Seat No.						Set	Ρ
N	I.Sc	. (8	Semester -	I) (New) (NEF APPLIE Mineralo	P CBCS) D GEOL ogy (233	Examination: Oct/Nov-2023 OGY 3101)	
Day & Time:	Date 03:00	e: F 0 P	riday, 05-01-2 M To 05.30 Pl	2024 M		, Max. Marks	: 60
Instru	ctior	າຣ:	1) All questior 2) Figure to ri	ns are compulso ght indicate full	ory. marks.		
Q.1	A) (1 2	Cho 1) 2)	ose correct a Which of the a) Plagiocla c) Olivine Aluminosilica	alternative. following minera se te group of mine	al has no o b) d) erals are h	cleavage? Zinnwaldite Calcite naving chemical formula	08
			a) Al ₂ SiO ₅ c) Al ₅ SiO ₄		b) d)	AlSiO ₅ Al ₂ O ₃	
	3	3)	Minerals in th a) silicates, b) silicates, c) silicates, d) silicates,	e Moh's scale o phosphates, ca carbonates, chl phosphates, ox carbonates, pho	of hardnes rbonates, orides, su ides, chlo osphates,	s are oxides Iphides rides sulphides	
	Z	4)	Which of the a) Calcite c) Orthoclas	following minera	als show la b) d)	amellar twinning under microscope? Plagioclase Hornblende	
	5	5)	The space lat a) X-ray diff c) chemical	ttice structure of raction analysis	[:] minerals b) d)	is determined using spectroscopic methods scanning electron microscopy	
	6	5)	Diamond crys a) Monoclin c) Tetragon	stallizes in: ic system al system	b) d)	Hexagonal system Cubic system	
	7	7)	Which is follo a) Biotite c) Paragoni	wing Sodium ric te	ch mica. b) d)	Muscovite Lepidolite	
	8	3)	Quartz is a) Uniaxial f c) Uniaxial f	Positive Negative	b) d)	Biaxial Positive Biaxial Negative	
I	B) F 1 2 3	= ill 1) 2) 3)	in the blanks What is the ha What type of The colour of	OR Write true ardness of Topa silicate structure streak of Hema	/ false az? e does the tite miner	e olivine mineral show? al is cherry red. (True/False)	04

Page ${\bf 1}$ of ${\bf 2}$

- The colour of streak of Hematite mineral is cherry red. (True/False)
- 4) Adamantine is the lustre shown by Diamond (True/False)



12

12

12

12

Q.2 Answer the Following. (Any Six)

- a) Define Isotropic and anisotropic minerals
- **b)** Physical properties of Calcite group of minerals.
- c) What is miller indices.
- d) Use of XRD in mineralogy
- e) Define pleochroism and streak of a mineral.
- f) Name Ca and Mg Olivine minerals.
- g) Planes and axis of symmetry.
- h) Give optical properties Quartz.

Q.3 Answer the following. (Any three)

- a) Write in short Structure and Physical properties of Garnet group of minerals.
- b) Write a note on behaviour of light under microscope.
- c) Define twinning. Write a short note on twinning in feldspars.
- d) Describe in brief optical and physical properties of Aluminosilicates group of minerals.

Q.4 Answer the following. (Any two)

- a) Describe in brief amphibole group of minerals.
- b) Differentiate between clinopyroxene and orthopyroxene.
- c) Describe in brief the mica group of minerals.

Q.5 Answer the following (Any two)

- a) What is interference figure? Add note on uniaxial interference figure.
- **b)** Write a note on Cubic system.
- c) Explain with neat diagram ortho and chain silicate structures.

No.			Set
N	I.Sc. (Semester -	I) (New) (NEP CBCS) Examination: Oct/	Nov-2023
		APPLIED GEOLOGY	
	Igneous	and Metamorphic petrology (2333102)	
Day &	Date: Sunday, 07 01	2024	Max Mark

Day & Date: Sunday, 07-01-2024 Time: 03:00 PM To 05:30 PM

1)

Seat

Instructions: 1) All question are compulsory.

2) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)

a) Kodurite

- Coarse grained gneissose rock rich in hypersthene is called:
 - b) Khondalite
 - c) Charnockite
- d) Gondite

- 2) Pyrolite is:
 - a) Three part peridotite and one part basalt
 - b) A rock found in continental crust
 - c) A model rock composition which can occur any where
 - d) A rock found on ocean floor

3) Lamprophyres are:

- a) Metamorphic rock
- b) Plutonic rock
- c) Hypabyssal rock d) Volcanic rock

4) Graphic texture is occur in _____ rock.

- a) granite b) Shale
- c) basalt d) pumice
- 5) The processes of splitting of homogeneous magma in to different fraction is known as _____.
 - a) Assimilation b) Differentiation
 - c) Flowing d) gas streaming
- 6) Marble is the resultant product of thermal metamorphism on
 - a) Shale b) Sandstone
 - c) Limestone d) Basalt
- 7) Directed pressure is the chief agent of _____ metamorphism.
 - a) Cataclastic b) Thermal
 - c) Pneumatolytic d) Plutonic
- 8) _____ of following is not a metamorphic rock.
 - a) Phyllite b) Syenite
 - c) Quartzite d) Gneiss
- B) Fill in the blanks OR write True or False.
 - 1) Dyke is a concordant body. (True/False)
 - 2) Rapid cooling of lava leads to formation of fine grained rock. (True/False)
 - Gneissose rocks are formed by dynamothermal metamorphism of rock (True/False)
 - 4) Glaucophane is the characteristic mineral of blueschist facies. (True/False)

04

SLR-EB-2

Set | F

08

Max. Marks: 60

c) Write note on Forsterite- Silica binary silicate system.

Seat No.		Set P							
М	M.Sc. (Semester - I) (New) (NEP CBCS) Examination: Oct/Nov-2023 APPLIED GEOLOGY Sodimontology and Palacontology (2333108)								
Day & I Time: 0	Day & Date: Tuesday, 09-01-2024 Max. Marks: 60 Time: 03:00 PM To 05.30 PM								
Instruc	ction	 1) All question are compulsory. 2) Figure to right indicate full marks. 							
Q.1 A	A) C 1	Noose correct alternative.08Which of the following is the smallest megascopic structure in a sedimentary sequence?b)a) Laminationb)b) Bedc) Stratumd)							
	2	The area of exposure of sedimentary rock is about a) 75% of the earth's crust b) 30% of the earth's crust c) 05% of the earth's crust d) 25% of the earth's crust							
	3	The size of fine-grained sand range between a) 0.1-1 mm b) 2-4 mm c) 0.64 mm d) 0.00064 mm							
	4	Limestone rock is consist ofa) calcite and gypsumb) calcite and aragonitec) calcite and dolomited) aragonite and dolomite							
	5	Fossils which have limited geological range but have a very wide geographical range is known as a) Living fossils b) Trace fossils c) Body fossils d) Index fossils							
	6	Which of the following fossils found in lower Gondwana? a) Glossopteris b) Williamsonia c) Gangamopteris d) 'a' and 'c'							
	7	The most ancient type of eyes in trilobites are called as a) Archroal b) Schizochroal c) Holochroal d) None of the above							
	8	Which of the following periods is known as age of fishes? a) Carboniferous b) Triassic c) Ordovician d) Devonian							
B	3) F 1 2 3	II in the blanks OR write true/false.04Index Fossils are also known as Indicator Fossils. (True/False)04Phillipsia trilobite fossil geological age is Carboniferous to Permian (True/False)04In cold and dry climates willweathering be most rapid.							
	4	Laterite is a deposit.							

