UNIVERSITY OF THE PUNJAB

First Prof. A/2018

Examination:- B.S. Applied Geology

Roll No. .....

Subject: General Geology
PAPER: VII / GEOL-102

TIME ALLOWED: 3 Hrs.
MAX. MARKS: 100

NOTE: Attempt All questions.

Q.No. 1 Define any TEN of the Following Geological terms. **(3x10=30)**

i. Lithosphere and Asthenosphere ,
ii. Batholith and Stock,
iii. Dyke and Sill.
iv. Focus and Epicenter,
v. Seismogram and Seismograph,
vi. Mohorovicic and Guttenberg discontinuity,
vii. Dip and Strike
viii. Mineral and Mineraloid.
ix. Isostatic and differential stress
x. Mean life and half life
xi. Foliation and lineation
xii. Convergent and divergent plate boundaries
xiii. Principal of Uniformitarianism,
xiv. Shadow zones,
xv. Sedimentary cycle,
xvi. Law of cross cutting relationship

Q.No. 2 Briefly explain and draw figures any FIVE of the following. **(5x5=25)**

i. Crust of Earth
ii. Crystal Structure
iii. Moh's scale of hardness
iv. Classification of beds on the basis of layer thickness
v. Differences between Contact Metamorphism and Regional Metamorphism
vi. Discuss important minerals of Sedimentary rocks
vii. Mud Cracks
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B.S. Applied Geology / First Prof. 2nd Annual 2020

Roll No. .....

Subject: Islamic Studies & Pakistan Studies
Paper: I (A) & I (B) / IPS-101 (A) & IPS-101 (B)

Time: 3 Hrs. Marks: 100

USE SEPARATE ANSWER BOOK FOR EACH PART

I (A) Islamic Studies

نوٹ: کوئی سے تین سوال حل کریں۔ تمام سوالوں کے نمبر برابر ہیں۔

سوال نمبر1 درج ذیل آیت کا مناسب عنوان تجویز کرتے ہوئے بامحاورہ ترجمہ اور تفسیر کیجیے۔ ۵+۱۳+۲

يَا أَيُّهَا الَّذِينَ آمَنُوا لَا تَرْفَعُوا أَصْوَاتَكُمْ فَوْقَ صَوْتِ النَّبِيِّ وَلَا تَجْهَرُوا لَهُ
بِالْقَوْلِ كَجَهْرِ بَعْضِكُمْ لِبَعْضٍ أَنْ تَحْبَطَ أَعْمَالُكُمْ وَأَنْتُمْ لَا تَشْعُرُونَ.

سوال نمبر2 درج ذیل حدیث کا مناسب عنوان تجویز کرتے ہوئے بامحاورہ ترجمہ اور تشریح کیجیے۔ ۵+۱۳+۲

عَنْ ابْنِ عُمَرَ رَضِيَ اللّٰهُ عَنْهُمَا قَالَ أَخَذَ رَسُولُ اللّٰهِ صَلَّى اللّٰهُ عَلَيْهِ وَسَلَّمَ
اَلْمُسْلِمُ مَنْ سَلِمَ الْمُسْلِمُونَ مِنْ لِسَانِهِ وَيَدِهِ وَالْمُهَاجِرُ مَنْ هَجَرَ مَا نَهَى اللّٰهُ عَنْهُ.

سوال نمبر3 سنت اور حدیث کا مفہوم بتائیں اور سنت کی اہمیت قرآن وحدیث کی روشنی میں تحریر کریں۔ ۵+۱۵

سوال نمبر4 درج ذیل پر نوٹ لکھیں۔ ۱۰+۱۰

ا۔ والدین اور بزرگوں کا احترام ۲۔ سادگی

I (B) Pakistan Studies

NOTE: Attempt any TWO questions. All questions carry equal marks.

نوٹ: کوئی سے دو سوالات کے جوابات تحریر کیجیے۔ تمام سوالات کے نمبر یکساں ہیں۔

سوال نمبر 1: تحریک خلافت پر ایک جامع مضمون قلمبند کیجیے۔ **(20)**

Q.1. Write a comprehensive essay of Khilafat Movement.

سوال نمبر 2: قیام پاکستان پر پیش آمدہ ابتدائی مشکلات قلمبند کیجیے۔ **(20)**

Q.2. Write early problems Pakistan faced after its creation.

