science – I (Applied Geology) Examination: Oct / Nov 2016 Semester – I (New CBCS)

|                  |      |                  | 20   | 16 Semes  | ter – I                | (New CBCS)  | )               |          |
|------------------|------|------------------|--|---|------------------------|---|-----------------|----------|
| SLF              | R No | ).               | Day &<br>Date  | Time  |                        | bject Name  | Paper<br>No.    | Seat No. |
| SLR – SE –<br>32 |      | E —              | Friday<br>18/11/2016   | 10.30 AM<br>to<br>01.00 PM  | Ge                     | ochemistry  | HCT 1.2         |          |
| Instr            | ucti | ons:             | <ol> <li>All que</li> <li>Q.1 is e</li> <li>Attemp</li> </ol>                            | r any five qu<br>estions carry<br>compulsory.<br>ot any two fr<br>ot any two fr | equal ma<br>com Q.2, 3 | 3 & 4   | Total Marks     | :70      |
| Q.1              |      | The<br>hav<br>a) | e the correct and<br>e elements that<br>e iconic bonds<br>Lithophiles<br>Chalcophile     | have strong a   | <br>b)                 | th oxygen to form<br>Atmosphile<br>All the above        | n silicate and  | 14       |
|                  | 2)   | a)               | ich of the follo<br>H <sup>+</sup> > OH <sup>-</sup><br>H <sup>+</sup> < OH <sup>-</sup> | wing is true i  | b)                     | pure water?<br>H <sup>+</sup> = OH <sup>-</sup><br>None |                 |          |
|                  | 3)   | yea              | rs?<br><sup>235</sup> Uranium  | wing radioact   |                        | ent has half life of<br>Thorium<br><sup>16</sup> O      | f 703.8 million | 1        |
|                  | 4)   | a)               | element is usua<br>Na-mineral<br>Ca-mineral  | ally found dis  | b)                     | K-mineral<br>Al-mineral                                 |                 |          |
|                  | 5)   | a)               | water pH is typ<br>2 and 3.8<br>9 and 11   | vically limited   | b)                     | the between<br>7.5 and 8.4<br>12 and 14                 |                 |          |
|                  | 6)   | Wh<br>a)<br>c)   |  | ue of Limeste   | b)                     | emical fence?<br>5.4<br>12.1                            |                 |          |
|                  | 7)   | con<br>a)        | e relative conce<br>centration in m<br>Higher<br>Same                                    |   | b)                     | t in comparison w<br>Lower<br>All the above             | vith its        |          |

|             | 8) is a characteristic rock of   | Upper mantle.  |     |  |  |  |  |  |
|-------------|--|--|-----|--|--|--|--|--|
|             | a) Basalt  | b) Gabbro  |     |  |  |  |  |  |
|             | c) Pegmatite   | d) Peridotite  |     |  |  |  |  |  |
|             | 9) Which of the elements that have the shortest residence time in the ocean? |  |     |  |  |  |  |  |
|             | a) Na-K<br>c) Mg-Cl  | <ul><li>b) Si-Al</li><li>d) None of the above</li></ul>  |     |  |  |  |  |  |
|             | c) Mg-Cl   | d) None of the above                                     |     |  |  |  |  |  |
|             | 10) Chlorinity is determined by precipita                                    |  |     |  |  |  |  |  |
|             | <ul><li>a) HCI</li><li>c) Hydrochloric acid</li></ul>                        | <ul><li>b) Silver Nitrate</li><li>d) None</li></ul>      |     |  |  |  |  |  |
|             | e) Hydroemone deld   |  |     |  |  |  |  |  |
|             | 11) Which of the following layers of the                                     |  |     |  |  |  |  |  |
|             | <ul><li>a) Biosphere</li><li>c) Lithosphere</li></ul>                        | <ul><li>b) Asthenosphere</li><li>d) Atmosphere</li></ul> |     |  |  |  |  |  |
|             | c) Linicipiiere  |  |     |  |  |  |  |  |
|             | 12) The concentration of gold is expected $C$                                |  |     |  |  |  |  |  |
|             | <ul><li>a) Core</li><li>c) Mantle</li></ul>                                  | <ul><li>b) Crust</li><li>d) All the above</li></ul>      |     |  |  |  |  |  |
|             | c) mante   |  |     |  |  |  |  |  |
|             | 13) The density of Fe-Meteorites are aro                                     |  |     |  |  |  |  |  |
|             | <ul> <li>a) 8 gm/cm<sup>3</sup></li> <li>c) 10 gm/cm<sup>3</sup></li> </ul>  | b) 9 gm/cm <sup>3</sup><br>d) 12 gm/cm <sup>3</sup>      |     |  |  |  |  |  |
|             | c) to gill chi   |  |     |  |  |  |  |  |
|             | 14) The cosmic abundance data of eleme                                       | ents indicate that there is a pronounced                 |     |  |  |  |  |  |
|             | peak in graph<br>a) Ni   | b) Fe  |     |  |  |  |  |  |
|             | c) U   | d) Au  |     |  |  |  |  |  |
| Q.2         | Discuss distribution of elements in Igned                                    | ous rocks  | 14  |  |  |  |  |  |
| <u>-</u>    | _  |  |     |  |  |  |  |  |
| Q.3         | Write a full note on physic-chemical fac                                     | tors in secondary environment.                           | 14  |  |  |  |  |  |
| Q.4         | What are decay clocks? Give various ma                                       | aterial in dating decay clocks.                          | 14  |  |  |  |  |  |
| Q.5         | Write short notes on the following   |  | 14  |  |  |  |  |  |
| -           | A) Polymorphism and Isomorphism  |  |     |  |  |  |  |  |
|             | B) Difference between sea and river wa                                       | ter composition  |     |  |  |  |  |  |
| Q.6         | Write in brief:  |  | 14  |  |  |  |  |  |
| _           | A) Primary differentiation of earth  |  |     |  |  |  |  |  |
|             | B) Climate changes during geologic his                                       | tory of earth  |     |  |  |  |  |  |
| <b>Q.</b> 7 | Discuss in short of the following  |  | 14  |  |  |  |  |  |
| <b>۲</b> ۳٬ | A) Composition of meteorites   |  | - • |  |  |  |  |  |
|             | P) Causas and products of chamical wa  | athoring   |     |  |  |  |  |  |
|             | B) Causes and products of chemical we  | anenig   |     |  |  |  |  |  |
|             |  |  |     |  |  |  |  |  |

## Master of Science – I (Applied Geology) Examination: Oct/Nov 2016 Semester – I (New CBCS)

|  |  | Semeste   | Semester – I (New CBCS)               |  |              |          |  |  |  |  |
|--|--|---|---------------------------------------|--|--------------|----------|--|--|--|--|
| SLR No.  | Day &<br>Date  | Time  | Su                                    | bject Name   | Paper<br>No. | Seat No. |  |  |  |  |
| SLR – SE -<br>33   | - Monday<br>21/11/2016   | 10.30 AM<br>to<br>01.00 PM                                      |                                       | nentology and<br>aeonotology                           | НСТ<br>1.3   |          |  |  |  |  |
| Instructions: 1) Answer any five questions.<br>2) All questions carry equal marks.<br>3) Q.1 is compulsory.<br>4) Attempt any two from Q.2, 3 & 4<br>5) Attempt any two from Q.5, 6 & 7<br>6) Draw neat and labeled diagrams wherever necessary.<br>Total Marks:70 |  |   |                                       |  |              |          |  |  |  |  |
| 1)   | <ul> <li>ct the answer a</li> <li>A river channel</li> <li>A) Sediment loa</li> <li>b) Gradient dec</li> <li>c) Lateral erodi decreases.</li> <li>d) Competence</li> </ul> | widens downs<br>ad decreases<br>reases and dis<br>ng capacity o | stream becascharge inc<br>f the river |  | ent load     | 14       |  |  |  |  |
|  | Which one of the<br>a) Arkose<br>c) Shale  | e following is  | b)                                    | ical sedimentary roo<br>Coal<br>Conglomerate           | ck?          |          |  |  |  |  |
|  | The wa<br>a) Precambrian<br>c) Mesozoic  | as an era dom   | b)                                    | he dinosaurs.<br>Paleozoic<br>Cenozoic                 |              |          |  |  |  |  |
|  | Fossils are most<br>a) Sedimentary<br>c) Metamorphic   |   | b)                                    | ck types.<br>Igneous<br>All the above                  |              |          |  |  |  |  |
| <ul> <li>5) A sedimentary rock composed of angular particles of gravel is called.</li> <li>a) Breccias</li> <li>b) Conglomerate</li> <li>c) Sandstone</li> <li>d) Gravelstone</li> </ul>   |  |   |                                       |  |              |          |  |  |  |  |
| <ul> <li>6) Micrite can be generated by:</li> <li>a) Chemical precipitation</li> <li>b) Disaggregation of peloids</li> <li>d) All of the above</li> </ul>  |  |   |                                       |  |              |          |  |  |  |  |
| <ul> <li>7) Glossopteris is a genus of sub- class</li> <li>a) Pteridospermae</li> <li>b) Cycadophyta</li> <li>c) Coniferophyta</li> <li>d) Angeiospermae</li> </ul>  |  |   |                                       |  |              |          |  |  |  |  |
|  | Benthonic foram<br>a) Paleozoic era<br>c) Tertiary era   |   | b)                                    | d all over the world o<br>Mesozoic era<br>Cenozoic era | during the:  |          |  |  |  |  |

