

नेपाल सरकार
शिक्षक सेवा आयोग
निम्न माध्यमिक तह, तृतीय श्रेणी, शिक्षक पदको
खुला प्रतियोगितात्मक विषयगत परीक्षा – २०८१

विषय : गणित विज्ञान

समय : ३ घण्टा

पूर्णाङ्क : १००

उत्तीर्णाङ्क : ४०

सबै प्रश्नहरू अनिवार्य छन् । प्रत्येक खण्डका लागि बेग्लाबेग्लै उत्तरपुस्तिका प्रयोग गर्नुपर्नेछ, अन्यथा उत्तर पुस्तिका रद्द हुनेछ ।

Group A

1. How does Piaget's stage of cognitive development influence the design of lower secondary level mathematics curriculum? Discuss the implication of Piaget's learning theory for mathematics and science teaching at the lower secondary level.	5+5
2. Which methods would you use to teach unitary method? Give examples of each of the methods and provide reasons why you used such methods.	5+5
3. How would you compare and analyze the volumes and surface areas of two cylinders A and B ? Describe the impact of altering the size on cylinder's surface area and volume.	5+5
4. a) How do you teach the 'Principle of Conservation of Energy' to the grade VIII students ?	5
b) If 'u', 'v', 'a' and 's' represent initial velocity, final velocity, acceleration and distance covered respectively, then show that $v^2 = u^2 + 2as$.	5
5. What is ecosystem? Describe forest ecosystem with a neat diagram and write its significance for natural balance.	2+8

.....

Group B

6. a) Define hyperbola. Write properties of isometric and non-isometric transformation.	2+3
b) Solve the given equations using the row equivalent method: $2x - y + 4z = -3$ $x - 4z = 5$ $6x - y + 2z = 10$	5
7. a) Find the derivative of $V(\sin x)$ from the first principle.	4
	6

b) Find the equation of line of regression of Y on X:								
X	5	7	11	15	21	27	30	
Y	2	8	14	18	22	24	27	
8. a) Describe the lab preparation process of Nitrogen gas with well labelled diagram.								5
b) What are the differences between ionic and covalent bonds? Explain with suitable examples.								5
9. a) What is simple harmonic motion (SHM) ? Describe the equation of time period of simple pendulum. Also, show that its motion exhibits SHM.								1+4+2
b) Derive a relation between emf, terminal potential difference and internal resistance of a cell.								3
10. a) State and explain parallelogram law of vector addition. Derive the magnitude and direction of the resultant vector.								1+4
b) Differentiate scalar product from the vector product of two vectors with suitable examples.								5