سوال نمبر 3: پاکستان کے قدرتی وسائل پر ایک مضمون قلمبند کیجیے۔ **(20)**

Q.3. Write an essay on natural sources of Pakistan.

سوال نمبر 4: پاکستان کے اسلامی دنیا سے تعلقات قلمبند کیجیے۔ **(20)**

Q.4. Write relations of Pakistan with Islamic World.

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B.S. Applied Geology / First Prof. 2nd Annual 2020

Roll No. .....

Subject: English Paper: II / ENG-101 Time: 3 Hrs. Marks: 100

NOTE: Attempt ALL questions. Allotted marks are given in front of each questions.

Q.1: Define the followings with 2 practical examples in sentences each: **20**

a) Personal Pronoun
b) Syntax
c) Grammar
d) Preposition
e) Adverb
f) Punctuation Mark
g) Adverb of time
h) Interjection
i) Genders of nouns
j) Sentence

Q.2: Change the following paragraph into Phonetic Transcription. **15**

There was once a contest held between two horse keepers on whose horse could pull the most weight. The winner pulled just over 9000 pounds; the loser horse pulled just less than 9000 pounds. After the dust had settled and the owner got the bragging rights, someone came up with the question that sparked more interest. The question was, "Wonder how much both horses could pull together?"

Q.3: Discuss Derivational morphology and its types with examples. **10**

Q.4: Make all tenses of the following sentences: **10**

I visit Islamabad for research purpose periodically.

Q.5: Define and discuss the types of Clauses with 2 example sentences each. **10**

Q.6: Define the types of Affixes and their uses in word formation. **10**

Q.7: Define and discuss the structure wise types of sentences with 2 example sentences each. **10**

Q.8: Write a paragraph on any one of the following topics in 150 words. **15**

a) Two Nation Theory
b) Importance of Punctuality
c) Importance of Future planning
d) How to reduce the addiction of internet use among students

UNIVERSITY OF THE PUNJAB

B.S. Applied Geology / First Prof. 2nd Annual 2020

Roll No. .....

Subject: Mathematics-I **Paper: III / MTH-101** **Time: 3 Hrs. Marks: 100**

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1(a)	Evaluate (i) $\lim_{h\to 0}\frac{3}{\sqrt{3h+1}+1}$ (ii) $\lim_{x\to 4}\frac{4x-x^2}{2-\sqrt{x}}$	(5+5)
(b)	Evaluate (i) $\lim_{t\to 0}\frac{tant\ sec2t}{3t}$ (ii) $\lim_{h\to 0}\frac{cosh-1}{h}$	(5+5)
Q.2(a)	Find the inverse of $B=\begin{pmatrix}1 & 2 & 3\\ 0 & -1 & 2\\ 1 & 4 & 3\end{pmatrix}$ if possible.	(10)
(b)	Convert the complex numbers into polar form (i) $1-i$ (ii) $-6-3i$	(5+5)
Q.3(a)	Find the domain and range of the functions (i) $f(x)=1-x-2x^2$ (ii) $g(x)=\sqrt{5x+10}$	(10)
(b)	Sketch the graph of (i) $y=x^2+1$ (ii) $y=\lvert 2x\rvert$	(5+5)
Q.4(a)	Find a & b if $\frac{5+2i}{1-i}+\frac{2-3i}{-2-i}=a+ib$.	(10)
(b)	For the matrix $B=\begin{pmatrix}-1 & -1\\ 2 & 3\end{pmatrix}$, verify that $BB^{-1}=I$, where I is identity matrix.	(10)
Q.5(a)	Find $\frac{dy}{dx}$, $y=\tan(\sin x)$.	(10)
(b)	Find $\frac{dy}{dx}$ if $y=\sqrt{x+\sqrt{x+\sqrt{x}}}$.	(10)
Q.6(a)	Evaluate $\frac{dy}{dx}$ if $y=\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}$.	(10)
(b)	Evaluate $\frac{dy}{dx}$ if $y=arctan\left(\frac{1+2x}{2-x}\right)$.	(10)
Q.7(a)	Evaluate $\int\frac{cosx}{3sinx+4\sqrt{sinx}}dx$.	(10)
(b)	Solve for x without using calculator: i) $e^{2x}=16$ ii) $3^{x+1}=5$.	(5+5)
Q.8(a)	Evaluate (i) $\int cscxdx$ (ii) $\int sin^2x\,dx$.	(5+5)
(b)	Evaluate $(-1-i)^8$ using De Moivre's theorem.	(10)

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Roll No. .....