| <ol> <li>In comparison with normal river flo<br/>boulders because of higher:</li> </ol> | w, debris flows can easily carry large |
|---|--|
| a) Velocity of flow   | b) Volume of flow                      |
| c) Turbulence of flow   | d) Viscosity of flow                   |
| 10) Conglomerate and breccia are exam   | ples of                                |
| a) Arenaceous   | b) Argillaceous                        |
| c) Rudaceous  | d) Ferruginous rocks                   |
| 11) Paradoxide is genus which possess   | type facial suture.                    |
| a) Hypoparian   | b) Proparian                           |
| c) Opisthoparian  | d) Gonatoparian                        |
| 12) Dianosaurs extincted at   |  |
| a) Permian-Triassic   | b) Cretaceous-Tertiary boundary        |
| boundary  | b) Cretaceous Fernary boundary         |
| c) Ordovician- Silurian   | d) Devonian carboniferous boundary     |
| boundary  |  |
| 13) Gondwana basin is an example of   |  |
| a) Rift basin   | b) Pullapart basin                     |
| c) Down warp basin  | d) Interior basin                      |
|   |  |
| 14) Osteichthyses are   |  |
| a) Cartilaginous fishes   | b) Bony fishes                         |
| c) Both A and B   | d) None of the above                   |
|   |  |

#### SECTION – A

| Q.2 | What is meant by sedimentary environment? Give an account on sedimentation in deltaic environment?                             | 14 |
|-----|--|----|
| Q.3 | Give an account on the sedimentary basins in India and their tectonic setting.   | 14 |
| Q.4 | What are fossils? Give an account on modes of preservation of fossils.   | 14 |
|     | SECTION-B  |    |
| Q.5 | <ul><li>Write short notes on the following</li><li>A) Morphology of trilobite</li><li>B) Classification of limestone</li></ul> | 14 |
| Q.6 | <ul><li>Write in brief:</li><li>A) Texture of sedimentary rocks</li><li>B) Gondwana flora</li></ul>                            | 14 |
| Q.7 | <b>Discuss in short of the following</b><br>A) Lithification and diagenesis  | 14 |
|     | B) Morphology of foraminifera  |    |

| Semester – I (New CBCS)                |   |  |   |                      |                       |          |  |  |  |
|--|---|--|---|----------------------|-----------------------|----------|--|--|--|
| SLR No.                                | Day &<br>Date   | Time   | Su  | ıbject Name          | Paper<br>No.          | Seat No. |  |  |  |
| SLR – SI<br>– 34                       | 2 Wednesday<br>23/11/2016   | 10.30 AM<br>to<br>01.00 PM   | Ecor                                      | iomic Geology        | SCT 1.1               |          |  |  |  |
| Instruct                               | <ol> <li>All q</li> <li>Q.1 i</li> <li>Q.1 i</li> <li>Atten</li> <li>Atten</li> </ol> | ver any five o<br>uestions carr<br>s compulsory<br>mpt any two<br>mpt any two<br>v neat and la | y equal m<br>y.<br>from Q.2,<br>from Q.5, | 3 & 4                | ecessary.<br>Total Ma | arks:70  |  |  |  |
| Q.1 Fi                                 | ll in the blanks w  | vith correct c   | hoice.                                    |                      |                       | 14       |  |  |  |
| 1)                                     | is prin   | •  |   |                      |                       |          |  |  |  |
|  | a) Chalcopurite   | 2  |   | Hematite             |                       |          |  |  |  |
|  | c) Galena   |  | d)  | Sphalerite           |                       |          |  |  |  |
| 2)                                     | close of magmat   | tic period.  |   | ystallizing from a r | nagma towar           | ds the   |  |  |  |
|  | a) Early magma  |  |   | Late magmatic        |                       |          |  |  |  |
|  | c) Metasomatic  | 2  | d)  | Pegmatitic           |                       |          |  |  |  |
| 3)                                     | Hutti is famous   | for n  | nine.                                     |                      |                       |          |  |  |  |
|  | a) Gold   |  | b)  | Copper               |                       |          |  |  |  |
|  | c) Zinc   |  | d)  | Iron                 |                       |          |  |  |  |
| 4)                                     | Bauxite deposits  | s of Maharash  | tra are asso                              | ociated with         |                       |          |  |  |  |
| • • • •                                | a) Granite  | , or munului ush   |   | Dunite               |                       |          |  |  |  |
|  | c) Amphibolite  | s  | ,   | Basalt               |                       |          |  |  |  |
|  | , <b>1</b>  |  | ,   |                      |                       |          |  |  |  |
| 5)                                     | Ore bearing fluid   |  | ediments a                                | t the time they wer  | e deposited is        | 8        |  |  |  |
|  | a) Meteoric wa  |  | b)  | Juvenile water       |                       |          |  |  |  |
|  | c) Connate wat  |  |   | d) Spring water      |                       |          |  |  |  |
|  |   |  |   |                      |                       |          |  |  |  |
| 6)                                     |   |  | •   | vn by depos          | its.                  |          |  |  |  |
|  | a) Sedimentary  | r  |   | Cavity filled        | , <b>-</b>            |          |  |  |  |
|  | c) Evaporites   |  | d) Magmatic Segregation                   |                      |                       |          |  |  |  |
| 7) Banded manganese ores are generally |   |  |   |                      |                       |          |  |  |  |
| a) Epigenetic b) Syngenetic            |   |  |   |                      |                       |          |  |  |  |
| c) Both a and b d) None                |   |  |   |                      |                       |          |  |  |  |
| 8)                                     | Which one of th   | e following of   | re mineral                                | is lead mineral?     |                       |          |  |  |  |
| -)                                     | a) Pyrite   | 0  |   | Malachite            |                       |          |  |  |  |
|  | c) Azurite  |  |   | Galena               |                       |          |  |  |  |
|  |   |  |   |                      |                       |          |  |  |  |

## Master of Science – I (Applied Geology)Examination: Oct/Nov 2016 Semester – I (New CBCS)

|     | <ul> <li>9) The pyrosomatic deposits are formed by</li> <li>a) Metamorphic process</li> <li>b) Residual alteration</li> <li>c) Contact metasomatism</li> <li>d) Pneumatolytic alteration</li> </ul> |    |
|-----|---|----|
|     | <ul> <li>10) Diamonds in kimberlite are good example of</li> <li>a) Disseminated deposits</li> <li>b) Segregated deposits</li> <li>c) Injected deposits</li> <li>d) Pegmatitic deposits</li> </ul>  |    |
|     | <ul> <li>11) Magmatic magnetic deposits occur with</li> <li>a) Diorite</li> <li>b) Syenite</li> <li>c) Pegmatite</li> <li>d) High viscosity</li> </ul>  |    |
|     | <ul> <li>12) Iron is commonly precipitated as</li> <li>a) Siderite</li> <li>b) Limonite</li> <li>c) Hematite</li> <li>d) All above</li> </ul>   |    |
|     | <ul> <li>13) "Gossans" is a</li> <li>a) Ferruginous residue</li> <li>b) Siliceous residue</li> <li>c) Calcareous residue</li> <li>d) Organic residue</li> </ul>                                     |    |
|     | <ul> <li>14) The mineral sphalerite shows colour of internal reflection under reflected light.</li> <li>a) Yellow to Brown</li> <li>b) Blue</li> </ul>  |    |
| Q.2 | <ul><li>c) Green</li><li>d) Deep Brown</li><li>Describe in detail khetri deposits of India.</li></ul>   | 14 |
| Q.3 | What is hydrothermal deposit? Explain in detail cavity filling deposit.   | 14 |
| Q.4 | Write full notes on supergene sulphide enrichment.  | 14 |
| Q.5 | <ul><li>Write short notes on the following</li><li>A) Ore Texture</li><li>B) Optical properties of ore minerals</li></ul>   | 14 |
| Q.6 | Discuss the short<br>A) National mineral policy<br>B) Fluid inclusion   | 14 |
| Q.7 | <ul><li>Write in brief :</li><li>A) Controls one ore deposits</li><li>B) Metallogenic province &amp; Epoctic</li></ul>  | 14 |