Q.2	An a) b) c) d) e) f) g) h)	swer the following. (Any Six) Frost wedging Lamination and Bedding Index fossil What is the difference between weathering and erosion. Carbonation Ripple mark Characteristics of sedimentary rocks Deltaic environment	12
Q.3	An	swer the following. (Any Three)	12
4.0	a)	Write a note on conditions of preservation of fossils.	
	b)	Write a note on morphology of trilobite.	
	C)	Write a note on Froude numbers.	
	d)	Write a brief account on clastic and non-clastic sedimentary rocks.	
Q.4	An	swer the following. (Any Two)	12
	a)	Discuss the process of paleo current analysis of sedimentary rock.	
	b)	Write a note on classification of sandstone.	
	C)	Draw the sketch and label explain the morphology of foraminifera.	
Q.5	An	swer the following. (Any Two)	12
	a)	Give an account on sedimentation in terrestrial environment.	
	b)	Write a note on evolution of man.	
	C)	Write a note on types of significance of fossils in mineral exploration	
		stratigraphy and paleo-environment study.	

Seat No.

M.Sc. (Semester - I) (New) (NEP CBCS) Examination: Oct/Nov-2023 **APPLIED GEOLOGY** Research Methodology (2333103)

Day & Date: Thursday, 11-01-2024 Time: 03:00 PM To 05:30 PM

Instructions: 1) All Questions are compulsory.

2) Figure to right indicate full marks.

Q.1 A) Choose the alternate.

- The study population is information about 1)
 - a) Problem b) Phenomenon c) Program
 - d) People
- Which of the following requirements for a dissertation may depend on 2) your institution?
 - a) Whether an abstract should be included
 - b) The format for referencing
 - c) The size of the study
 - d) All of the above
- In Microsoft Word and other word processor programs, pressing _____ 3) aligns the selected text.
 - a) Ctrl+J
 - c) Ctrl + Down arrow
- d) Ctrl + End
- What is the shortcut key for find in Microsoft word document? 4)
 - a) Ctrl + K

c) Ctrl + I

- b) Ctrl + G d) Ctrl + F
- 5) "Web of Science" is
 - a) Citation Index
 - c) An Abstracting Service
- The _____ is a measure of the frequency with which the average article 6) in a journal has been cited in a particular year.
 - a) Impact factor
 - b) Hypothesis c) Surveying d) All of the above
- 'International Standard Book Number (ISBN)' is a digit unique 7) numeric commercial machine-readable identification number meant for monograph publications.
 - a) Eight c) Ten
- b) Thirteen Eleven d)
- Citation of original source, available within text of the writing is called . 8)
 - a) Hypertext referencing c) Parenthetical Referencing
- d) Paragraph Referencing
- b) In-text Referencing

SLR-EB-6

Max. Marks: 60

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80

b) Ctrl+l

b) A Bibliography d) All of the above

	B)	Fill in	n the blanks OR (True/ False). Originality is the main feature of a	thes	is	04
		•)	a) True	b)	False	
		2)	Windows are open source softwa	re		
		3)	a) True Bibliography is organized data.	b)	False	
			a) True	b)	False	
		4)	Assumptions are formulated on th	e bas	sis of observations.	
		i	a) True	b)	False	
Q.2	Ans	wer th	ne following. (Any Six)			12
	a)	Define	e Plagiarism			
	b)	What i	is internet.			
	C)	Uses (of Hard disc.			
	u)	What i	is analytical research			
	f)	coral c	draw			
	q)	Literat	ture review.			
	h)	Any tw	vo uses of MS-Excel.			
Q.3	Ans	wer th	ne following. (Any Three)			12
	a)	MS-W	/ord			
	b)	what is	s SCOUPUS index.			
	C)	Differe	ence between general and specifi	c rese	earch objective.	
	d)	resear	rch design.			
Q.4	Ans	wer th	ne following. (Any Two)			12
	a)	discus	ss in detail e-database.			
	b)	Give a	a full account on search engine?			
	C)	Write	full note on key word.			
Q.5	Ans	wer th	ne following. (Any Two)			12
	a)	h-inde	X			
	b)	How to	o present research outcome as a	resea	arch paper?	
	C)	vvrite 1	Tuil note on ISBN number.			

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M.Sc. (Semester - I) (Old) (CBCS) Examination: Oct/Nov-2023 APPLIED GEOLOGY Mineralogy (MSC19101)

Day & Date: Friday, 05-01-2024 Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and 2 are compulsory.

2) Attempt any three questions from Q. No. 3 to Q. No. 7.3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

- Silicates are the most common rock-forming minerals because _____
 - a) 0 and Si are the most abundant elements in the Earth's crust
 - b) silicate radical is stable in a narrow range of PT conditions
 - c) these are resistant to weathering
 - d) these have diverse crystal structures
- 2) Pb is compatible in which one of the following minerals?
 - a) Muscovite b) Biotite
 - c) Diopside d) Orthoclase
- 3) Minerals in the Moh's scale of hardness are _____.
 - a) silicates, phosphates, carbonates, oxides
 - b) silicates, carbonates, chlorides, sulphides
 - c) silicates, phosphates, oxides, chlorides
 - d) silicates, carbonates, phosphates, sulphides
- 4) Which one of the minerals in the Moh's scale of hardness is a silicate?
 - a) Apatite b)
 - c) Topaz
- b) Fluorited) Corundum
- 5) Amber is a .
 - a) Fossilized natural resin

c) Ore mineral

- b) Gemstoned) None of the above
- 6) Which one of the following minerals can be scratched by a finger nail?
 - a) Apatite b) Feldspar
 - c) Gypsum d) Selenite
- 7) The space lattice structure of minerals is determined using _____.
 - a) X-ray diffraction
 - b) spectroscopic methods
 - c) chemical analysis
 - d) scanning electron microscopy
- 8) Which of the following is the hardest mineral?
 - a) Topaz b) Tourmaline
 - c) Beryl d) Sapphire
- 9) _____ is the property of a crystal exhibiting different colours.
 - a) Cleavage
- b) Streak
- c) Pleochroism d) Twinkling

Set P

Max. Marks: 80

10) The total number of crystal system is:

a)	5	b)	7
c)	8	d)	6

	B)	 Fill in the blanks OR write True or False. 1) The mineral muscovite shows 2 sets of cleavages. (True/False) 2) X-ray methods of the study of mineral are based on Thermal analysis of the x-rays (True/False). 3) Diamond shows adamantine lustre (True/False). 4) Galena mineral belongs to crystal system. 5) Forsterite and quartz react to form 6) Mg Garnet is termed as 	06
Q.2	Ans a) b) c) d)	swer the following. Explain optic sign with neat diagrams. Write down physical and microscopic properties of mineral Biotite. Application of XRD in mineral characterization. Discuss various symmetries in crystal.	16
Q.3	Ans a) b)	swer the following. Describe in brief physical properties, optical property of feldspar group and sketch field diagram. Explain in detail the optical properties which are studied under microscope.	08 08
Q.4	An: a) b)	swer the following. Write down structure, chemistry and paragenesis of Garnet group of mineral. Discuss in brief the mica group of mineral.	08 08
Q.5	An: a) b)	swer the following. Write a full note on Triclinic system. Mineral chemistry and structure of Epidote.	08 08
Q.6	Ans a) b)	swer the following. Draw a neat labelled diagram of Petrological microscope. Add a note on Concepts of light under microscope. Discuss in detail various silicate structure.	08 08
Q.7	Ans a) b)	swer the following. Pleochroism and determination of pleochroic scheme in minerals. Methods of determination of optic axial angle(2V);	08 08

e: 03:0	00 PM	Го 06:00 РМ	
tructio	o ns: 1) 2) 3)	Q. Nos. 1 and 2 are compulsory. Attempt any three questions from Q. No. 3 to Q. No. 7. Figure to right indicate full marks.	
A)	se correct alternative. During which geological time Dinosaur was flourish on earth? a) Proterozoic b) Permian c) Jurassic d) Tertiary	1	
	2)	On which of the following Supergroup/group the Diamonds are associated with a) Vindyan Supergroup b) Sausar group c) Dongargarh group d) Sakoli group	
	3)	The age of Muth quartzite is a) Middle to Late Permian b) Permian c) Early Carboniferous d) Late Silurian to Early Devonian	
	4)	Cu deposits of Khetri belt are associated with a) Railo group b) Erinpura granite c) Alwar slate d) Ajabgarh limestone	
	5)	The cretaceous rocks of fresh water origin which occur in Madhya Pradesh are called. a) Lameta bed b) Bagh bed c) Nimar sandstone d) Umia sandstone	
	6)	The age of Tillite beds of Gondwana is a) Lower Permian b) Middle Jurassic c) Upper Carboniferous d) Proterozoic	
	7)	 The correct chronological sequence (older to younger) of the Precambrian stratigraphic units listed below is a) Sargur Group, Chitradurga Group, Alwar Group, Kaimur Group b) Chitradurga Group, Sargur Group, Kaimur Group, Alwar Group c) Sargur Group, Alwar Group, Chitradurga Group, Kaimur Group d) Sargur Group, Chitradurga Group, Kaimur Group, Alwar Group 	
	8)	Cambrian sea is dominated by the abundance of a) Cephalopoda b) Trilobites c) Brachiopoda d) Reptiles	
	9)	The two fold classification of Gondwana is based on a) Unconformity b) Floral characteristics	

d)