Subject: Physics I Paper: IV / PHYS-101 Time: 3 Hrs. Marks: 75

NOTE: Attempt any FIVE questions. All questions carry equal marks.

(1) (a)Define Rectangular components of vector and resolve a vector into its rectangular components (9)

(b) Find a unit vector, where vector A is given as A=2i -10J+32K. (6)

(2) (a) Show that $(A\times B)^2+(A.B)^2=A^2B^2$ (7)

(b) Find value of q for which the following two vectors will become perpendicular to each other.

A = 2i-4j+5K, B=13i –qj+2K (8)

(3) Define and explain newton law of gravitation and also compute Mas and density of the Earth. (15)

(4) Define and explain in detail Kepler's law with respect to planetary motion. (15)

(5) Define and explain following (15)

(i) Hygen's Principal
(ii) Fermat Law
(iii) Diffraction
(iv) Hooks Law
(v) Interference of Light

(6) Compute the variation of gravity g with altitude by using newton's law of gravitation. (15)

(7) (a) Define and explain center of gravity , center of mass and explain how we can determine center of gravity of different bodies (10)

(b) Define and explain angular momentum. (5)

(8) Define and explain following terms with reference to optics. (15)

Convergence and divergence lens, Aperture in optics, Principal focus, Focal length and Optical center

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Roll No. .....

Subject: Chemistry I Paper: V / CHEM-101 Time: 3 Hrs. Marks: 75

NOTE: Attempt any FIVE questions. All questions carry equal marks.

1	Define Law of Mass Action and how it is applicable to solubility product? Give its mathematical form. —	15
2	a) Why indicators are used in titrations? Describe in detail the Redox Indicators with suitable examples. b) What is the principle of Flame emission Spectroscopy?	10 5
3	a) What is Column chromatography? What types of adsorbents are used in Column adsorption Chromatography? b) What is the use of solvent extraction? Also give relationship between D and K_D? c) What is acid dissociation constant also giving its significance	5 7 3
4	a) What is Bronsted Lowry Concept of Acids and Bases? Also give it short comings. b) What are Conjugate Acids and Bases	9 6
5	a) What is titrimetric analysis? Give classification of reactions in titrimetric analysis? b) What is R_f value and explain any three factors on which R_f values depend?	8 7
6	a) What is the principle of Flame photometer? Explain the different zones of flame? b) How separation occurs in paper chromatography	9 6
7	a) What is Common ion effect? Give its applications. b) What is acid dissociation constant also giving its significance?	10 5
8	a) What types of burners are used in AES name them? Explain the working, advantages and disadvantages of Total Combustion Burner b) What are the merits and demerits of modern periodic table	8 7

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Roll No. .....

Subject: Paleontology Paper: VIII / GEOL-103 Time: 3 Hrs. Marks: 75

NOTE: Attempt any FIVE questions. All questions carry equal marks. Draw figures where necessary.

Q-1. Discuss Fossilization in detail. Also describe conditions of fossilization and types of preservation. **(15)**

Q-2. Describe morphology of Foraminiferal test. Also classify Foraminifera on the basis of chamber arrangements. **(15)**

Q-3. Explain morphology of the Order Rugosa in Corals. Also describe development of septa in Rugose Coral. **(15)**

Q-4. Discuss the Phylum Brachiopoda. Differentiate between Articulate and Inarticulate Brachiopods. **(15)**

Q-5. Write details on morphology of Trilobites; also explain their modes of life. **(15)**

Q-6. Draw and explain morphological features of Ammonite shell. Also discuss evolution of different types of sutures in Ammonoids. **(15)**

Q-7. **a)** Describe significance of fossils in geological studies. (7)

b) Explain the laws involved in relative age-dating of rocks. (8)

Q-8. Explain the following:

a) Kinds of Marine Environments. (10)

b) Factors controlling distribution of organisms in marine environments. (5)

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Roll No. .....

Subject: Geomorphology **Paper: IX / GEOL-104** **Time: 3 Hrs. Marks: 75**

NOTE: Attempt any FIVE questions while Question No. 1 is compulsory. All questions carry equal marks.

