SH-V/Geology-502C-12/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

GEOLOGY

Course ID : 52012 **Course Code : SHGEL-502C-12(T)**

Course Title : Economic Geology

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) What is an ore?

(b) What is tenor?

(c) Define epigenetic ore deposit.

(d) What is cockade ore?

(e) Name one important economic mineral occurring in Greenstone belt.

(f) Define VMS deposit.

(g) Name a complex ore which can yield two metals.

(h) What is eluvial placer deposit?

2. Answer *any two* of the following questions: 5×2=10

(a) Compare between stratiform and stratabound ore deposits with examples.

(b) Describe the important geochemical characteristics of ore forming hydrothermal solution.

(c) Describe various types of placer deposits.

(d) Write short notes on (i) porphyry-type deposit, (ii) skarn deposit

3. Answer *any one* of the following questions: 10×1=10

(a) Briefly describe the magmatic processes responsible for the formation of ore deposits.

(b) Describe the processes of supergene enrichment of base metal sulphide deposits.

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SH-V/Geology-502C-12(P)/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

GEOLOGY

Course ID : 52022 **Course Code : SHGEL-502C-12(P)**

Course Title : Economic Geology Lab

Time 2 Hours **Full Marks: 15**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all *the questions.*

1. Describe the physical properties of the two given economic minerals in hand specimen and identify them. 2×3=6

2. Show the distribution of two important occurrences each of ores of aluminium, copper, iron and manganese on the given outline map of India. 4

3. Laboratory Notebook. 5

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SH-V/Geology-503DSE-1/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

GEOLOGY

Course ID : 52016 **Course Code : SHGEL-503DSE-1(T)**

Course Title : Fuel Geology

Time 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) Name two microorganisms which decompose plants to peat.

(b) What is coalification?

(c) What is maceral?

(d) Define Useful Heat Value (UHV) of coal.

(e) Name one coalfield situated in the Bankura district, West Bengal.

(f) What is oil window?

(g) Name one ore of uranium.

(h) Name four operating uranium mines in India.

2. Answer *any two* of the following questions: 5×2=10

(a) Write a short note on proximate analysis of coal.

(b) Write a brief note on the Seyler's coal band.

(c) Describe the major uses of radioactive elements.

(d) Briefly describe the broad composition of petroleum and natural gas.

3. Answer *any one* of the following questions: 10×1=10

(a) Briefly describe about the mode of occurrences of uranium in nature.

(b) Briefly describe the processes involved in petroleum migration from source rock to pool.

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SH-V/Geology-503DSE-1/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

GEOLOGY

Course ID : 52026 **Course Code : SHGEL-503DSE-1(P)**

Course Title : Fuel Geology Lab

Time 2 Hours **Full Marks: 15**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all *the questions.*

1. The four vertical boreholes, namely BH-1 (R.L. 15 m), BH-2 (R.L. 50 m), BH-3 (R.L. 40 m) and BH-4 (R.L. 20 m) have been drilled in a coal basin. BH-2 is located 800 m away along 035° direction from BH-1, BH-3 is located 600 m away along East from BH-2 and BH-4 is located 725 m away along 140° direction from BH-3. The lithologs of the boreholes (drilled depth in metre) are given in the following table. Prepare a fence diagram involving the above boreholes and write a brief description of the subsurface stratigraphy and behaviour of the coal seams at depth from bore hole to bore hole. 10