All the above

Time

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Q.1

- - Page 1 of 2

SLR-EB-8

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APPLIED GEOLOGY Indian Stratigraphy (MSC19102) Day & Date: Sunday, 07-01-2024

c) Climatic conditions

M.Sc. (Semester - I) (Old) (CBCS) Examination: Oct/Nov-2023

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Max. Marks: 80

		10)	In ir a) c)	ntertrappea Panjal al tr Deccan tra	n beds physa ap p	a is repoi b) d)	ted fro Rajm Both	m ahal trap (b) and (с)		
	B)	Fill in 1) 2) 3) 4) 5) 6)	Wh ore Wh app The (true crat con Cer	e blanks Ol ich formatic ich of the fo earance of e most com e land cover e/False) ton, the stal posed of a nozoic is the	R write True on of Saucer g illowing geolo skeleton orgo non rock of t ed by water f ole interior po ncient crysta e youngest er	or False group is ogical tim anism in he Vindh from all s ortion of a lline bas ra in Geo	e. more inter the ea iyan su sides is a conti ement ologica	mportant vals with urth's hist upergroup called a nent cha rock. (tru l time sca	for many essed the ory? o is s Island racteristic ie/False) ale. (True	ganese e first [.] cally e/False)	06
Q.2	Ans a) b) c) d)	Swer th Delhi S Iron or Indus Differe	ne fo Supe re se Oph ence	ollowing. ergroup eries iolite belts between E	astern and w	estern D	harwa	rs.			16
Q.3	Ans a) b)	swer th Write a Give fi	ne fo a full ull ac	Ilowing. I note on Ge ccount on E	eological Tim Jeccan Trap o	e scale. of Mahar	ashtra				08 08
Q.4	Ans a) b)	swer th Discus Write a	ne fo ss in a de	detail K-T detail K-T tailed accou	ooundary. Int on Cretac	eous of	Tiruchi	rappalli.			08 08
Q.5	Ans a) b)	swer th Write Write	ne fo note a no	ollowing. on Pleistoc te on Indrav	ene glaciatio vati basin.	n.					08 08
Q.6	Ans a) b)	swer th Discus Basin. Explai Chron	ne fo ss in n the ostra	ollowing. detail Struc e term corre atigraphic C	cture, Stratigr elation. Add a correlation.	aphy & ⁻ note on	Tecton Litho-	ic evoluti , Bio- and	on of Cuo	ddapah	08 08
Q.7	Ans a) b)	swer th Write a Explai rocks.	ne fo a no n cla	Ilowing. te on Trans assification,	- Himalayan Stratigraphy	and Kara and ecc	akoran nomic	n granite importar	batholith: ce of Go	s. ndwana	08 08

Day Time	& Da : 03:0	te: Tu 00 PN	esda 1 To (y, 09-01-2024 06:00 PM			Ма
Instr	uctio	o ns: 1 2 3) Q. 2) Atte 3) Fig	Nos. 1 and 2 are co empt any three que ure to right indicate	mpulsory stions fro full mark	y. om Q. ks.	No. 3 to Q. No. 7.
Q.1 A) Cho 1)			ose The a) c)	correct alternative e grain size of clasti more than 2.0 mm 0.062 mm to 0.004	c silty se l mm	dimeı b) d)	ntary rock is 2.0 mm to 0.062 mm less than 0.004 mm
		2)	Re ^v a) c)	verse graded cross Fluvial environmer Marine environme	laminatio nt nt	on str b) d)	ucture is developed in Aeolian environment None of the above
		3)	Sai gra bet a) c)	ndstone rocks are c ins cemented toget ween more than 2.0 mm 0.062 mm to 0.004	omposed her throu I mm	d almo igh liti b) d)	ost entirely of sand-sized qu hification. Its grain size is in 2.0 mm to 0.062 mm less than 0.004 mm
 4) The combination of poorly-so grains suggests that conglom a) High-energy environment b) Low-energy environment c) Low-energy environment 				e combination of po ins suggests that co High-energy enviro Low-energy enviro Low-energy enviro High-energy enviro	orly-sorte onglomer onments onments s onments s onments	ed, pro rates r such such a such a such a	edominantly coarse, rounde form in as steep-gradient streams. as steep-gradient streams. as gentle-gradient streams. as gentle-gradient streams.
		5)	Beo tha a) c)	dding in sedimentar n 1 cm. Thicker than 1 cm Thicker than 1 m	y rock is	b) d)	_ whereas lamination is thin Thicker than 2 cm Thicker than 2 cm
		6)	The a) c)	e ripple index of way 7 3	ve-forme	d ripp b) d)	oles is generally around 4 2
		7)	Allu seg The	uvial fans are the de gments of a cone ar e sediments presen	eposits w nd exhibit t in alluvi	ith far ing co al fan	n shaped approximating a onvex up cross sectional pro
			a) c)	Well sorted Moderately sorted		b) d)	Poorly sorted Very well sorted
		8)	The	e AFM diagram to re semblages to politic	epresent rocks wa	the ro as inv	ock composition and minera ented by
			a)	Winkler		b)	Goldschmidt

Q.1 A

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M.Sc. (Semester - I) (Old) (CBCS) Examination: Oct/Nov-2023 **APPLIED GEOLOGY** Sedimentary and Metamorphic Petrology (MSC19103)

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ninner

- profile.
- eral
 - a) Winkler b)
 - c) Thompson d) Harker

SLR-EB-9



Max. Marks: 80

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- 9) Which of the following mineral is the stress mineral?
 - a) Andalusite
 - c) Kyanite d)
- 10) The structure shown by hornblende biotite gneiss is _____.
 - a) Schistose
 - c) Granulose d) Gneissose

B) Fill in the blanks OR Write True or False.

1) The geobaric gradient is defined as the increase in temperature with depth in the Earth (True/False)

b)

b)

Sillimanite

Spinel

Slaty

- 2) _____ pressure is the pressure increases with depth due to the weight overlying rock in all directions.
- 3) The processes that break a rock or minerals into small pieces without altering its composition are called as _____.
- 4) Grain size gives information about nature of source rocks, mode and strength of transportational medium, sorting, depositional history of sediments and tectonics of depositional basin (True/False)
- 5) In a sedimentary rock all clasts are more or less of the same size are said to be _____ sorted sediments.
- 6) In sieve analysis Phi values for grains coarser than one millimetre are negative, while those for grains finer than one millimetre are positive (True/False)

Q.2 Write a short note on: 16 a) Roundness b) Reynolds number and Froude number c) Hydrothermal metamorphism d) Migmatites 16 Q.3 Answer the following. a) With the help of neat sketch, brief discuss the classification of sandstone. b) Discuss in brief graded bedding, current bedding, ripple marks and mud cracks sedimentary structures with sketch and label. 16 Q.4 Answer the following. a) With neat sketch, describe the erosional sedimentary structure. b) Describe types of chemical weathering.