## Master of Science – I (Applied Geology)Examination: Oct / Nov 2016 Semester – I (Old CBCS)

|                  |          |       |  | Semester   | - I (O            | Old CBCS)              |              |          |
|------------------|----------|-------|--|--|-------------------|------------------------|--------------|----------|
| SLI              | R No.    |       | Day &<br>Date  | Time   |                   | Subject Name           | Paper<br>No. | Seat No. |
| SLR – SE –<br>36 |          |       | Vednesday<br>6/11/2016   | 10.30 AM<br>to<br>01.00 PM   | Mine              | eralogy and Optics     | I            |          |
| Instr            | uctions  | :     | <ol> <li>All ques</li> <li>Q.1 is control</li> <li>Attemp</li> </ol> | any five questions carry e<br>ompulsory.<br>t any two fron<br>t any two fron | qual m<br>m Q. 2, | 3 & 4                  | Total N      | larks:70 |
|                  |          |       |  |  |                   |                        | 100001       |          |
| Q.1              |          |       | e correct an   | swer.  |                   |                        |              | 14       |
|                  | <i>,</i> |       | 0  | and non-diag   | nostic            |                        |              |          |
|                  | b)       | Dir   | rectional and  | diagnostic   |                   |                        |              |          |
|                  |          |       |  | and diagnosti<br>non diagnosti   |                   |                        |              |          |
|                  | u)       | DI    |  | non utagnosti  | C                 |                        |              |          |
|                  | 2) Ri    | ng si | ilicate structu  | ires are charac  | eteristic         | of minerals crystalliz | ing in       |          |
|                  | ,        |       | kagonal syste  |  |                   |                        |              |          |
|                  |          |       | -  | trigonal system<br>gonal and orth  |                   | pic system             |              |          |
|                  | ,        |       | -  | orhombic and   |                   | •                      |              |          |
|                  | 3) Ne    | phel  | line is a  | group  | of mine           | eral                   |              |          |
|                  |          | a)    | Feldspar   |  | b)                | feldspathoid           |              |          |
|                  |          | c)    | Olivine  |  | d)                | quartz                 |              |          |
|                  | 4) W     | hich  | one among t  | the following  | is a ison         | netric mineral.        |              |          |
|                  |          |       | -  |  |                   |                        |              |          |
|                  |          | c)    | garnet   |  | d)                | muscovite              |              |          |
|                  | 5) Th    | ie ma | ain difference   | e between gra  | phite an          | d diamond is           |              |          |
|                  |          | a)    | Compositio   | n  | /                 | hardness               |              |          |
|                  |          | c)    | density  |  | d)                | crystal structure      |              |          |
|                  | 6) Th    | ie pu | rest and the   | most transpare   | ent from          | n of quartz is         |              |          |
|                  |          | a)    | milky quar   |  | /                 | rose quartz            |              |          |
|                  |          | c)    | rock crysta  | l  | d)                | aventurine             |              |          |
|                  | 7) Th    | ie en | d member of  | an olivine ser   | ries is           |                        |              |          |
|                  |          | a)    | forsterite   |  | b)                | 2                      |              |          |
|                  |          | c)    | orthoferros  | ilite  | d)                | augite                 |              |          |
|                  | 8) Th    | e ref | fractive index   | x of the Canad   | la balsa          | m is                   |              |          |
|                  |          | a)    | 1.50   |  | /                 | 1.54                   |              |          |
|                  |          | c)    | 1.486  |  | d)                | 1.65                   |              |          |

- 9) Which of the following is used for the identification of polished sections of metallic ores?
  - a) Compound microscope
- b) Polarizing microscope
- c) reflecting microscope d) binocular microscope
- 10) The 'Melatope' of an interference figure coincides with
  - a) The point of emergence of the optic axis
  - b) Direction perpendicular to the optic axis
  - c) Direction 45 to the optic axis
  - d) None of the above

#### 11) The purple colour of amethyst is due to the presence of

- a) titanium b) manganese
- c) iron d) chromium
- 12) Hardness of minerals increases with a/an
  - a) increase in valency
  - b) increase in bond strength
  - c) increase in the density of packing of atoms
  - d) all of the above

13) On Moh's scale of harness ----- possess hardness 4.

- a) calcite b) apatite a) fluorita d) faldspa
- c) fluorite d) feldspar
- 14) When anions and cations of similar size and in same numbers crystallizes in similar type of structure , the phenomenon is known as

| a) | isomorphism | b) | polymorphism             |
|----|-------------|----|--------------------------|
| c) | diadochy    | d) | eutectic crystallization |

## Q.2 Discuss structure, chemistry, optical properties and paragenesis of Alkali feldspar 14 group.

| Q.3 | Write a full note on interference figure of biaxial and uniaxial mineral.   | 14 |
|-----|---|----|
| Q.4 | Write in detail different types of silicate structure.  | 14 |
| Q.5 | <ul><li>Write short notes on the following</li><li>A) Polysynthetic twining</li><li>B) Optical &amp; physical properties of olivine mineral</li></ul> | 14 |
| Q.6 | <b>Explain briefly the following:</b><br>A) Pleochroism   | 14 |

B) Concept of light under microscope

# Q.7Attempt the following:<br/>A) Polymorphism & Isomorphism14

B) Optical properties of garnet

## Master of Science – I (Applied Geology) Examination: Oct / Nov 2016 Semester – I (Old CBCS)

|                  | 2   | <u>uio</u> seme                                 | ster – I (Old CBCS)   |              |           |
|------------------|---|---|---|--------------|-----------|
| SLR No.          | Day &<br>Date   | Time  | Subject Name  | Paper<br>No. | Seat No.  |
| SLR – SE –<br>37 | Friday<br>18/11/2016  | 10.30 AM<br>to<br>01.00 PM                      | Igneous and<br>Metamorphic Petrology  | II           |           |
| Instructions     | <ol> <li>All qu</li> <li>Quest</li> <li>Answ</li> <li>Attem</li> </ol>                | ion no. 1 is c<br>er any two q<br>upt any two c | y equal marks   | ary          | arks: 70  |
| Q.1 Choos        | se correct ansv   | ver for the fo                                  | ollowing  |              | 14        |
|                  | The presence of<br>a) Greenschis<br>c) Granulite g<br>Khondalite of<br>a) Zeolite fac | t facies<br>grade<br>Eastern Ghats              | <ul> <li>garnet in the metamorphic r</li> <li>b) Greenstone</li> <li>d) Eclogite facies</li> <li>s belong to</li> <li>b) Amphibolite f</li> </ul> |              | cative of |
|                  | c) Blue delis   | t facies  | d) None   |              |           |
| 3)               | The index min<br>a) Eclogite<br>c) Hornfels   | eral 'Stilpom                                   | elane' is for which facies<br>b) Greenschist<br>d) Buchite  |              |           |
| 4)               | <ul><li>Find the odd p</li><li>a) Hampi ter</li><li>c) Naldurg -</li></ul>            | nple – closep                                   |   |              |           |
| 5)               | The concept of<br>a) Harker<br>c) Eskola  | f metamorphi                                    | c facies was first proposed by<br>b) Bowen<br>d) Turner   |              |           |
| 6)               | <ul><li>Which of the f</li><li>a) Charnock</li><li>c) Carbonati</li></ul>             | ite   | cs has hypersthene as characte<br>b) Hornfels<br>d) Blue – schist   | eristic mine | eral      |
| 7)               | <ul><li>Sieve structure</li><li>a) Blue schis</li><li>c) Hornfels f</li></ul>         | st facies                                       | the rocks of<br>b) Eclogite facies<br>d) None   | 3            |           |
| 8)               | The line joinin<br>a) isograde<br>c) isotype  | g equal degre                                   | ee of metamorphism is synony<br>b) isotope<br>d) isobar   | mous to      |           |

- 9) The world famous diamond deposits located in Republic of South Africa are associated with
  - a) eclogite b) kimberlite
  - c) granite d) none

10) The silica percentage is basic igneous rocks is

- a) >66%b) 45% - 62%c) 52% - 66%d) < 45%
- 11) Igneous rocks exhibiting anhedral minerals in equal size are
  - a) Allotromorphic b) Hypidiomorphic

b) Sub duction zone

d) None

b) Andesite

c) Panidiomorphic d) None

12) The generation of calc – alkaline magmas are at

- a) Aceanic rift
- c) Continental rift

#### 13) Find the odd one out

- a) Eclogite
- c) Amphibolite d) Marble
- 14) The MORB are characterized by basalts of
  - a) Tholeite b) Carbonatite
  - c) Alkaline d) All the above
- **Q.2** Describe the role of water vapour pressure in the crystallization of albite orthoclase system and state its significance
- **Q.3** Discuss khondalite and charnockite rocks of eastern ghats. Add a note on mineralogy of them with suitable ACF diagrams.
- Q.4 Describe how calc alkaline magmatism originates with respect to plate boundaries and also the metamorphism associated with convergent plate margins