1. Elaborate the processes of delicate balance and driving force.
2. Describe the principle of process linkage and time frame work.
3. Discuss climate, process and landforms.
4. What is the geomorphic significance of soils?
5. Discuss classification of landslides.
6. Write an essay on initiation of Channels and drainage network.
7. Briefly discuss pediments and their morphology.
8. a) Describe wind deposition

   b) What are secondary features of glaciers.

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Roll No. .....

Subject: Mineralogy Paper: VI / GEOL-101 Time: 3 Hrs. Marks: 75

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q. 1.

a. Discuss the importance of Mineralogy as foundation course in Geology.
b. Discuss the reflection across a plane and rotation about an axis as criteria for symmetry in crystals?
c. Discuss the unit cell having the axial specification: $a \neq b \neq c$ and $\alpha=\gamma=90°$, $\beta>90°$ and crystal forms of Prismatic class.

Q.2.

a. Briefly discuss the visible part of Electromagnetic Spectrum and production of color in the minerals.
b. Discuss the relationship of internal structure of the crystal with its external morphology.
c. What is the difference between 'luster' and 'color'?

Q.3.

a. Discuss the Symmetry and crystal forms of Pinacoidal Class.
b. What structural difference makes a diamond different from graphite?
c. Briefly discuss the Phase Rule and its application to one component system.

Q.4.

a. Draw the Octahedron, Tetragonal prisms and Tetragonal Bipyramids and also indicate the indices.
b. Briefly discuss the carbonate group of minerals.
c. Discuss the Pauling's 1st Coordination Rule.

Q.5.

a. Briefly discuss the minerals corundum ,hematite and rutile.
b. Discuss the uniaxial positive and uniaxial negative minerals.
c. Discuss the Acicular, Capillary, Equant, Prismatic and Fibrous Crystal Habits.

Q.6.

a. Briefly discuss the use of X-rays in mineral identification.
b. Discuss the Tungstates.
c. Briefly discuss the Hardness in Minerals

Q.7.

a. Given the following parameters, calculate the Miller Indices
   a. 2a: b: 3c b. 1a: ∞b: ∞c c. 2a: b: 5c d. a: a: 3c e. 4a: 3a: 9a
b. Discuss the Polymorphs of Si_{O2}.
c. Briefly discuss the Neso or orthosilicates.

Q.8

a. What is the chemical composition of Anorthite, Sanidine, Spinel, Fosterite and Topaz
b. What are Metamict minerals? Explain with examples.
c. Determine the number of faces comprising each form below:
   a. Hexagonal scalenohedron b. Ditetragonal pyramid c. Rhombohedron d. Tetrahexahedron e. Trisoctahedron

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Subject: General Geology Paper: VII / GEOL-102

Roll No. .....

Time: 3 Hrs. Marks: 100

NOTE: Attempt ALL questions.

Q. 1 Define any TEN of the following Geological terms. **(10 X 2 = 20)**

i. Cross Bedding
ii. Geomorphology
iii. Geochemistry
iv. Joints
v. Law of uniformitarianism
vi. Mud cracks
vii. Non conformity
viii. Principle of intrusion
ix. Protolith
x. Reverse fault
xi. Rock cycle
xii. Streak
xiii. Stock and Batholith
xiv. Seismogram and Seismograph
xv. Sills and dyke
xvi. Verve

Q. 2 Discuss major differences between any FIVE of the following. **(5 X 7 = 35)**

i. Volcanic igneous rocks and Plutonic Igneous rocks
ii. Normal fault and Reverse fault
iii. Shield volcano and composite volcano
iv. Disconformity and Angular unconformity
v. Foliated and Non Foliated metamorphic Rocks
vi. Earthquake and Microseism
vii. Anticlinal folds and Synclinal folds
viii. P-Waves and S-Waves

Q. 3 Answer any THREE of the Following. **(3 X 15 = 45)**

1. How igneous rocks are grouped on the basis of grain size?
2. There is a variety of rocks in eastern salt range. Discuss in detail, the rocks you observed during your field excursion of 1st. Prof. in Eastern Salt Range.
3. Discuss different processes due to which rocks are subjected to metamorphism.

4.A) Define Seismic Moment and Moment Magnitude.