Q.5 Answer the following.a) Discuss metamorphic differentiation and explain its mechanism.

b) Explain the concept of metamorphic facies with suitable diagram.

Q.6 Answer the following.

- a) Discuss in details Orogenic. Burial metamorphism and Ocean floor metamorphism processes.
- b) Write a full note on amphibolites facies of rocks.

Q.7 Answer the following.

- a) Describe the classification of terrestrial sedimentary depositional environments.
- b) Define metamorphic reactions. Explain univarient and divarient reactions.

16

- 16

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M.Sc. (Semester -I) (Old) (CBCS) Examination: Oct/Nov-2023 **APPLIED GEOLOGY** Geochemistry (MSC19108)

Day & Date: Thursday, 11-01-2024 Time: 03:00 PM To 06:00 PM

Instructions: 1) Q. Nos. 1 and 2 are compulsory.

2) Attempt any three questions from Q. No. 3 to Q. No. 7. 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

- In the cosmic abundance of elements which of the following statement is 1) false.
 - a) Elements of even atomic number are more abundant than those of odd atomic number.
 - b) Elements of odd atomic number are more abundant than those of event atomic number.
 - c) The abundance show rapid exponential decrease for element of lower atomic number (almost atomic number 40) followed by an almost constant value for heavier elements.
 - d) The relative abundance for elements of higher atomic number than nickel varies less than those for element of lower atomic number

3°C

- 2) The average vertical thermal gradient at the Earth's surface is about °C /km
 - a) 25°C
 - c) 80°C 100°C d)
- Hydrogen is converted to helium in the sun this nuclear reaction produces: 3)

b)

- a) Solar radiation c) Kinetic energy
- b) Potential energy Radiation energy d)
- 4) Chromium is strongly lithophile element in earth's crust but it is found as chalcophile in some meteorites because of
 - a) Oxygen rich
 - Oxygen deficiency b) c) Hydrogen deficiency d) Carbon deficiency
- The upper crust of the earth mainly consist of . 5)
 - a) Sandstone b) Shale
 - c) Limestone Igneous and metamorphic rocks d)
- Long -term changes in the geochemical cycle are known as: 6)
 - a) Periodic changes b) c) Secular changes
 - Permanent changes d) Perennial changes
- Which type of bond is present in the diamond? 7)
 - a) Metallic bond b) lonic bond Van deer Waal's bond
 - c) Covalent bond d)
- Magma is characterised by: _ 8)
 - a) Composition b) Temperature All the above
 - c) Mobility d)

Max. Marks: 80

06

16

- The stability series of minerals of ligneous rocks towards weathering 9) is given by: _
 - a) Bowmen (1919)
- b) Goldich (1938)
- c) Imbrie (1959)
- d) Goldschmidt (1940)
- 10) The angle between the bonds joining the hydrogen nuclei to the centre of the oxygen atom in a water molecule is:
 - a) 90.5° b) 96.5°
 - c) 104.5° 115.5° d)

B) Fill in the blanks.

- method is used for dating relatively recent geological event. 1)
- 2) The Ph of pure water is
- The first solid to separate from sea water by evaporation under natural 3) Condition is
- 4) feldspar occurs more usually in metamorphic rocks.
- Weather phenomena confined to the 5)
- 6) The oceans cover about _____ area of the earth's surface.

Q.2 Answer the following.

- a) Explain fugacity and activity.
- b) Describe Carbon Cycle.
- c) Write a note on formation of stars.
- d) Distinguish between oceanic crust and continental crust.

Q.3 Answer the following.

a)	Explain in detail the geochemical classification of elements.	08
b)	What is thermodynamics and its significance. Write a note on	08
	thermodynamic systems.	

Q.4 Answer the following.

a) What are thermodynamic states? Explain equilibrium state in detail. 80 b) Write a note on composition of ocean water. 80

Q.5 Answer the following.

- a) Explain in detail the Major, Minor and Trace elements of the earth's interior. 08 80
- **b)** Write a note on Gibbs free energy.

Q.6 Answer the following.

- a) Explain in detail the structure and composition of atmosphere with neat 08 labelled diagram.
- b) Brief introduction on history of Geochemistry. What is Pauling's rule? 80

Q.7 Answer the following.

a) Discuss K-Ar dating methods used for age determination. 80 **b)** Explain in detail Carbon cycle with neat labelled diagram. 08

Seat	
No.	

M.Sc. (Semester - II) (New) (CBCS) Examination: Oct/Nov-023 **APPLIED GEOLOGY** Igneous Petrology (MSC19201)

Day & Date: Monday, 18-12-2023

Time: 11:00 AM To 02:00 PM

Instructions: 1) Question no. 1 and 2 are compulsory.

2) Attempt any three questions from Q. No. 3 to Q. No. 7.

3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative. (MCQ)

- Why basalt is fine grained than Gabbro? 1)
 - a) Basalt formed from quick cooling of magma
 - b) Basalt formed from slow cooling of magma
 - c) Gabbro formed from quick cooling of magma
 - d) Formed at high temperature
- 2) What is Pyrolite material:
 - a) Three part peridotite and one part basalt
 - b) A rock found in continental crust
 - c) A model rock composition which can oc-cur any where
 - d) A rock found on ocean floor
- Batholith is an example of type of igneous form. 3)
 - a) Extrusive b) Intrusive
 - c) Both the above d) None of the above
- The texture which is exhibited by igneous rocks whose constituent 4) minerals are anhedral & approximately equal in size?
 - a) Hypidimorphic c) Xenomorphic
- b) Panidiomorphic d) Allotriomorphic
- What is Pahoehoe flow. 5)
 - a) A type of Volcanic Crater
 - b) Lake formed by meteoric fall
 - c) A ropy type of lava
 - d) Typical mineral found in Antartica
- The rapid cooling lava leads to formation of non-crystalline texture. 6)
 - a) Glassy Granitic b)
 - c) Porphyritic None of above d)
- What is the state of lava or magma? 7)
 - a) Liquid Solid b)
 - c) Gaseous d) Mixture of solid, liquid, gas
- is the last mineral which crystallized in Bowen reaction series. 8) a) Hornblende
 - Olivine b)
 - c) Quartz d) Calcite
- 9) The Norms or CIPW classification is essentially a _____ classification. Chemical
 - a) Mineralogical b) d)
 - c) Genetic

Max. Marks: 80

10

SLR-EB-12 Set



Textural

								•=	
		10)	The a) c)	concordant Sills Laccolith	bodies assoc	ciated wit b) d)	h structural b Lopolith Phacolith	oasin are	_·
	B)	Fill i 1) 2) 3) 4) 5) 6)	n the Lam SiO ₂ Volc (True The form Wha Dole	blanks OR prophyre is a is the domi anic rocks h e/False) gases and v gases and v struc at is the mine erite is a	Write True/ a Igneous ro nant constitu ave large-gra apors entrap cture. eral composit igneous r	False. ck. (True lents of n ain crysta oped duri tion of Rh ock.	/False) nost igneous als due to rap ng the solidif nyolite?	rocks. (True/Fa bid cooling. ication of lava t	06 alse). :o
Q.2	Ans a) b) c) d)	swer Disc Note Petro Write	the fo us in on B ograp e shoi	ollowing. short MORE atholith hic propertie rt note on Te	8. es of Granite extures of Igr	neous roo	cks.		16
Q.3	Ans a) b)	swer f Disc Desc	the fo uss va cribe i	ollowing. arious struct in detail the	ures of Igneo origin and ty	ous rocks pes of ca	s with neat di rbonatites.	agram.	08 08
Q.4	Ans a) b)	swer f Desc Desc	t he fo cribe f cribe f	bllowing. the Magmat the Interior o	sm associate of the earth a	ed with P nd their o	late tectonic: chemical con	s. 1position	08 08
Q.5	Ans a) b)	swer f Write Expla	the fo e a ful ain in	ollowing. Il note on IU details Man	GS classifica tle metasom	ation of ig atism	neous rocks		08 08
Q.6	Ans a) b)	swer Expla differ Write	the fo ain ev rentia e a no	ollowing. volution of N ition and Ass ote on Ab-Or	lagma with v similation. binary silica	arious pr ite syster	ocesses of N ns.	lagmatic	08 08
Q.7	Ans a) b)	swer f Desc Write	t he fo cribe (e a no	ollowing. granite and gote on Lunar	granodiorite basalt.	clan.			08 08

b) Write a note on Lunar basalt.