#### Q.5 Write short note on the following

- A) Barrowian zones of metamorphism
- B) Fenitization

#### Q.6 Bring out the salient aspects on the following

- A) S type and I type granite
- B) Burial metamorphism

#### Q.7 Write briefly on the following

- A) Deccan basalts
- B) Index minerals for metamorphic facies

## Master of Science – I (Applied Geology)Examination: Oct/Nov 2016 Semester – I (Old CBCS)

|                       | Semester – I (Old CBCS)   |  |   |                                  |   |                |          |  |
|-----------------------|---|--|---|----------------------------------|---|----------------|----------|--|
| SLR No                | ).  | Day &<br>Date  | Time  | Sı                               | ubject Name   | Paper<br>No.   | Seat No. |  |
| <b>SLR – SI</b><br>38 | E —   | Monday<br>21/11/2016   | 10.30 AM<br>to<br>01.00 PM  |                                  | mentology and<br>laeonotology                             | III            |          |  |
| Instruct              | Instructions:1) Answer any five questions.2) All questions carry equal marks.3) Q.1 is compulsory.4) Attempt any two from Q.2, 3 & 45) Attempt any two from Q.5, 6 & 76) Draw neat and labeled diagrams wherever necessary.Total Marks:70 |  |   |                                  |   |                |          |  |
|                       |   | the answer an  | 0   | 0                                |   |                | 14       |  |
| 1)                    |   | e foraminifera   | belong to the   | class                            |   |                |          |  |
|                       |   | sarcodina  |   | b)                               | 1   |                |          |  |
|                       | c)  | flagellata   |   | d)                               | mastigophora  |                |          |  |
| 2)                    | $Th_{\ell}$   | e lateral and no   | sterior horde   | rs of trilo                      | bites meet to form ar                                     | n angle know   | an as    |  |
| 2)                    |   | glabellar angl   |   |                                  | genal angle   | i aligic kilov | vii as   |  |
|                       |   | spire angle  | 0   |                                  | angle of divergence                                       | <u>,</u>       |          |  |
| 3)                    | a)<br>b)<br>c)  | compared with<br>Higher porosi<br>Lower porosi<br>Higher porosi<br>Lower porosi      | ty and perme<br>ty and permeaty<br>ty and lower                     | ability<br>ability<br>permeabi   | lity  |                |          |  |
| 4)                    | a)  | evee' and 'Crev<br>channel depos<br>river bank dep                                   | its   | b)                               | re<br>channel- fill deposi<br>flood basin deposit         |                |          |  |
| 5)                    | a)  | e central conve<br>Glabella<br>Free cheek  | x lobe of the   | b)                               | of trilobites is know<br>Occipital furrow<br>Neck, furrow | n as           |          |  |
| 6)                    | a)  | e shells of fora<br>Calcium carbo<br>Chitin  |   | b)                               | of<br>Arenaceous sedime<br>Any of the above               | ents           |          |  |
| 7)                    | a)  | e Rann of Kutc<br>Non-marine e<br>basin<br>Ephemeral ev                              | vaporate  | b)                               | Marine evaporate b<br>Playa                               | asin           |          |  |
| 8)                    | A s<br>a)<br>b)<br>c)   | edimentary fac<br>Lithologic cha<br>Palaeontologi<br>Both lithologi<br>None of the a | cies may be d<br>aracteristics c<br>c characterist<br>c and palaeou | lescribed i<br>only<br>tics only | in terms of   |                |          |  |

| $(\Delta)$ | TT1 (° (  | C ·               | •       | C 1     | . 1 1 .       |
|------------|-----------|-------------------|---------|---------|---------------|
| 91         | The first | annearance of 1aw | /s 1n 1 | tichec  | took nlace in |
| ~          | The mot   | appearance of jaw | 5 m     | 1101100 | took place m  |

- a) Cambrian
- b) Ordovician c) Silurian d) Devonian
- 10) Which of the following is called the "age of mammals"?
  - b) Mesozoic a) Paleozoic
  - c) Cenozoic d) None of the above
- 11) According to Wentworth's scale particles having a diameter between 64mm-4mm are described as
  - a) Granules

- b) Pebbles
- c) Cobbles

d) Coarse sands

- 12) Bog Iron Ore is of
  - a) Organic origin
  - c) Biochemical origin
- b) Chemical origin
- d) Biological origin
- 13) 'Vertebraria indica' is
  - a) A plant fossil belonging to conifers
  - b) A plant fossil belonging to cycads
  - c) The stem of Glossopteris
  - d) The stem of Gangamopteris
- 14) Shale is made up of
  - a) Clasts only b) Clasts+ matrix
  - c) Clasts + cement d) Clasts+ matrix+cement

#### Section A

| Q.2 | What are sedimentary environments? Write in brief about continental sedimentary environment.                               | 14 |
|-----|--|----|
| Q.3 | Write about morphology, geological distribution and application of foraminifera.   | 14 |
| Q.4 | Write a note on sedimentary basins in India and their tectonic setting.  | 14 |
| Q.5 | Section B<br>Write short notes on the following<br>A) Classification of limestone<br>B) Devonian fishes                    | 14 |
| Q.6 | <ul><li>Write in brief:</li><li>A) Sedimentary structures</li><li>B) Modes of preservation of fossils</li></ul>            | 14 |
| Q.7 | <ul><li>Discuss in short of the following</li><li>A) Carbonaceous sedimentary deposits</li><li>B) Gondwana flora</li></ul> | 14 |

| SLR No.          | Day &<br>Date  | Time   |                           | Subject Name         | Paper<br>No.        | Seat No. |
|------------------|--|--|---------------------------|----------------------|---------------------|----------|
| SLR – SE -<br>40 | - Thursday<br>17/11/2016   | 10.30 AM<br>to<br>01.00 PM   | Ec                        | conomic Geology      | V                   |          |
| Instruction      | <ol> <li>All ques</li> <li>Q.1 is constrained</li> <li>Attemp</li> <li>Attemp</li> </ol> | any five quest<br>stions carry eq<br>ompulsory.<br>t any two from<br>t any two from<br>eat and labeled | ual m<br>1 Q.2,<br>1 Q.5, | 3 & 4                | essary.<br>Total Ma | rks:70   |
| O.1 Cha          | aga agunaat altaun   | ative among th   | a fall                    | owing                |                     | 14       |
|                  | <b>ose correct altern</b><br>The well known ch   | 0  |                           | 0                    |                     | 14       |
|                  | ) Ultramafic rock  |  |                           | Acidic rocks         |                     |          |
|                  | c) Sedimentary ro  |  | ,                         | None of the above    |                     |          |
|                  | )  |  |                           |                      |                     |          |
|                  |  |  |                           | l formation is from  |                     |          |
|                  | a) Banganpalli con   | -  |                           | Paniam sandstones    |                     |          |
| C                | e) Jamalamadugu  | kimberlites  | d)                        | Panna sandstone      |                     |          |
| 3) F             | Placer deposits are  | formed as a res  | ult of                    |                      |                     |          |
|                  | ) Liquid segregat  |  |                           | Mechanical concent   | etration            |          |
|                  | c) Metasomatic re  |  |                           | Supergene sulphide   |                     |          |
|                  | ,  | <u>r</u>   |                           |                      |                     |          |
| ,                | Malachite is hydro:  | kyl carbonate og   |                           |                      |                     |          |
|                  | a) Zinc  |  | b)                        |                      |                     |          |
| C                | c) Iron  |  | d)                        | Lead                 |                     |          |
| 5) I             | n Maharashtra chr  | omite ore occur  | rrence                    | is known from        |                     |          |
|                  | ) Kankauli-Vagd  |  |                           | Kolaba               |                     |          |
|                  | c) Randhanagari  | -  | ,                         | None of the above    |                     |          |
|                  | , 0  |  | ,                         |                      |                     |          |
|                  |  |  | -                         | atic dissemination?  |                     |          |
|                  | ) Chromite in ult  |  |                           | Diamonds in kimbe    | rlite               |          |
| C                | c) Asbestos in ser   | pentine  | d)                        | None of the above    |                     |          |
|                  | The manganese dep<br>are of  | oosits of Mahar  | ashtra                    | lie in Nagpur and B  | handara dis         | tricts   |
|                  | a) Gondite   |  | h)                        | Charnockite          |                     |          |
|                  | c) Kodurite  |  |                           | Khondalite           |                     |          |
| · · · ·          | ,  |  | 4)                        |                      |                     |          |
| 8) (             | Chromite deposits  | of Sitampundi a  | are ass                   | ociated with         |                     |          |
|                  | a) Anorthosite   |  | ,                         | Peridotite           |                     |          |
| С                | e) Syenite   |  | d)                        | All the above        |                     |          |
|                  |  |  |                           |                      |                     |          |
| 9) N             | Malanjkhand is fan   | nous for bigges  | t open                    | cast mine of India o | of                  |          |
|                  | ) Sponge iron  | 00   | -                         | Lignite              |                     |          |
|                  |  |  |                           |                      |                     |          |