BH-1		BH-2		BH-3		BH-4	
Drilled depth	Lithology	Drilled depth	Lithology	Drilled depth	Lithology	Drilled depth	Lithology
0-10	Coarse sandstone	0-9	Fine sandstone	0-2	Coarse sandstone	0-14	Coarse sandstone
10-19	Fine sandstone	9-20	Coarse sandstone	2-11	Fine sandstone	14-23	Fine sandstone
19-29	Coarse sandstone	20-28	Coal Seam III	11-25	Coarse sandstone	23-40	Coarse sandstone
29-38	Coal Seam III	28-32	Shale	25-31	Coal Seam III	40-45	Coal Seam III
38-42	Shale	32-37	Fine sandstone	31-35	Shale	45-47	Shale
42-47	Fine sandstone	37-44	Coarse sandstone	35-40	Fine sandstone	47-53	Fine sandstone
47-53	Coarse sandstone	44-56	Coal Seam II	40-50	Coarse sandstone	53-65	Coarse sandstone
53-66	Coal Seam II	56-61	Shale	50-59	Coal Seam II	65-72	Coal Seam II
66-77	Shale	61-67	Fine sandstone	59-63	Shale	72-75	Shale
73-78	Fine sandstone	67-76	Coarse sandstone	63-69	Fine sandstone	75-80	Fine sandstone
78-88	Coarse sandstone	76-82	Coal Seam I	69-77	Coarse sandstone	80-88	Coarse sandstone
88-92	Coal Seam I	>82	Fine sandstone	77-82	Coals Seam I	88-92	Coal Seam I
>92	Fine sandstone			>82		>92	Fine sandstone

2. Laboratory Notebook. 5

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SH-V/Geology-504DSE-219

B.Sc. 5th Semester (Honours) Examination, 2019

GEOLOGY

Course ID : 52017 **Course Code : SHGEL-504DSE-2(T)**

Course Title : Exploration Geology

Time 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) Name two elements which have high mobility.

(b) Mention the subdivisions of ore reserves in order of decreasing geological confidence.

(c) What is the indicator plant for zinc mineralization?

(d) Define geochemical anomaly.

(e) What is pedogeochemical method for mineral exploration?

(f) Define pathfinder element in mineral exploration.

(g) Define logging in mineral exploration.

(h) Define homogeochemical method in mineral exploration.

2. Answer *any two* of the following questions: 5×2=10

(a) Give a flow chart which summarises the sequence of work done in mineral exploration.

(b) Describe geobotanical and biogeochemical methods for mineral exploration.

(c) Briefly describe different types of electrical logging and their uses.

(d) Explain the reasons for use of pathfinder elements in exploration program.

3. Answer *any one* of the following questions: 10×1=10

(a) Discuss the advantages and limitations of application of remote sensing in mineral exploration.

(b) Briefly describe the general principles and uses of seismic methods in mineral exploration.

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SH-V/Geology-501C-11/19

B.Sc. 5th Semester (Honours) Examination, 2019-20

GEOLOGY

Course ID : 52011 **Course Code : SHGEL-501C-11(T)**

Course Title : Hydrogeology

Time: 1 Hour 15 Minutes **Full Marks: 25**

The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.

1. Answer *any five* of the following questions: 1×5=5

(a) What is the ratio of fresh water to saline water in the Earth?

(b) What is evapotranspiration?

(c) Which type of packing generates least porosity?

(d) Which radioisotopes are used for age determination of ground water?

(e) What is piezometric surface?

(f) What is effective porosity?

(g) What is storativity?

(h) What is specific retention?

2. Answer *any two* of the following questions: 5×2=10

(a) Briefly describe the techniques for artificial recharge of ground water.

(b) Diagrammatically represent the vertical distribution of subsurface water.

(c) Describe the surface geological and geobotanical methods for groundwater exploration.

(d) Explain the Ghyben-Herzberg relation between fresh water and salt water in coastal aquifers.

3. Answer *any one* of the following questions: 10×1=10

(a) Compare among aquifer, aquitard, aquiclude and aquifuge with examples.

(b) Describe the Darcy's law with its limitations for application to groundwater movement.

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SH-V/Geology-501C-11/19

B.Sc. 5th Semester (Honours) Practical Examination, 2019-20

GEOLOGY

Course ID : 52021 **Course Code : SHGEL-501C-11(P)**

Course Title : Hydrogeology Lab

Time 2 Hours **Full Marks: 15**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer all the questions.

1. Interpret the given water table contour map of an area with special emphases to (i) major and minor flows, and (ii) discharge and recharge areas. 10

2. Laboratory Notebook. 5

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Water Table Contour Map