Seat No.		Set	Ρ			
	M.Sc. (Semester - II) (New) (CBCS) Examination: Oct/Nov-2023 APPLIED GEOLOGY					
		Structural Geology and Tectonics (MSC19202)				
Day & D Time: 1	Date: Tue 1:00 AM	esday, 19-12-2023 Max. Marks To 02:00 PM	: 80			
Instruc	tions: 1) 2) 3)) Q. Nos. 1 and 2 are compulsory.) Attempt any three questions from Q. No. 3 to Q. No. 7.) Figure to right indicate full marks.				
Q.1 A) Choo	ose correct alternative.	10			
	1)	Parallel faults having a central upthrown block is a faults.a) Grabenb) Horstc) Trenchd) None				
	2)	Slicken slides, gauge and breccia are field guides to recognizea) Faultb) Angular unconformityc) Jointsd) Fold				
	3)	The fastest spreading divergent plate boundary is the a) Central-Indian ridge b) Carlsberg ridge c) Mid-Atlantic ridge d) East Pacific rise				
	4)	The average slope of continental slopea) 1 degreeb) 15 degreec) 10 degreed) 4 degree				
	5)	states about the strain being proportional to the stress- producing it within the elastic limit of a material. a) Hooke's Law b) Newton's Law c) Young's Modulus d) Bulk Modulus				
	6)	Substances that elongate considerably and undergo plasticdeformation before they break are known as substancesa) Ductileb) Brittlec) Amorphousd) Solid				
	7)	Which of the following fold has horizontal axial plain?a) Chevron foldb) Symmetrical foldc) Recumbent foldd) Homocline fold				
	8)	The fold hinge is the line joining points of maximum curvature on afolded surface.a) Hingeb) Troughc) Axial surfaced) Crest				
	9)	Tombolo is formed due toa) glacial depositsb) wind depositsc) river depositsd) sea deposits				

		10)	Folo a) c)	d having sharp hinges Cuspate Cheveron	and smoot b) d)	h sides are termed as _ Isoclinal Anticline	fold.	
	B)	Fill ir 1) T (2) T 3) S (4) (5) (6) S (7)	1 the True True The F Subd Casc Vave Sync	e blanks OR write Tru average density of the e/False) Pacific Ring of Fire is a luction of the Juan de ade Range, (True/Fal is an area of sedim action along the coas is extremely smooth line folds are arch-shapperssed, the oldest roc	ue or False continenta an example Fuca Plate se) ent accumu st. h portion of aped fold in cks occurrin	I crust is 2.7-2.8 g/cm ³ . of a plate bound under North America c llation (usually sand) ex the deep-sea floor. to which rock strata hav g in the core. (True/Fal	dary. reating the cposed to ve been lse)	06
Q.2	Ans a) b) c) d)	swer th Conse Morph Geom Strike	ie fo ervati iolog etry and	bllowing. ive plate margin gy of the ocean floor. of the fault dip of the bed				16
Q.3	Ans a) b)	swer th Draw Write	ıe fo neat a bri	bllowing. sketches and discuss ef note on erosional la	s Ramsay's andforms in	classification of fold. costal geomorphology.	. (08 08
Q.4	Ans a) b)	swer th Write Give t	1e fo a bri he g	bllowing. ef note on neotectonis eometric classificatior	sm. n of Fault.		(08 08
Q.5	Ans a) b)	swer th Explai Give a	ne fo In the An ac	bllowing. e evidences and mech ccount on cratons and	nanism of so ocean bas	ea floor spreading. ins.	(08 08
Q.6	Ans a) b)	swer th Explai Give c	ne fo In wif Jetai	b llowing. th diagram Strike, Dip I account on joints and	, Apparent d their differ	dip and Plunge of a roc rent types.	ks. (08 08
Q.7	Ans a) b)	swer th Define Write	ie fo e unc a no	bllowing. conformities and discu te on what are the evi	iss the crite dences of a	ria for their recognition. active tectonics in Hima	laya?	08 08

	Μ	l.Sc. (Semester - II) (New) (CB APPLIED Hydrogeolog	CS) E GEOL v (MS	camination: Oct/Nov-20 OGY C19206)	23
Day Time	& Da e: 11:	ate: We :00 AM	ednesday, 20-12-2023 I To 02:00 PM		, Max.	Marks: 80
Insti	ructi	ons: 1 2 3) Question no. 1 and 2 are cor) Attempt any three questions) Figure to right indicate full m	npulsor from Q arks.	y. No. 3 to Q. No. 7.	
Q.1	A)	Choc 1)	ose correct alternative. Impermeable formation which described as a) Aquitard c) Aquifuge	h neithe b) d)	r contain nor transmit water i Aquiclude Aquifer	10 s
		2)	How many groundwater prov a) 7 c) 9	vinces fo b) d)	ound in Indian continent? 8 10	
		3)	The unit of Transmissivity is a) Darcy c) Meter per day	b) d)	Meter square/day Micrometre	
		4)	Groundwater held above an with main water table is calle a) Connate water c) Leaky aquifer	impervi d as b) d)	ous strata's and not connecte Perched water Juvenile water	؛d
		5)	Which of the following gives a) Limestone c) Clay	highest b) d)	specific yield? Sandstone Gravel	
		6)	One degree of Hardness of v a) 14.25 mg/litre c) 40 mg/litre	vater m b) d)	eans a content of salt of 13.25 mg/litre 18.25 mg/litre	·
		7)	 Due to external load piezome a) Increases b) Decreases c) May increases or decreated d) No effect on it 	etric sur ises	face of an unconfined aquife	
		8)	Casing material for driven we a) Standard weight pipe c) Steel Pipe	ell is b) d)	Wrought Iron pipe Sheet Metal	
		9)	Which method is not used in a) Jacob's method c) Boulton's method	aquifer b) d)	parameter estimation? Popodopulm-copper metho Hills method	d
		10)	Hydraulic conductivity can be a) Tracer test c) Pumping test	e detern b) d)	nined by Auger hole test All the above	

Seat No.

Set P

	-,	 well contain water that is under pressure, which may cause the well water to spur in to the air. The process of water seepage in to the ground is called as The ability of earth material to transmit water is measure of its Sonic logging is also known as porosity logging. (True /False) Isohydal lines are the lines joining points of equal depth of water table. (True /False). The water which in a state of downward movement under gravity is water. 	
Q.2	Ans a) b) c) d)	swer the following. Hydrostratigraphic units of India. Sea water contamination in aquifer. Groundwater potential zone mapping using remote sensing and GIS techniques Specific capacity of wells.	16 5.
Q.3	Ans a) b)	swer the following. Explain in detail various hydrological properties of rocks. What are sub-surface geophysical methods of groundwater exploration? explain with neat labelled diagrams.	08 08
Q.4	Ans a) b)	swer the following. Write in detail determination of permeability in field and laboratory. Explain in detail Vertical distribution of water.	08 08
Q.5	Ans a) b)	swer the following. Explain types of flow conditions of groundwater. Describe arsenic and fluorite contamination in groundwater.	08 08
Q.6	Ans a) b)	 swer the following. Explain the effect of groundwater structures on hydraulic conductivity of rocks. What is water table fluctuation? Describe various factors affecting the water table fluctuations. 	08 08
Q.7	Ans a) b)	swer the following. Explain in detail pumping test with suitable diagram. Classify various rocks with respect to their water bearing characteristics.	08 08

	Se
M.Sc. (Semester	- III) (New) (CBCS) Examination: Oct/Nov-2023
-	APPLIED GEOLOGY

Climatology & Oceanography (MSC019301)

Day & Date: Friday, 05-01-2024 Time: 11:00 AM To 02:00 PM

Seat

No.