## c) Uranium d) Copper

|     | <ul><li>10) A vertical dyke showing transverse v</li><li>a) Saddle reef</li><li>c) Stockwork</li></ul>                    | b)    | is known as<br>Ladder vein<br>Vug                    |    |
|-----|---|-------|--|----|
|     | <ul><li>11) Uranium deposits of Jaduguda are of</li><li>a) Magmatic origin</li><li>c) Metamorphic origin</li></ul>        | b)    | Sedimentary origin<br>Hydrothermal origin            |    |
|     | <ul><li>12) Hutti gold deposits occurring in south</li><li>a) Greenstone</li><li>c) Closepet granite</li></ul>            | b)    | lia are associated with<br>Kimberlites<br>Kondalites |    |
|     | 13) Which of the geological control plays diamonds.   | s an  | important role for formation of                      |    |
|     | <ul><li>a) Lithological</li><li>c) Climatic</li></ul>   |       | Structural<br>All of the above                       |    |
|     | <ul><li>14) Find the odd pair</li><li>a) Cr-ultrabasics</li><li>c) Co-pegmatite</li></ul>                                 |       | Sn-granite<br>Illemnite – placer                     |    |
| Q.2 | Write a full account on hydrothermal ore  | e dep | oosits.  | 14 |
| Q.3 | Describe various processes of ore format  | tion  | with suitable examples.                              | 14 |
| Q.4 | Give in brief the mineral deposits associa province of south India.   | ated  | with metallogenic epochs and                         | 14 |
| Q.5 | <b>Discuss in briefly:</b><br>A) Refractory minerals<br>B) Super gene Sulphide enrichment                                 |       |  | 14 |
| Q.6 | <ul><li>Explain the following:</li><li>A) Lead and zinc deposits of Zawar</li><li>B) Residual laterite deposits</li></ul> |       |  | 14 |
| Q.7 | <b>Discuss in short of the following</b><br>A) Placer deposits  |       |  | 14 |
|     | B) Strata bound and stratiform  |       |  |    |

## Master of Science – I (Applied Geology) Examination: Oct / Nov 2016 Semester – II (New CBCS)

|       |              |  |  |                               | mester – II (N  |                        | $c_{n}$  |
|-------|--------------|--|--|-------------------------------|---|------------------------|----------|
| SLI   | R No.        | Day &<br>Date  | Time   | Su                            | bject Name  | Paper<br>No.           | Seat No. |
|       | – SE –<br>41 | Saturday<br>19/11/2016   | 10:30 A.M<br>to<br>01:00 P.M   | Indian Stratigraphy           |   | VI                     |          |
| Instr | uctions      | <ol> <li>All qu</li> <li>All qu</li> <li>Q.1 is</li> <li>Attem</li> <li>Attem</li> </ol> | er any five qu<br>lestions carry<br>compulsory.<br>lpt any two fr<br>lpt any two fr<br>neat and labe | equal m<br>om Q.2,<br>om Q.5, | 3 & 4<br>6 & 7<br>rams wherever ne                          | ccessary.<br>Гotal Mar | ks:70    |
| Q.1   |              | nark the corre   | ,  | 1                             |   |                        | 14       |
|       | a)           | e rocks of Chit<br>Zeolite facies<br>Greenschist fa                                      |  | b)                            | Amphibolites fac<br>Granulite facies                        | ies                    |          |
|       | a)           | irenkonda forn<br>Kurnool grou<br>Papaghni grou  | р  | b)                            | <br>Nallamalai group<br>Cheyyair group                      | 1                      |          |
|       | a)           | osepet granites<br>Mayurbhanj (<br>Singhbhum G   | Granite  | b)                            | alent with o<br>Bundelkhand Gno<br>Dongargarh Gran          | eiss                   | ndia.    |
|       | a)           | do- Gangetic ba<br>Periferal back<br>Dominal basin                                       | land basin   | b)                            | Peripheral forelar<br>Erosional basin                       | nd basin               |          |
|       | a)           | hich formation<br>Sitasaong forn<br>Mansar forma   | mation   | b)                            | e important for mai<br>Lohangi formatio<br>Chorbaoli format | on                     | re:      |
|       | a)           | nosaurs existed<br>Palaeozoic era<br>Tertiary era  | -  |                               | Mesozoic era<br>All the above are                           | correct                |          |
|       | a)           | e lowermost fo<br>Kamlial Form<br>Pinjor Format  | nation   | b)                            | up is<br>Dhokpathan Forn<br>Nagri Formation                 | nation                 |          |
|       | · ·          | hat is the age o<br>Upper Creatad<br>Eocene<br>Palaeocene- I                             | ceous- Lower   | b)                            | Lower creataceous   |                        | ocene    |

| a) Marble & Conglomerate   | b)       | Phyllite & Slantes                     |    |
|--|----------|--|----|
|  |          | Sargur Schist & peninsular<br>Gneisses |    |
| 10) On which of the following supergr<br>with  | oup/gr   | oup the Diamond are associated         |    |
| <ul><li>a) Vindyan supergroup</li><li>c) Dongargarh group</li></ul>  |          | Sausar group<br>Sakoli group           |    |
| 11) Who introduce the neme 'Gondwa   |          |  |    |
| <ul><li>a) Medlikott</li><li>c) King</li></ul>   | ,        | Heron<br>Wadia                         |    |
| 12) Which of the following is younger  |          |  |    |
| <ul><li>a) Andes</li><li>c) Alps</li></ul>   |          | Himalayas<br>Zagros                    |    |
| , <u>-</u>   | <i>,</i> | 0                                      |    |
| <ul><li>13) What is the correct sequence in asc</li><li>a) Semri, kaimur, Rewah,<br/>Bhander</li></ul>                 |          | Kaimur, Rewah, Semri, Bhander          |    |
| c) Semri, Bhander, Kaimur,<br>Rewah  | d)       | Bhander semri, kaimur, Rewah           |    |
| 14) Beginning of Gondwana Sediment<br>deposition of sediments  |          | n India is characterized by the        |    |
| <ul><li>a) Marine sediments</li><li>c) Glacial Sediments</li></ul>   | b)       | Terrestrial Sediments<br>All the above |    |
| Write an essay on Deccan trap.   |          |  | 14 |
| Discuss in detail Structure, Stratigraph<br>Basin.   | у & Те   | ectonic evolution of Cuddapah          | 14 |
| Give details about the classification, cl<br>deposition of Gondwana rocks.   | limatic  | condition and environment of           | 14 |
| <ul><li>Write short notes on the following</li><li>A) Peninsular Gneissic Complex</li><li>B) Indravati Basin</li></ul> |          |  | 14 |
| <ul><li>Describe in brief:</li><li>A) Triassic sequence in spiti</li><li>B) Fossils of Siwalik</li></ul>               |          |  | 14 |
| <b>Discuss in short of the following</b><br>A) Creataceous of Tiruchirapalli   |          |  | 14 |