B) Calculate Seismic Moment and Moment Magnitude of an earthquake in which two parts of a fault after earthquake, fly apart by 30 cm. having an area of fault plane 15 Km. by 10 Km. Take the Modulus of rigidity of rocks $3X\ 10^{11}$ dyne/cm^2.

5.A) Discuss Radiocarbon Method to determine the age of dead tissues.

B) A sample of C-14, whose half life is 5730 years, has a decay rate of 14 disintegration per minutes (dpm) per gram of Natural Carbon C. An artifact is found to have radioactivity of 4 dpm per gram of its present carbon C. how old is the artifact.

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Roll No. .....

Subject: Structural/Petroleum Geology **Paper: X / GEOL-212** **Time: 3 Hrs. Marks: 75**

NOTE: Attempt any THREE questions. All questions carry equal marks.

Q. 1 Describe normal faults? Explain its components and types in details.

Q. 2 Discuss Ramsey classification of folded layers.

Q. 3 Describe compressional tectonics and reverse/thrust fault.

Q. 4. What is Petroleum System? Discuss its components with label diagrams, where needed?

Q. 5. Discuss reservoir rocks and its physical properties. Name three reservoir rocks of Pakistan?

Q. 6. Discuss Kerogen, types of Kerogen and its maturation processes?

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Roll No. .....

Subject: Communication Skills & Technical Report Writing

Paper: I / ENG-202 **Time: 3 Hrs. Marks: 100**

NOTE: Attempt all questions.

Part-I (Communication Skills) 60 Marks

Q.1. Complete the sentences by writing the correct prefixes and suffixes in the blank space. (10)

Dis -in mis- re- un- under -able -ful -less -er

1) I just can't believe it! The story is -------believable.
2) No, that answer is -----correct. It is wrong.
3) Let's look at this information again. We should----view it before the test.
4) I saw Jane just a moment ago, but now I can't find her! It seems that she _____appeared.
5) Oh, I'm sorry, I didn't hear you correctly. I _____ understood you.
6) This train moves_____ground.
7) The women is always rest____
8) The cat is odour____
9) She cannot remember anything. She is very forget____.
10) I teach maths in a big university. I am a teach____

Q # 2: Change the following transcription into words. (10)

Hed

ɪnfəˈ ˈmeɪʃən

ˈkwestʃən

ˈbɪznɪs

ˈpaʊəˈ

ʧeɪndʒ

muːv

bʊk

dɪˈveləpmənt

jʌŋ

Q # 3: Read the sentences below, and choose if the statement is a fact or an opinion. (10)

1. Abraham Lincoln was President of the United States during the Civil War.

2. The cookies my mom makes are the best in town.

3. My teacher feels all students should wear school uniforms.

4. I enjoy reading books at night.

5. In America, we celebrate Christmas in December.

6. There are seven days in a week.

7. My friend likes to go to the park during the evenings.

8. She awoke at 7:00 a.m. this morning.

9. English is an easy language to learn.

10. Harry. S. Truman was the president of U.S.

Q # 4: Explain briefly the parts of a research proposal? **(10)**

Q # 5: Write an essay on any one of the following topics. **(10)**

a) Covid-19 b) Should plastic be banned
c) Social Media d) Technology

Q # 6: Write a letter to a company informing them about the damaged good you received from them and as for a refund. **(10)**

Part II (Technical Report Writing) Max. Marks: 40

Q # 7. Read the paragraph carefully and correct it technically in all aspects. **(20)**

On the eastern shelf of the Indian plate, the Bolpur and Ghatal Formations were deposited. whereas carbonates are recognized primarily on the eastern and western shelves today, it is likely that they were deposited over much of the northern shelf as well. This shelf environment persisted through the Late Cretaceous when regressive sandstones such as the Lumshiwal and pab Formations in the west and Tura Formation in the east were deposited. during the latest cretaceous, the indian plate continued to drift northward toward the Eurasian plate and the seafl oor of the Bengal Basin began to form and fl ysch accumulated on all sides of the Indian plate. Northward plate movement continued during the Late Cretaceous, and a transform fault became active along the Ninety-East Ridge. Rifting between Madagascar and the Seychelles portion of the Indian plate initiated formation of the Mascarene Basin. Extensional faulting occurred as the western part of the Indian plate sheared southward relative to the main plate (Kemal and others, 1992).

Q # 8. Explain importance of conclusions and reference citation in technical report writing. **(20)**

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Roll No. .....