Instructions: 1) Question no. 1 and 2 are compulsory.

- 2) Attempt any three guestions from Q. No. 3 to Q. No. 7.
- 3) Figure to right indicate full marks.

Q.1 A) Choose the correct alternative.

- Which of the following factor(s) affect(s) the distribution of insolation? 1)
 - a) Angle of incidence
 - b) Distance between the earth and sun
 - c) Duration of sunshine
 - d) All of the above
- 2) Which one of the following oceans has greater percentage of continental shelf area?
 - a) Pacific Atlantic b) c) Indian
 - The longest day or night at 49° latitude will be of _____.
- 3) a) 13hours b) 16hours
 - c) 18hours 20 hours d)
- 4) The average slope of continental shelf is about .
 - 40° a) 15° b)
 - c) 20° d) 1°
- 5) Electromagnetic radiation from the sun reach the earth's surface in about
 - a) 8 minutes b) 18 minutes
 - c) 10 minutes d) 12 minutes

The average slope of continental slope is about _____. 6)

45° a) 30° b) c) 5° 10° d)

Flat-topped volcanoes on the ocean floor is known as _____. 7)

- a) Seamounts b) Guyots
- c) Plateaus d) Oceanic ridges
- Siliceous animal remains consist of 8)
 - a) Sekeletons of radiolaria Skeleton of algae b)
 - c) Skeleton of diatoms d) None of the above
- 9) Isohalines are
 - a) The lines that join the places of equal salinity
 - b) The lines that join the places of equal temperature
 - The lines that join the places of equal humidity c)
 - The lines that join the places of equal precipitation d)

SLR-EB-16



Max. Marks: 80

- d) Arctic

06

16

10

- 10) The warmest and coldest months in northern hemisphere respectively are _____.
 - a) June and December b)
 - b) May and Januaryd) July and December
 - c) July and January d) July and D

B) Fill in the blanks OR write true/ false

- 1) Relatively windless areas along the equator are called the _____, or the horse latitudes.
- 2) The prevailing winds of the mid-latitudes are called the ____
- 3) The _____ effect causes prevailing winds to blow diagonally rather than along strict.
- 4) Indian dipole movement depend on the two high pressure and low pressure poles. (True/ False)
- 5) Jetstream form on the equator only (True/ False)
- 6) Water has high Albido. (True/ False)

Q.2 Answer the following

- a) Earth sun relationship explain with net diagram.
- **b)** Define climatology and describe its nature and scope.
- c) Write a note on
 - 1) Density of ocean water
 - 2) Continental margins
- d) Explain Single-Cell Model.

Q.3 Answer the following

a) What is atmosphere? Describe its vertical distribution.
 b) Describe with sketch distribution of Wind and Pressure over the surface of the earth.
 06

Q.4 Answer the following.

- a) Discuss the general relief features of the ocean floor. 06
- **b)** Explain the physical properties of sea water.

Q.5 Answer the following.

- a) Give an account of sediment distribution on the Indian Ocean floor. 06
- b) How earth has Latitudinal Variations in Solar Radiation and its effect on 10 climates.

Q.6 Answer the following.

- a) Give an account of Equatorial Trough and Inter Tropical Convergence Zone. 06
- b) Discuss the factors which cause variation in salinity of ocean and sea. 10

Q.7 Answer the following.

a) Define and differentiate weather and climate.
b) Describe Origin and evolution of the Indian Ocean.
10

Seat	
No.	

M.Sc. (Semester - III) (New) (CBCS) Examination: Oct/Nov-2023 **APPLIED GEOLOGY** Mineral Exploration (MSC019302)

Day & Date: Sunday, 07-01-2024 Time: 11:00 AM To 02:00 PM

4)

Instructions: 1) Question no. 1 and 2 are compulsory.

- 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
- 3) Figure to right indicate full marks.

Q.1 A) Choose the correct alternative.

- In Schlumberger configuration method of electrical prospecting the 1) distance between two electrodes is
 - a) different same b)
 - c) change with depth d) uniform

Geological sampling is defined as 2) fraction of the bulk.

- a) Recoverable c) Resource
- b) Representative d) Reserve
- 3) In India which of the following organizations and agencies are responsible for mineral prospecting.
 - a) GSI and MECL
 - c) Private investors
 - Gravity survey is useful for find the mineral deposits because _____.
 - a) many ore bodies are denser than the surrounding rock.
 - b) many ore bodies are located close to gravitational nodes.
 - c) ores generate a smaller gravitational field than the surrounding rock.
 - d) ores produce cracks in the surrounding rock that generate inverse gravitational fields.

b)

d)

- 5) Find the odd one out?
 - a) Some logging c) S.P. logging
- Gramma ray logging b)

State and central Govt.

None of the above.

- Sampling d)
- helps to interpret the 3D picture of the area. 6)
 - Bore hole drilling data and surface investigation a)
 - b) Gamma ray logging
 - c) Sampling
 - d) None of the above
- 7) The equation $\rho = 2\pi a V/I$ is used in
 - a) Potential drop Self potential b) c) Wenner
 - d) Schlumberger
- 8) is most suitable drilling techniques in Igneous, sedimentary and metamorphic rocks.
 - a) Cable tool drilling c) Environmental drilling
- b) Rotary drilling
- d) None of the above

Max. Marks: 80

10

Set

- 9) Drilling is employed for _____
 - a) Determining the stratigraphy or rock sequence
 - b) Locating and evaluating substances of economic value
 - c) Obtaining data for correlating
 - d) All of the above

10) The average gravitational force of the earth is ____

- a) 98 cm/sec² b) 980 cm/sec²
- c) 9800 cm/sec² d)

B) Fill in the blanks OR write True or False.

- The instrument used for gravity survey is known as _____
- The values of gravitational acceleration on the earth surface various from about 9.78m/s² at the equator to about 9.78m/s² at the pole. (true/false)

980 cm/sec

- 3) A magnetic dipole is inclined about _____ from earth rotational axis.
- 4) _____ method is only method that can indirectly detect disseminated Sulphide mineralization.
- 5) Gravity is the attraction on one body due to the mass of another body. (true/false).
- 6) The temperature inside the earth rises at a rate of about 10°c per km. (true/false).

Q.2 Write a short note on:

- a) Triangular method of ore reserve estimation.
- **b)** Bore hole drilling and its applications.
- c) Goldschmidt classification of elements.
- d) Geobotanical indicators.

Q.3 Answer the following.

Q.4

Q.5

Q.6

Q.7

a)	Discuss in brief various geological criteria of mineral exploration of ore deposits.	80
b)	Write a short note on rotary drilling and types of rotary drill bits.	08
An	swer the following.	
a)	Define well log and its principles. Discuss various types of well log techniques.	08
b)	Write a note on geochemical cycle and geochemical dispersion.	08
An	swer the following.	
a)	Write a brief note on Resistivity survey and its applications.	08
b)	Discuss in brief what are the corrections needed for gravity survey.	80
An	swer the following.	
a)	Write a brief note on how physical properties of rocks are influences during the geophysical prospecting	10
b)	Write a note on core drilling with is advantages.	06
An	swer the following.	
a)	Discuss various types of self-Potential methods.	08
b)	Discuss in details geochemical methods of mineral exploration.	08