## Master of Science – II (Applied Geology) Examination: Oct / Nov 2016 Semester – III (New CBCS)

|            |              | Oct / No   | <u>v 2010 S</u>                        | emester –                             | III (New C                                       | <u>, BCS)</u>       |          |
|------------|--------------|--|--|---------------------------------------|--|---------------------|----------|
| SLF        | R No.        | Day &<br>Date  | Time                                   | Subjec                                | t Name   | Paper<br>No.        | Seat No. |
| SLR -<br>4 | - SE -<br> 8 | - Wednesday<br>16/11/2016  | 2:30 P.M<br>to<br>5:00 P.M             | Geotecto<br>Physical Oc               | onics and<br>eanography                          | IX                  |          |
| Instr      | ·uctio       | <ol> <li>All qu</li> <li>Q.1 is</li> <li>Attem</li> <li>Attem</li> </ol> | compulsory<br>pt any two<br>pt any two | y equal mark                          | is from Q.2, 3<br>estion from Q<br>is wherever n | .5, 6 & 7           | :70      |
|            |              |  |  |                                       |  |                     |          |
| Q.1        |              | in the blanks:   | • 1 1                                  | 1 •                                   |  |                     | 14       |
|            |              | The Ninety east  | ridge located                          |                                       |  | י 1 מי              |          |
|            |              | a) Arabian sea   |  |                                       | ) Off coast of                                   |                     |          |
|            |              | c) Persian gulf<br>Compressive stre                                      | accac araniti                          |                                       | ) Bay of Beng                                    |                     | uakas    |
|            | 2)           | are associated wi  |  |                                       |  | iepui earing        | uakes    |
|            |              | a) Sub duction 2   |  |                                       | Continent- co                                    | ntinent conv        | vergence |
|            |              | <ul><li>c) Spreading ce</li></ul>  |  | · · · · · · · · · · · · · · · · · · · | Transform bo                                     |                     | ergenee  |
|            |              | Melange deposit  |  |                                       |  |                     |          |
|            |              | a) Divergent bo  |  |                                       | ) Sub duction                                    | margins             |          |
|            |              | c) Transform be  |  |                                       | ) All of these                                   | 8                   |          |
|            |              | The effect of the  |  |                                       |  | ects to the right   | ght in   |
|            |              | the northern hem   |  |                                       |  |                     |          |
|            |              | as   |  |                                       |  |                     |          |
|            |              | a) Coriolis effect   |  |                                       | ) Geostropic                                     |                     |          |
|            |              | c) Ekman transj  | -                                      |                                       | l) None of the                                   |                     |          |
|            |              | Which plate is be  | -                                      |                                       |  |                     |          |
|            |              | a) The pacific p   |  |                                       | ) The South A                                    | -                   |          |
|            |              | c) The Narca pl  |  |                                       | ) The South A                                    | -                   |          |
|            | 6)           | The carbonate co   | ompensation                            | -                                     | -  |                     |          |
|            |              | a) 2500 m  |  |                                       | ) 4500 m   |                     |          |
|            |              | c) 1200m   |  |                                       | ) 100m   |                     | .0       |
|            | ,            | Which of the foll  | -                                      |                                       |  | -                   |          |
|            |              | <ul><li>a) The age of O</li><li>c) The thicknes</li></ul>                |  | -                                     | ) The depth to<br>) All of the at                |                     | 1        |
|            |              | lithosphere  | s of the                               | u                                     | ) All of the at                                  | Jove                |          |
|            | 8)           | What are ophioli   | te suites?                             |                                       |  |                     |          |
|            | ,            | a) Fragments of  |  | snhere emplac                         | ed on a contine                                  | ent                 |          |
|            |              | b) Groups of se  |  |                                       |  |                     |          |
|            |              | c) Wedge shape   | •                                      |                                       |  | sive marging        | 2        |
|            |              | d) Micro contin  |  |                                       |  | sive murging        | ,        |
|            |              | When the estuary   |  | -                                     | -  | e estuary slo       | nes      |
|            | ~)           | down towards th  |  | ing tradess and                       |  | <b></b> 51001 y 510 | r.o      |
|            |              | a) Partially mix   |  | h                                     | ) Salt wedge                                     | estuarv             |          |
|            |              | c) Stratified est  | -                                      |                                       | ) None of the                                    | •                   |          |
|            |              | ,  | 2                                      |                                       | ,  |                     |          |

- 10) At the convergent plate boundary the most common geologic features formed on the continental lithosphere are -----
  - a) Island arec) Volcanic are

- b) Pull apart basin
- d) Rift valleys
- 11) Lesser Himalaya domain in Himalaya is separated from great Himalaya by
  - a) Main central thrust

- b) Main Boundary thrust
- c) Himalayan frontal fault
- d) Indus suture zone
- 12) The margin associated with a trench, volcanism, active mountains and earth quakes.
  - a) Pacific type
  - c) Transform type
- 13) Earth loses heat by
  - a) Conduction
  - c) Radiation

- b) Atlantic type
- d) None
- b) Convection
- d) All of the above
- 14) Which type of magma is generated at mid oceanic ridge.
  - a) Andesitic magma
- b) Calc-alkaline magma
- c) Tholeiitic magma
- d) Acidic magma
- **Q.2** Describe in brief the volcanism and seismicity related to plate boundaries.
- Q.3 Explain in detail the surface and deep circulation pattern of oceanic water.
- Q.4 Write note on topographic features of ocean basin.

#### Q.5 Write short notes on the following

- A) Sea floor spreading
- B) Earth interior and its composition

#### Q.6 Explain the following

- A) Petrology of ocean crust
- B) Oceanic sediments

#### Q.7 Discuss the following

- A) Hydrothermal vents and its significance
- B) Sea level changes

## Master of Science – II (Applied Geology) Examination: Oct / Nov 2016 Semester – III (New CBCS)

|       | Exai           | nination: (   | <b>)ct / Nov 2</b>   | 2016 Sem                                  | ester – III (f        | New CBC               | US)                         |
|-------|----------------|---|--|---|-----------------------|-----------------------|-----------------------------|
| SL    | R No.          | Day &<br>Date   | Time   | Subj                                      | ect Name              | Paper<br>No.          | Seat No.                    |
|       | – SE –<br>49   | Friday<br>18/11/2016  | 02:30 P.M<br>to<br>05:00 P.M   | Mineral                                   | Exploration           | X                     |                             |
| Instr | ructions       | <ol> <li>All que</li> <li>Q.1 is (4)</li> <li>Attemp</li> <li>Attemp</li> </ol> | r any five que<br>estions carry o<br>compulsory.<br>pt any two fro<br>pt any two fro<br>neat and label | equal marks<br>om Q.2, 3 &<br>om Q.5, 6 & | 4.                    | essary.<br>Total Marl | <u><s:70< u=""></s:70<></u> |
| 0.1   | <b>T' I</b> (1 |   |  | •   |                       |                       |                             |
| Q.1   |                | <b>he correct cho</b> i<br>resistivity surve                                    |  | 0   | ip of each of the     | layers with           |                             |
|       |                | er is as P1>P2<   |  |   | ip of each of the     | luyers with           |                             |
|       |                | A type  |  | ,   | K type                |                       |                             |
|       | c)             | H type  |  | d)  | D type                |                       |                             |
|       | bao            | kground fluctu  |  |   | n used to define t    | he upper lin          | nit of                      |
|       |                | Median  |  | /   | Threshold             |                       |                             |
|       | c)             | Standard devia  | ation  | d)  | All                   |                       |                             |
|       | 3) WI          | nich of the follo   | wing correction  | on is not app                             | lied to gravity da    | ta?                   |                             |
|       |                | Free air correc   |  |   | Diurnal correcti      |                       |                             |
|       | c)             | Elevation corr  | ection   | d)  | Baugner correct       | tion                  |                             |
|       | · ·            | hfinder dement  | for porphyry   |   |                       |                       |                             |
|       | a)<br>c)       | No<br>Hg  |  |   | Se<br>None of the abo | We                    |                             |
|       | C)             | 115   |  | u)  |                       |                       |                             |
|       |                | iger meller cou   | nter is used to  |   |                       |                       |                             |
|       |                | Radioactivity   |  | · · · · · · · · · · · · · · · · · · ·     | Resistivity           |                       |                             |
|       | c)             | Seismicity  |  | d)  | None                  |                       |                             |
|       | 6) Kh          | ondalite occurr   | ing in the easte   | ern ghats are                             | associated with       |                       |                             |
|       |                | Gold  |  | ,   | Diamonds              |                       |                             |
|       | c)             | Zinc  |  | d)  | Graphite              |                       |                             |
|       | · ·            | nich of the follo<br>drocarbon prosp  | -  | used for loc                              | ation of sub surfa    | ace structure         | es in                       |
|       | •              | Gravity   | C  | b)  | Magnetic              |                       |                             |
|       | c)             | Seismic   |  | d)  | Electro magneti       | ic                    |                             |
|       |                |   |  |   |                       |                       |                             |

8) Green stone belts of Precambrian terrain are good for searching

- a) Cu
- c) Sn d) Au
- 9) Which of the following is not a geophysical instrument?
  - a) Gravitaeter b) Scintillation counter
  - c) Magnetometer d) Flame photometer
- 10) Magnetic materials having extremely high magnetic susceptibility are described as
  - a) Ferro magnetic b) Para magnetic
  - c) Di magnetic d) Non magnetic
- 11) If the sulphide deposits is in disseminated type, what type of geophysical prospecting is employed?
  - a) Resistivity
- b) Self potential

b) Fe

- c) Induced potential d) None
- 12) Which of the following has control on formation of laterite?
  - a) Climate b) Parent rode
  - d) All of the above c) Lithology

13) In matic igneous rocks the most common geochemical association is

- a) Si-K-Na b) Fe-Mg-Ti d) Zn-Pb-Ba-F-Sr c) Ag-Au-As
- 14) By which of the following electrical process depth investigation is made
  - a) Resistivity profiling b) Resistivity contouring c) Resistivity sounding
    - d) Resistivity mounting
- **Q.2** Give in detail productive plutons of deep seated origin. Add a note on the geochemical characters of porphyry copper deposits.
- **Q.3** Differentiate schlumberger and wenner array of electrode arrangement in electrical resistivity survey.
- Q.4 Discuss various sampling techniques in geological exploration.