Subject: Mathematics-I Paper: III / MTH-101 Time: 3 Hrs. Marks: 100

NOTE: Attempt any FIVE questions. All questions carry equal marks.

Q.1(a)	Express the following decimals as ratio of integers. i)0.171717... ii) 43.741313....	(5+5)
(b)	Solve for x without using calculator. i) $3^x = 27$ ii) $8^{x+1} = 32$	(5+5)
Q.2(a)	Differentiate $\frac{1}{a}\cos^{-1}\left(\frac{a}{x}\right)$ with respect to x.	(10)
(b)	If $y = (\sin^{-1} x)^2$, show that $(1-x^2)y_2 - xy_1 - 2 = 0$.	(10)
Q.3(a)	Evaluate i) $\int \frac{1}{\sqrt{y}} \sec\sqrt{y}\, dy$ ii) $\int \ln(9x)\, dx$	(5+5)
(b)	Evaluate i) $\int \sqrt{3x+1}dx$ ii) $\int x\sqrt{1+2x^2}\, dx$	(5+5)
Q.4(a)	Express each term as a single logarithm with a coefficient of 1. $4\log 4 log_{10}3 - 6log_{10}(x^2+1) + \frac{1}{2}[log_{10}(x+1) - 2log_{10}3]$	(10)
(b)	Sketch the graph of i) $y = 7-2x$ ii) $y = \lvert x+5 \rvert$	(5+5)
Q.5(a)	Discuss the continuity of the function $f(x) = \begin{cases} \frac{x^2-4}{x-2} & \text{if } x \neq 2 \\ 4 & \text{if } x = 2 \end{cases}$ at $x = 0$.	(10)
(b)	If $z = \frac{(2-3i)(-3+4i)}{7+4i}$, then find $\lvert z \rvert$.	(10)
Q.6(a)	Find $\frac{dy}{dx}$, $y = \sqrt{4x+\sqrt{2x+\sqrt{5x}}} + \cos(45)$	(10)
(b)	Solve each inequality and sketch the solution on a coordinate line. i) $t+8 \geq \frac{1}{3}$ ii) $\lvert x+1 \rvert \leq 6$	(5+5)
Q.7(a)	i) Find $\sin\theta$ and $\tan\theta$, given that $\sin\theta = \frac{5}{2}$. ii) Find $\tan\theta$ and $\csc\theta$, given that $\cos\theta = \frac{1}{8}$.	(5+5)
(b)	Find $\frac{dy}{dx}$, $y = \frac{\sin x \sec x}{1+x\tan x}$	(10)
Q.8(a)	Find $(1+5i)^{-10}$ using DeMoivre's Formula.	(10)
(b)	Convert the following complex numbers to its polar forms. i) $z = 1+5i$ ii) $z = 3-i$	(5+5)

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Roll No. .....

Subject: Islamic Studies & Pakistan Studies

Paper: I (A) & I (B) / IPS-101 (A) & IPS-101 (B)

Time: 3 Hrs. Marks: 100

USE SEPARATE ANSWER BOOK FOR EACH PART

I (A) Islamic Studies

نوٹ: کوئی سے تین سوال حل کریں۔ تمام سوالوں کے نمبر برابر ہیں۔

سوال نمبر 1: درج ذیل آیت کا عنوان تجویز کریں اور اس کا بامحاورہ ترجمہ اور تفسیر لکھیں۔ 2+13+5

يَآ اَيُّـهَا الَّـذِيْنَ اٰمَنُـوْا لَا يَسْخَرْ قَوْمٌ مِّنْ قَوْمٍ عَسٰٓى اَنْ يَّكُوْنُـوْا خَيْـرًا مِّنْـهُـمْ وَلَا نِسَآءٌ مِّنْ نِّسَآءٍ عَسٰٓى اَنْ يَّكُنَّ خَيْـرًا مِّنْهُنَّ ۖ

سوال نمبر 2: درج ذیل حدیث کا مناسب عنوان بامحاورہ ترجمہ اور تشریح کریں:۔ 2+13+5

عَنْ أَنَسٍ، قَالَ: قَالَ النَّبِيُّ صَلَّى اللهُ عَلَيْهِ وَسَلَّمَ: "لَا يُؤْمِنُ أَحَدُكُمْ حَتَّى أَكُونَ أَحَبَّ إِلَيْهِ مِنْ وَالِدِهِ وَوَلَدِهِ وَالنَّاسِ أَجْمَعِينَ"

سوال نمبر 3: بحیثیت سپہ سالار اور مبلغ آپ ﷺ کا کردار کیا تھا۔ 10+10

سوال نمبر 4: فضائل اخلاق سے متعلق نوٹ لکھیں۔ 20

I (B) Pakistan Studies

NOTE: Attempt any TWO questions. All questions carry equal marks.