06

Seat No.								Set	Ρ
	М.	Sc. (Er	(Semeste ngineerir	er - III) (N Al ng Geolo	lew) (CBC PPLIED GI gy & Rock	S) Ex EOL (Me	kamination: Oct/N OGY chanics (MSC0193	ov-2023 806)	
Day & Time:	Da 11:0	te: Tu 00 AN	uesday, 09 /I To 02:00)-01-2024) PM				Max. Marks	: 80
Instru	ictic	ons: 1	I) Question 2) Attempt 3) Figure to	n Nos. 1 aı any three o right indi	nd 2 are com questions fro cate full mark	ipulso om Q. <s.< td=""><td>ry. No. 3 to Q. No. 7.</td><td></td><td></td></s.<>	ry. No. 3 to Q. No. 7.		
Q.1	A)	Cho 1)	ose corre Reservoi a) Stor b) Floc c) Dist d) Dro	ct alternations involving rage and control rest ribution rest ught control	ive (MCQ) g large sluice onservation r eservoirs. servoirs. ol reservoirs.	e gate reserv	s are ⁄oirs.		10
		2)	Hardnes a) Slat c) Brid	s is an imp os lges	ortant param	neter d b) d)	considered in the cons Walls Arches	truction of: _	
		3)	The large a) Yan c) Sir I	est irrigatio nuna canal nand canal	n canal in In	dia. b) d)	Indira Gandhi canal Upper Bari daab cana	al	
		4)	Which of a) Clay c) Qua	[:] the followi / artz	ng is good fi	re-res b) d)	sistance stone? Granite Limestone		
		5)	Which is a) Lak c) Cas	the larges e superior pian sea	t lake in the v	world. b) d)	Dal lake wular lake		
		6)	Churn dr a) Pero c) Jet	ill is type o cussion Dr Drilling	f: illing	b) d)	Rotary Drilling None of these		
		7)	What is v a) Stre b) Stre c) Stre d) The	very critical ength of the ength of the ength of the type of wa	about gravit concrete us masonry us rock founda iter stored in	y dan ed. ed. ation. the re	ns? eservoir.		
		8)	which typ index pro a) Con c) Und	be of comp operty of st ifined Irained	ressive strer one.	ngth is b) d)	taken as the most im Drained Unconfined	portant	
		9)	Type of t server ty a) Trat	unnels whi pe from su fic tunnels	ch are excav rface to subs	/ated surfac b)	to divert the traffic load e routes. Hydropower tunnels	d of what	

I raffic tunnels b) d) a) c) Generation tunnels Power tunnels

SLR-EB-18

		10)	 Which among the following is not an objective for the construction of the dam? a) To make sure rains occur periodically. b) Generation of hydropower energy. c) Providing water supply for domestic and industrial purposes. d) providing irrigational facilities. 					
	B)	Fill in 1) 2) 3) 4) 5) 6)	in the blanks. The dam which generally is of trapezoidal shape is embankment dams. (True/False) Artificially created water storage basin with storage capacity that may range from a few thousand cubic meter are called tunnel (True/False) Anthracite is the ore of Bauxite (True/False) is a road material which is metamorphic origin and are hard, crystalline and compact in nature. India is divided into earthquake zone. The layer of soil which the topsoil is found	06				
Q.2	An: a) b) c) d)	swer t Disac Beha Expla Buttre	wer the following. Disadvantage of Reservoirs. Behavior of rocks under stress. Explain blast holes and their pattern. Buttress dam.					
Q.3	An: a) b)	swer t Giver engir Expla	the following. In an account on various geological investigation involved in civil neering projects. ain engineering properties of rocks.	08 08				
Q.4	An: a) b)	swer t Expla Expla	the following. ain the soil mechanics. ain important building stones.	08 08				
Q.5	An: a) b)	swer t How Write	the following. Gravity method used in geophysical investigation. e a note on Auger drilling.	08 08				
Q.6	An: a) b)	swer t What Koyn Discu	the following. It are different geological investigation carried out during construction of na dam. uss in detail about Underground mining.	08 08				
Q.7	An: a) b)	swer t What Discu	the following. It is the scope of Rock Mechanics? uss in detail mass wasting.	08 08				

b) Discuss in detail mass wasting.

Time	: 03:	:00 PM	То	06:00 PM		
Instr	ucti	ons: 1) 2 3) Q.) Att) Fig	Nos. 1 and 2 are compulsor empt any three questions fro gure to right indicate full mark	y. om Q. ks.	No. 3 to Q. No. 7.
Q.1	A)	Rewr alterr 1)	ite t nativ An cor a) c)	he sentences by choosing /es: assemblage of high tempera ntact metasomatic deposits i Gondite Skarn	corr ature s call b) d)	ect answer from given metamorphic gangue minerals in ed as Gossan None of the above
		2)	Hy a) c)	drothermal deposits mostly ₋ Epigenetic Residual	b) d)	- Syngenetic Placers
		3)	Wh a) c)	nich one of the following is Iro Galen Sphalerite	on ore b) d)	e Chalcopyrite Magnetite
		4)	Wh Pro a) c)	nich one of the following min operty? Pyrite Bornite	eral s b) d)	hows diagnostic Internal Reflectio Sphalerite Covellite
		5)	Ch a) c)	romite is closely associated Utrabasic rock Acidic rock	with _ b) d)	Intermediate rock All the above
		6)	Wh a) c)	nich is the open cast mine in Bandalamottu Malajkhand copper mine	India b) d)	Zawar zinc mine Hutti gold mine
		7)	Wh cro of t sur a)	nen a polished surface of a c ossed polar, it is found to rem the stage, whatever the crys face. This Phenomena is ca Bireflectance	ubic r nain d tallog lled _ b)	mineral is examined under lark (in extinction) in all positions raphic orientation of the polished Internal reflection

M.Sc. (Semester - IV) (New) (CBCS) Examination: Oct/Nov-2023 **ÀPPLIÈD GEÓLOGY** Economic Geology (MSC019401)

Day & Date: Monday, 18-12-2023 Time: (

Max. Marks: 80

Seat No.

SLR-EB-20

Set Ρ

10

- ons shed
 - Twinning c) Anisotropism d)
- 8) textures, where one phase separates from another as a result of incomplete miscibility during cooling, and has a tendency to concentrate along certain crystallographic directions which one of the following is a sulphide ore mineral? a) Cumulus b) Graphic
 - c) Idiomorphic d) Exsolution

			a) b) c) d)	Divergent boundarie quantities of oil and g Divergent boundarie squeeze minerals ou Divergent boundarie and rarely form mine Divergent boundarie form evaporite depos	s accumulate gas. s move apar it of rocks. s are not ass rals. s are low-lyin sits.	e sentiment and secrete t and then closer together to sociated with volcanic activity ng basins that collect water a	/ Ind
		10)	The a) c)	e chief raw material of Silt Kyanite	[;] the ceramic b) d)	: industry is Clay Quartz	
	B)	Fill in 1) T p 2) K 3) C 4) J 5) P 6) V	the ine rope (het /hich Chen Vhen Vhat	blanks OR write Tru amount of incident light ral that is reflected bat erty of that mineral its in mineralised belt is s in hosts Phosphate minical composition of C nile water is also called er deposits along hill s t is the ore of Arsenic	Je or False. Int on a polision reflectance. ituated at the ineralization. Chalcopyrite adslope, cause ?	hed surface of a particular server depends on an import (True/False) e foothills of the Aravalli Ran (True/False) mineral is Fe ₃ O ₄ . (True/False d by hill slope are known as	06 ant ge, e)
Q.2	Wri a) b) c) d)	te sho i Explai Metas How w Bande	r t no n E> oma /ill y ed Ire	otes on. ksolution and Mutual I atic deposits. ou prepare ore polish on Formation.	boundary tex led section.	cture of ore minerals.	16
Q.3	Ans a) b)	swer th What i proces Fluid I	i e fc is m sses nclu	bllowing. agmatic concentration Give Indian example sion Geothermocryor	n. Explain in es. netry.	details Early magmatic	08 08
Q.4	Ans a) b)	swer th Stratig Minera	i e fo Irapl aliza	b llowing. hic, lithological and Si ition associated with (tructural con Convergent _l	trols on mineral localisation. plate margin.	08 08
Q.5	Ans a) b)	swer th Write a Write a	e fo a no a no	bllowing. ote on Openings in Ro ote on oxidation & sup	ock. Jergene enric	chment deposit.	08 08
Q.6	Ans a) b)	swer th Discus What i	e fo ss fu is wa	ollowing. Ill note on Ore Bearin all rock alteration. Dis	g fluids. cuss in shor	t various types of alteration.	08 08
Q.7	Ans a) b)	swer th Froth f Parage	e fo flota	b llowing. tion method. sis and Zoning.			08 08

Why would you expect to find rich mineral resources on land

associated with divergent plate boundaries?