#### Q.5 Discuss briefly on the following:

- A) Mobility of elements and path finders
- B) Geological criteria for cool deposits in India
- Q.6 Write short notes on the following:
  - A) Gravity survey
  - B) Corrections in magnetic data

#### Q.7 Write briefly on the following:

- A) Geobotanical indicators
- B) Well logging

## Master of Science – II (Applied Geology) Examination: Oct/Nov 2016 Semester – III (New CBCS)

| SLR No         |           | Day &<br>Date  | Time   |                                 | mester – III (<br>bject Name                           | Paper<br>No.         | Seat No.      |
|----------------|-----------|--|--|---------------------------------|--|----------------------|---------------|
| SLR – SI<br>50 | E—        | Monday<br>21/11/2016   | 02:30 P.M<br>to<br>05:00 P.M   | 0                               | eering Geology<br>Iining Geology                       | XI                   |               |
| Instructi      | ons:      | <ol> <li>All qu</li> <li>Q.1 is</li> <li>Atten</li> <li>Atten</li> </ol> | er any five qu<br>lestions carry<br>compulsory.<br>pt any two fr<br>pt any two fr<br>neat and labo | equal m<br>com Q.2,<br>com Q.5, | 3 & 4  | ccessary.<br>Total M | arks:70       |
|                | The<br>a) |  | mong the follo   | that direc<br>b)                | tly overlie on the c<br>Heel<br>Driver section         | hannel is kn         | 14<br>Nown as |
| 2)             | a)        | e concrete wal<br>Key wall<br>Protecting wa                              |  | b)                              | way (way chute) is<br>Training wall<br>Side wall       | s known as           |               |
| 3)             | a)        | ghest crushing<br>Limestone<br>Dolerite                                  | strength is of   | b)                              | rock.<br>Marble<br>Shale                               |                      |               |
| 4)             | a)        | ening through<br>Conduit<br>Gallery                                      | the dam throu  | b)                              | checking and repa<br>Inspection chamb<br>Silt          |                      |               |
| 5)             | kno<br>a) | e upstream por<br>own as<br>Toe<br>Axis of dram                          |  | b)                              | t conducts the bear<br>Abue-ment<br>Heel               | ring surface         | is            |
| 6)             | a)        | folded rocks th<br>Faust plane<br>Bedding plan                           | -  | b)                              | ated along the trend<br>Fold axis<br>None of the above |                      |               |
| 7)             | a)        | nd slide occurs<br>Fault plane<br>Rest                                   | s when the ang   | b)                              | e is greater than th<br>Dip and strike<br>Fold axis    | e angle of           |               |
| 8)             | a)        | nich method is<br>Auger metho<br>Quarrying                               | good for mecl<br>d   | b)                              | acer mining?<br>Diamond drilling<br>Planning           |                      |               |

|     | 9) In the open-pit mining, the ratio of the   | waste rock mined to ore is known as      |    |
|-----|---|--|----|
|     | the   |  |    |
|     |   | b) Stripping ratio                       |    |
|     | c) Recovery ratio   | I) None of the above                     |    |
|     | 10) A horizontal entry in to an ore body is   | called                                   |    |
|     | · · ·   | o) Shaft                                 |    |
|     | c) Bench  | l) Pit                                   |    |
|     | 11) Which of the following is an undergrous supported openings.   | and mining method using artificially     |    |
|     |   | b) Shrinkage opening                     |    |
|     |   | ) Long wall mining                       |    |
|     |   |  |    |
|     | 12) In drilling the mud of high density is a  |  |    |
|     |   | o) Barytes<br>I) Oil                     |    |
|     | c) Water d  |  |    |
|     | 13) The waste material which is present ab  |  |    |
|     |   | b) Over hand                             |    |
|     | c) Over break   | l) Skip ways                             |    |
|     | 14) The excess of quantity of rock broken a is known as   | and removed from the proposed tunnels    |    |
|     | a) Caving b   | o) Over break                            |    |
|     | c) Excavation   | l) Caving and excavation both            |    |
| Q.2 | Give an account on various geological inverse projects.   | estigation involved in civil engineering | 14 |
| Q.3 | Explain the problems of ground water in en  | ngineering project.                      | 14 |
| Q.4 | Describe the activities involved in undergr   | ound mining.                             | 14 |
| Q.5 | <ul><li>Answer the following:</li><li>A) Types of drilling methods</li><li>B) Seismic zones of India</li></ul>                      |  | 14 |
| Q.6 | <ul><li>Explain in short the following:</li><li>A) Ocean bottom mining</li><li>B) Surface mining operation</li></ul>                |  | 14 |
| Q.7 | <ul><li>Discuss in short of the following</li><li>A) Types of bridges</li><li>B) Rock aggregates and their classification</li></ul> | n  | 14 |

## Master of Science – II (Applied Geology) Examination: Oct / Nov 2016 Semester – III (New CBCS)

|            | ĽX           | ammation:   | OCL / NOV  | <u>2010 Sem</u>                             | ester – III (N  |                     | <u>,5)</u> |
|------------|--------------|---|--|---|---|---------------------|------------|
| SLR        | R No.        | Day &<br>Date   | Time   | Subj  | ect Name  | Paper<br>No.        | Seat No.   |
| SLR -<br>5 | – SE -<br>51 | - Wednesday<br>23/11/2016   | 02:30 P.M<br>to<br>05:00 P.M   | Fuel Geology and Resource<br>Management     |   | XII                 |            |
| Instr      | uctio        | <ol> <li>All qu</li> <li>Q.1 is</li> <li>Attem</li> <li>Attem</li> </ol>      | er any five qu<br>lestions carry<br>compulsory.<br>opt any two fr<br>neat and labo | equal marks<br>com Q.2, 3 &<br>com Q.5, 6 & | 4<br>7<br>s wherever necess                             | sary.<br>'otal Mark | s:70       |
| Q.1        | 1)           | ect the answer ar<br>What type of ener<br>a) Solar energy<br>c) Nuclear energ | rgy is derived   | from heated g<br>b)                         | ground water<br>Ger thermal energy<br>Hydro electric en | gy                  | 14         |
|            |              | The minimum ter<br>temp.<br>a) Diagenetic<br>c) Maturation                    | np. required fo  | b)  | of petroleum in the<br>Metagentic<br>Ketagenic          | basin is            |            |
|            |              | Coal occurs com<br>a) Basinal<br>c) Metamorphic                               | nly in   |   | Ignesus<br>Mylonitic                                    |                     |            |
|            |              | The constituents<br>a) Mineral<br>c) Gems                                     | which make co  | b)  | l as<br>Maceral<br>Clays                                |                     |            |
|            |              |   | following is r   | b)  | ources<br>Itydrocarbon<br>Tidal                         |                     |            |
|            | Í            | The origin of petr<br>a) Extra-terrestri<br>c) Intrusion                      |  | b)  | source.<br>Mantle<br>Sedimentary basi                   | n                   |            |
|            | Í            | Quality of oil is n<br>a) Viscosity<br>c) Gravity                             | neasured by A  | b)  | of oil.<br>Density<br>Fugacity                          |                     |            |
|            |              | Migration of petratermed asa)<br>Primary<br>c) Tertiary                       |  | b)  | atmosphere throug<br>Secondary<br>None of the abov      |                     | r is       |

|     | <ul><li>9) Cambay basin falls in state.</li><li>e) Maharashtra</li><li>g) Rajasthan</li></ul>  | f)<br>h) | Gujarat<br>Goa                               |    |  |  |  |
|-----|--|----------|--|----|--|--|--|
|     | <ul><li>10) Which one of the following is not a strata</li><li>a) Unconformity</li><li>c) Overlap</li></ul>  | b)       | phic trap.<br>Ancient shoreline<br>Anticline |    |  |  |  |
|     | <ul> <li>11) Which one of the following is productive basin</li> <li>a) Bhima</li> <li>b) Cuddapah</li> <li>c) Bombay</li> <li>d) Kareuva</li> </ul> |          |  |    |  |  |  |
|     | <ul><li>12) Chemical composition of coal is obtaine</li><li>a) Gravimetric</li><li>c) Trimetric</li></ul>  | b)       | Proximate<br>Spectrometric                   |    |  |  |  |
|     | <ul><li>13) Conventional fuel used in India is</li><li>a) Forest wood</li><li>c) Petrol</li></ul>  | b)       | Coal<br>Diesel                               |    |  |  |  |
|     | <ul><li>14) A process of formation of oil begins at -</li><li>a) Deposition</li><li>c) Maturation</li></ul>  | b)       | stage.<br>Diagenesis<br>Metagenesis          |    |  |  |  |
| Q.2 | Write an essay on Geo-thermal energy and India's potential in Geothermal energy.   |          |  |    |  |  |  |
| Q.3 | Give a detailed account of petroliferous basins of India.  |          |  |    |  |  |  |
| Q.4 | Describe in detail the different theories of origin of petroleum.  |          |  |    |  |  |  |
| Q.5 | <ul><li>Write short note on:</li><li>A) Ocean thermal energy</li><li>B) Wind energy and uses</li></ul>   |          |  | 14 |  |  |  |
| Q.6 | <b>Discuss inn Short:</b><br>A) Trap rocks<br>B) Isopach map   |          |  | 14 |  |  |  |
| Q.7 | Write in brief of the following:<br>A) Porosity and permeability   |          |  | 14 |  |  |  |
|     | B) Structural trap and salt dome.  |          |  |    |  |  |  |
|     |  |          |  |    |  |  |  |