نوٹ: کوئی سے دو سوالات کے جوابات تحریر کیجیے۔ تمام سوالات کے نمبر یکساں ہیں۔

1. Write a comprehensive essay on Two Nation Theory in the light of speechs and writings of Quaid-e-Azam and Allama Iqbal.

۱۔ علامہ اقبال اور قائداعظم کی تقاریر اور تحریروں کی روشنی میں دو قومی نظریہ پر ایک جامع مضمون قلمبند کیجیے۔

2. Write note on objectives Resolution 1949.

۲۔ قرارداد مقاصد 1949ء پر نوٹ تحریر کیجیے۔

3. Write note on geographical importance of Pakistan.

۳۔ پاکستان کی جغرافیائی اہمیت پر نوٹ قلمبند کیجیے۔

4. Write a comprehensive essay on Pakistan relations with Islamic Countries.

۴۔ پاکستان کے اسلامی ممالک کے ساتھ تعلقات پر ایک جامع مضمون قلمبند کیجیے۔

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Roll No. .....

Subject: Paleontology Paper: VIII / GEOL-103 Time: 3 Hrs. Marks: 75

NOTE: Attempt any FIVE questions. All questions carry equal marks. Draw figures where necessary.

Q-1. Describe "Geologic Time Scale" in detail. Also explain principles of relative age dating. **(15)**

Q-2. What are Fossils and how they are formed? Describe different types of Fossils. **(15)**

Q-3. Classify Foraminifera on the basis of shell forms and composition of Foraminiferal test. **(15)**

Q-4. What are Brachiopods? Classify Brachiopods by representing major features of Brachiopod morphology. **(15)**

Q-5. Explain external morphology of Trilobites and describe their modes of life. **(15)**

Q-6. What are Bryozoans? Differentiate the classes of Marine Bryozoans by discussing their morphological features. **(15)**

Q-7. A) Write details on morphology and shell structure of the Class Bivalvia. (10)

B) Differentiate between Infaunal and Epifaunal Bivalves. (5)

Q-8. A) What are Ammonoids? Explain the evolutionary history of Ammonoid suture. (8)

B) Describe Ammonite hard part morphology in detail. (7)

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Roll No. .....

Subject: General Geology Paper: VII / GEOL-102 Time: 3 Hrs. Marks: 100

NOTE: Attempt ALL questions.

Q.No. 1 Define any TEN of the following Geologic terms. 20

i. Asthenosphere
ii. Batholith
iii. Cross Bedding
iv. Dyke
v. Foliation
vi. Isostatic Stress
vii. Lithosphere
viii. Law of Cross Cutting Relationship
ix. Meteoroids
x. Mean life time
xi. Pillow Lava
xii. Paleontology
xiii. Rock cycle
xiv. Sedimentary cycle
xv. Seismology
xvi. Seismograph

Q.No.2 Answer and Solve any Five of the Following. 60

i. Discuss Foliated Metamorphic Rocks.
ii. Discuss Agents of Metamorphism and their sources.
iii. Classify volcanoes on the basis of their activity.
iv. Discuss Mineralogical Classification of Igneous Rocks.
v. Discuss and Classify Clastic Sedimentary Rocks.
vi. Explain Joints, types of Joints, and how they are formed.
vii. Draw and label a diagram of the Fault and discuss its various parts in detail.
viii. Define Richter Magnitude Scale. Calculate the magnitude of an earthquake on Richter scale, if the maximum amplitude of ground vibration produced by the seismic waves and recorded on Standard Wood Anderson Torsion Seismograph, situated at 150 km is 25.2mm.

Q.No. 3 Write short notes on any FOUR of the following 20

i. Crust
ii. Specific Gravity of Minerals
iii. Hardness of minerals
iv. Tenacity
v. Crystal Structure of Minerals
vi. Specific Gravity of Minerals
vii. Classification of Beds on the basis of layer Thickness