9)

Seat No.			Set	Ρ
I	M.Sc. (Semester - IV) (New) (CBCS) Examination: Oct/Nov-2 APPLIED GEOLOGY Fuel Geology (MSC019402)	2023	
Day &	Date: Tue 3:00 PM	esday, 19-12-2023 Ma 1 To 06:00 PM	x. Marks	: 80
Instruc	tions: 1) 2 3) Q. Nos. 1 and 2 are compulsory. ?) Attempt any three questions from Q. No. 3 to Q. No. 7. 8) Figure to right indicate full marks.		
Q.1 A) Choo 1)	ose correct alternative. state is the largest producer of petroleum in India. a) Rajasthan b) Gujarat c) Assam d) Orissa		10
	2)	What type of energy is derived from heated groundwater? a) Solar energy b) Geothermal energy c) Hydroelectric energy d) Nuclear energy		
	3)	The oil producing zone of Bombay high is in the a) Miocene sandstone b) Miocene limestone c) Oligocene sandstone d) Oligocene limestone		
	4)	Kalol and Nawgam petroleum deposits are in a) Maharashtra b) Gujarat c) Assam d) West Bengal		
	5)	Palana lignite deposit is assigned to age: a) Late Triassic b) Early Jurassic c) Tertiary d) Cretaceous		
	6)	 The ranking depends on the: a) The water content in the coal. b) Amounts of carbon contain and heat energy the coal can proceed of SO2 in the coal. d) None of these. 	oduce.	
	7)	The transformation of a primary petroleum-like organic material ispetroleum begins with its deposition in the sediments in aa) Reducing environmentb) Oxidizing environmentc) Both of the aboved) Glacial environment	nto	
	8)	Oil shale contain a) Solid hydrocarbon b) Gaseous hydrocarbon c) Liquid hydrocarbon d) None of the above		
	9)	 A layer of impermeable rock, called the prevents the upware lateral escape of the petroleum. a) Cap rock b) Reservoir rock c) Trap rock d) None of these 	ird or	

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SLR-EB-21

Seat No.

- is one of the most important variables used to determine oil quality.a) viscocityb) densityc) API gravityd) colour and smell 10)

	B)	Fill 1)	in the blanks OR write True or False. Sub-bituminous coals are the second division of high-rank coals.	06
		2)	(True / False) Petroleum is a naturally occurring complex mixture made up predominantly of organic carbon and hydrogen compounds.	/
		3)	Coal is fossil fuel or fuel that comes from the remains of prehistoric plants or animals (True / False)	
		4)	The rock having high porosity high permeability is most suitable for petroleum.	
		5)	American Petroleum Institute gravity (API gravity) is a scale used to compare crude oil density to water.	
		6)	mine has the distinction of being the first Uranium Mine of the country	/ .
Q.2	Wr a) b) c) d)	ite a Res Geo Jais Coa	short note on. ervoir rock in petroleum. logy of Bengal petroliferous basin almer Basin petroliferous basin l seams.	16
Q.3	An a) b)	swer Writ Writ mine	the following. e brief note on distribution of Gondawana coal deposits in India. e a brief note mineralogy and geochemistry of Thorium radioactive erals.	08 08
Q.4	An a) b)	swer Give Writ	the following. an account of the geology and hydrocarbon occurrence in Assam basin. e brief note on non- conventional energy resource.	08 08
Q.5	An: a) b)	swer Disc Give mine	the following. cuss in brief various types of coal and its grades. an account of mode of occurrence, association and distribution of atomic erals in nature.	08 08
Q.6	An a) b)	swer Give Writ	the following. e application of radioactivity in geochronometry. e a note on stratigraphic, structural and combined traps of petroleum.	08 08
Q.7	An a) b)	swer Give Writ	the following. e a brief account on Mumbai offshore basin. e a note on Coal bed methane (CBM).	08 08

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Page	1	of	2

Set

Max. Marks: 80

Seat	
No.	

M.Sc. (Semester - IV) (New) (CBCS) Examination: Oct/Nov-2023 **ÀPPLIÈD GEÓLOGY**

Environmental Geology & Disaster Management (MSC019403)

Day & Date: Wednesday, 20-12-2023 Time: 03:00 PM To 06:00 PM

Instructions: 1) Question no. 1 and 2 are compulsory.

- 2) Attempt any three questions from Q. No. 3 to Q. No. 7.
- 3) Figure to right indicate full marks.

Q.1 A) Choose correct alternative.

- To prevent landslide, improving the cultivation in the sloppy region, 1) the roots of which Provide effect.
 - a) Erosion b)
 - coherent c) cohesion d) flood
- Point at which earthquake takes place is known as _____. 2)
 - a) Origin b) Epicenter
 - c) Principal d) Focus
- The typical citation of reservoir induced specificity (RIS) of India is. 3)
 - a) Koyna dam Srisailam dam b)
 - c) Jayakwadi dam d) Almatti dam
- 4) Among the following biogeochemical cycles which one does not have losses due to respiration.
 - a) Sulphur b) Nitrogen
 - c) Phosphorus All of the above d)
- Which of the following is the best thing to do during heavy lightning? 5)
 - a) lie on the ground in an open place
 - b) Go into a water body
 - c) Stay indoors, away from metallic doors and windows.
 - d) Stand under a tall tree
- Respiration and photosynthesis are Central to these process. 6)
 - a) Nitrogen cycle c) Carbon cycle
- Phosphorus cycle b) d) Sulphur cycle
- Diseases that becomes unusually widespread and even global in its 7) rich in referred to as.
 - a) Epidemic
 - b) c) Spanish flu d)
- 8) What is ring of fire?
 - a) Belt of volcanoes in the circum Pacific region.
 - b) Belt of volcanoes in the mid continental region.
 - c) Belt of volcanoes in the mid-Atlantic region.
 - d) None in the above.
- Composition of ozone is ____ 9)
 - a) O b) **O**₂ c) O₃
 - none of these d)

Pandemic

Hyperendemic

		 10) Which of the following is not a man made hazard? a) Leakage of toxic waste b) Wars and civil strike c) Drought d) Environmental 	
	B)	 Fill in the blanks / True OR False 1) Volcanic erupted material when inside the hill / Earth / mountain it is called 2) biological method of disposal of municipal solid waste? 3) In India national institute of disaster management is located. 4) Landslide is the example of terrestrial hazards. (True/False) 5) The soil is the source of energy for all ecosystem (True / False) 6) An ecological pyramid shows that relationship between consumers and producers (True / False) 	06
Q.2	Ans a) b) c) d)	twer the following Explain the water cycle. What is the difference between natural disaster and man made disasters. Short notes on biological hazards. What is meant by flash flood?	6
Q.3	Ans a) b)	wer the following. Impact of Urbanization on environment. 0 Write a note on Bhopal gas tragedy. 0)8)8
Q.4	Ans a) b)	wer the following. Discuss various types of landslides. Give remedial measure for prevention of 0 landslide. GIS and remote sensing study in disaster management 0)8)8
Q.5	Ans a) b)	wer the following. Explain in detail coastal zone management. 0 Write full note on Killari earthquake. 0)8)8
Q.6	Ans a) b)	wer the following.Explain natural disaster and its mitigation strategies.0Preparedness for relief and recovery operations.0)8)8
Q.7	Ans a) b)	wer the following. Explain sources and management of water pollution. 0 Explain the nitrogen cycle with neat sketch diagram. 0)8)8