## Master of Science – II (Applied Geology) Examination: Oct / Nov 2016 Semester – III (Old CGPA)

|       | Exar                            | nination: C   | Oct / Nov 2   | <u>2016 S</u>          | emester – III (   | Old CGPA        | 4)       |
|-------|---------------------------------|---|---|------------------------|---|-----------------|----------|
| SL    | R No.                           | Day &<br>Date   | Time  | S                      | ubject Name   | Paper No.       | Seat No. |
|       | R – SE –<br>53                  | Friday<br>18/11/2016  | 02:30 P.M<br>to<br>05:00 P.M  | Mineral Exploration    |   | X               |          |
| Insti | ructions:                       | <ol> <li>2) All que</li> <li>3) Q.1 is c</li> <li>4) Attemp</li> </ol>                                | • any five que<br>stions carry o<br>ompulsory.<br>It any two fro<br>t any two fro | equal ma<br>om Q.2, 3  | 3 & 4   | Total Mar       | ks:70    |
| Q.1   | 1) Whi<br>a) '<br>c) '          | <b>he blanks.</b><br>ich of the follow<br>Type of the roc<br>Texture of the r                         | k<br>rock   | b)<br>d)               | annot access?<br>Mineralogy of the r<br>All of the above<br>ethod used for samp |                 | 14       |
|       | depo<br>a) (<br>c) 1<br>3) In m | osits?<br>Churn drilling<br>Rotary drilling   |   | b)<br>d)               | Auger drilling<br>Jet<br>geochemical associa<br>Fe-Mg-Ti                        |                 |          |
|       | 4) Geo<br>a) '<br>b) '          | Ag-Au-As<br>chemical anom<br>They are related<br>They are unrela<br>Confirm ore de<br>None of the abo | d to the ore de<br>ted to ore dep<br>posit  | ed signit              | Zn-Pb-Ba-F-Sr<br>ficant when  |                 |          |
|       | <b>a</b> ) 1                    | cury vapor sam<br>Metallic ore de<br>Sulphide ore de  | posit   | b)                     | le to<br>Note metallic ore d<br>Carbonate ore depo                              |                 |          |
|       | a) (                            | l the odd match<br>Chromite- Pegr<br>Gold-Amphibo   | netite  | b)                     | Bauxite- Khondalit<br>Diamond-Granite   | e               |          |
|       | a)                              | random collect<br><br>Grab sample<br>Bulk sample  | tion of broken  | h chip fro<br>b)<br>d) | om the exposed surfa<br>Groove sample<br>Channel sample                         | ce of an outcro | op is    |

| 8 | Magnetic materials having extremely high magnetic susceptibility are described   |    |  |  |  |  |
|---|--|----|--|--|--|--|
|   | asa) Ferro magneticb) Para magneticc) Di magneticd) Para magnetic  |    |  |  |  |  |
| 9 | Which of the following correction is not applied to gravity data?  |    |  |  |  |  |
|   | e) Free-air correctionf) Diurnal correctiong) Elevation correctionh) Bouger correction   |    |  |  |  |  |
| 1 | ) In terms of electric conductivity granites can be described as   |    |  |  |  |  |
|   | <ul><li>a) Good conductors</li><li>b) Bad conductors</li><li>c) Moderate conductors</li><li>d) None of these</li></ul>                   |    |  |  |  |  |
| 1 | ) The self potential or spontaneous polarization (SP) method is most suitable for the exploration of                                     |    |  |  |  |  |
|   | a) Sulphides b) Sulphates  |    |  |  |  |  |
|   | c) Oxides d) Carbonates  |    |  |  |  |  |
| 1 | 2) The P waves velocities are highest in   |    |  |  |  |  |
|   | a) Air b) Water  |    |  |  |  |  |
|   | c) Sand d) Granite   |    |  |  |  |  |
| 1 | 3) The corrections for the case of a gravity station at an elevation (h) above sea level termed as                                       |    |  |  |  |  |
|   | a) Bouger b) Free air  |    |  |  |  |  |
|   | c) Elevation d) None   |    |  |  |  |  |
| 1 | ) Scintillation counter is used for  |    |  |  |  |  |
|   | a) Seismic survey b) Electrical survey   |    |  |  |  |  |
|   | c) Radioactive survey d) Magnetic survey   |    |  |  |  |  |
| G | ive a detailed account of various productive plutons for deposits from south India.  | 14 |  |  |  |  |
|   | ate the principle of Magnetic method for prospecting the ore deposits. Add a note a corrections related to magnetic anomaly data.        | 14 |  |  |  |  |
| W | Write a full note on Biogeochemical and Geobotanical indicators.   |    |  |  |  |  |
| А | <ul><li>Write short note on:</li><li>A) Association of elements and pathfinders</li><li>B) Geological criteria for prospecting</li></ul> |    |  |  |  |  |
| A | Discuss in brief:<br>A) Corrections applied for gravity survey<br>B) Electrical resistivity  |    |  |  |  |  |
|   | V <b>rite short notes on:</b><br>) Types of sampling   | 14 |  |  |  |  |
| В | ) Sonic Logging and caliper logging  |    |  |  |  |  |

## Master of Science – II (Applied Geology) Examination: Oct / Nov 2016Semester – III (Old CBCS)

| Ľ   | xan          | mation: O                              | CUTINOV Z           | oroseme             | ester – III ('                                    |              | DCD)     |  |
|---|--------------|--|---------------------|---------------------|---|--------------|----------|--|
| SLR N   | 0.           | Day &<br>Date                          | Time                | Subject Name        |   | Paper<br>No. | Seat No. |  |
| SLR – SE –<br>55  |              | Wednesday<br>23/11/2016                | Termote Sensing and |                     | 0   | XII          |          |  |
| Instructions:1) Answer any five questions.2) All questions carry equal marks.3) Q.1 is compulsory.4) Attempt any two from Q.2, 3 & 45) Attempt any two from Q.5, 6 & 76) Draw neat and labeled diagrams wherever necessary.Total Marks:70 |              |  |                     |                     |   |              |          |  |
| Q.1 Fil   | ll in tl     | he blanks with                         | appropriate         | choice              |   |              | 14       |  |
|   | Digi<br>a) ( | tization error m<br>Over shoot<br>Node |                     | b)                  | Vertex<br>All the above                           |              |          |  |
| 2)  |              | S-I is of spatial<br>10 m<br>70        | resolution          | b)                  | 90<br>72.5 m                                      |              |          |  |
| 3)  | a) (         | waveleng<br>Optical<br>Microwave       | gth can penetra     | b)                  | Thermal<br>All the above                          |              |          |  |
| 4)  | a) 2         | poral resolution<br>20 day<br>27 day   | n of IRS-LISS       | b)                  | ellite is<br>24 day<br>35 day                     | -            |          |  |
| 5)  | Pass<br>a) [ |  | sing system ha      |                     | n source of ener<br>false                         | rgy.         |          |  |
| 6)  | Com<br>a) [  |  | dware, softwa       | · 1 1               | nd data can be o<br>false                         | called as (  | GIS.     |  |
| 7)  | a) 2         | tude of geostati<br>20000Km<br>2000 Km | onary satellite     | b)                  | 36000 Km<br>700 Km                                |              |          |  |
| 8)  | man          | ipulating and d<br>Remote sensing      | isplay spatial a    | and spatial c<br>b) | ng, storing, anal<br>lata.<br>GPS<br>Both a and b | yzing,       |          |  |

| 9) | A spatial data model that uses grid to represent the spatial variation of |
|----|---|
|    | features are called as  |

e) Vector data model

- f) TIN data model
- g) Raster data model h) None of them
- 10) The spatial relationship between spatial features having same and common properties are called as -----
  - a) Topology b) DEM
  - c) Georeferancing d) Buffer
- 11) DBMS stand for ----
  - a) Data Building management system
  - b) Distribution Building management System
  - c) Database management System
  - d) Distribution building manipulation System
- 12) A ratio of map distance to ground distance is called as -----
  - a) Map projection b) Resample
  - c) Map scale d) None of these

#### 13) The process of converting rater lines into vector lines through tracing is called

- as -----
- a) Vectorization b) Rasterization
- c) Map scale d) None of these

#### 14) IRNSS stands for

- a) Indian Research Navigation Space System
- b) Indian Regional Negative space System
- C) Indian Regional Navigation Satellite System
- d) None of these
- Q.2 Explain fundamental principle of remote sensing and describe types of remote 14 sensing.
- Q.3 Explain the importance of GIS in Geo-science.14
- **Q.4** What is means resolution? Explain in details its types.

| Q.5 | <ul><li>Write short note on:</li><li>A) History of Remote Sensing</li><li>B) Vector data set</li></ul> | 14 |
|-----|--|----|
| Q.6 | <ul><li>Write brief note on the following:</li><li>A) Advantages of GPS</li><li>B) Topology</li></ul>  | 14 |

- Q.7 Write brief account on the following: 14 A) IRS
  - B) EMR

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