NTHP Free Practice Set – 50 Questions

IBA Karachi National Talent Hunt Program · English & Mathematics · with answer key

Please read first

• 50 original MCQs written by MCQsAI on the topics in the published NTHP test-preparation outline (Matriculation / HSSC-I English and Mathematics).
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• Suggested time: 60 minutes. Answers and short explanations are on the last pages.

Section	Questions
Mathematics	26
English	24
Total	**50**

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Mathematics

Q1. If A = {1, 2, 3, 4, 5, 6} and B = {2, 4, 6, 8}, then n(A ∪ B) equals

A) 6
B) 10
C) 8
D) 7

Q2. Simplify $(2^5 \times 2^{-3}) \div 2^{-1}$

A) 16
B) 8
C) 2
D) 4

Q3. Factorise $x^2 - 5x - 14$

A) $(x - 7)(x + 2)$
B) $(x - 5)(x + 14)$
C) $(x - 14)(x + 1)$
D) $(x + 7)(x - 2)$

Q4. Solve $3(x - 2) = 2x + 5$

A) $x = 11$
B) $x = 7$
C) $x = 1$
D) $x = 9$

Q5. The solution set of $|x - 3| \leq 2$ is

A) $-5 \leq x \leq -1$
B) $1 < x < 5$
C) $1 \leq x \leq 5$
D) $-1 \leq x \leq 5$

Q6. The sum of three consecutive even numbers is 78. The largest of them is

A) 30
B) 26
C) 28
D) 24

Q7. The roots of $2x^2 - 5x + 2 = 0$ are

A) 1 and 2
B) 2 and 1/2
C) 5/2 and 1
D) −2 and −1/2

Q8. The equation $x^2 + kx + 9 = 0$ has equal roots when k equals

A) ±9
B) ±18
C) ±3
D) ±6

Q9. The decimal 0.45 written as a fraction in simplest form is

A) 45/10
B) 9/20
C) 9/25
D) 11/20

Q10. A town's population increases by 20% in the first year and by 10% in the second year. The overall increase is

A) 31%
B) 32%
C) 30%
D) 35%

Q11. Rs 1,800 is divided in the ratio 2 : 3 : 4. The largest share is

A) Rs 700
B) Rs 600
C) Rs 900
D) Rs 800

Q12. y varies inversely as x, and y = 6 when x = 4. The value of y when x = 8 is

A) 4
B) 12
C) 24
D) 3

Q13. The sum of the first 10 terms of the arithmetic sequence 3, 7, 11, ... is

A) 210
B) 190
C) 39
D) 220

Q14. The sum to infinity of the series 8 + 4 + 2 + 1 + ... is

A) 16
B) 24
C) 32
D) 15

Q15. The determinant of the matrix with rows (2, 1) and (3, 4) is

A) 8
B) −5
C) 5
D) 11

Q16. If A has rows (1, 2) and (3, 4), and B has rows (0, 1) and (1, 0), then AB has rows

A) (0, 2) and (3, 0)
B) (1, 2) and (3, 4)
C) (2, 1) and (4, 3)
D) (3, 4) and (1, 2)

Q17. The value of $\log_2 32 + \log_3 9$ is

A) 5
B) 6
C) 14
D) 7

Q18. The value of $\log_{10} 5 + \log_{10} 20$ is

A) 1
B) 25
C) 2
D) 100

Q19. The area of the triangle with vertices (0, 0), (6, 0) and (0, 4) is

A) 12 square units
B) 10 square units
C) 24 square units
D) 14 square units

Q20. Each interior angle of a regular hexagon measures

A) 108°
B) 150°
C) 135°
D) 120°

Q21. How many different 3-letter arrangements can be made from the letters A, B, C, D, E if no letter is repeated?
A) 125
B) 60
C) 120
D) 10

Q22. A bag has 4 red and 6 blue balls. Two balls are drawn one after the other without replacement. The probability that both are red is
A) 4/15
B) 4/25
C) 2/15
D) 1/5

Q23. The value of sin 30° · cos 60° + tan 45° is
A) 1
B) 7/4
C) 3/2
D) 5/4

Q24. A 10 m ladder leans against a wall and makes an angle of 60° with the ground. The height it reaches on the wall is
A) 10√3 m
B) 5√2 m
C) 5 m
D) 5√3 m

Q25. If f(x) = 2x² − 3x + 1, then f(−2) equals
A) 15
B) 3
C) 11
D) −1

Q26. A can finish a job in 12 days and B can finish it in 18 days. Working together, they will finish it in
A) 9 days
B) 7.2 days
C) 6 days
D) 15 days

English

Q27. Choose the word closest in meaning to "diligent".
A) hesitant
B) careless
C) hardworking
D) lazy

Q28. Choose the word opposite in meaning to "frugal".
A) extravagant
B) economical
C) thrifty
D) careful

Q29. Although the evidence seemed _____, the judge ordered a further inquiry.
A) imaginary
B) trivial
C) conclusive
D) irrelevant

Q30. The minister's remarks were so _____ that listeners could not tell whether he supported or opposed the bill.

A) ambiguous
B) candid
C) hostile
D) emphatic

Q31. Which part of the sentence is incorrect?
"Neither of the two candidates were satisfied with the result."

A) were
B) with the result
C) Neither of
D) satisfied

Q32. Which part of the sentence is incorrect?
"She has been living in Karachi since five years."

A) has been living
B) in Karachi
C) since
D) five years

Q33. Which sentence is grammatically correct?

A) Hardly did he entered when the bell rang.
B) Hardly he had entered when the bell rang.
C) Hardly had he entered than the bell rang.
D) Hardly had he entered when the bell rang.

Q34. Read the passage.

In many villages of Sindh, electricity cuts last for hours every day. To deal with this problem, a small group of engineers installed solar panels on the roof of a village school. The panels now run the lights and fans in every classroom, and in the evening the school is used by adults who attend literacy classes. Villagers say the biggest change is not the electricity itself but the way the school has become a centre of community life. Critics argue that solar panels are expensive and need regular maintenance, but the engineers have trained two local youths to look after the system.

What is the main idea of the passage?

A) Solar panels are too expensive for villages.
B) A solar-powered school has become a community centre as well as a place for classes.
C) Electricity cuts have ended across Sindh.
D) Engineers should stop working in villages.

Q35. Read the passage.

In many villages of Sindh, electricity cuts last for hours every day. To deal with this problem, a small group of engineers installed solar panels on the roof of a village school. The panels now run the lights and fans in every classroom, and in the evening the school is used by adults who attend literacy classes. Villagers say the biggest change is not the electricity itself but the way the school has become a centre of community life. Critics argue that solar panels are expensive and need regular maintenance, but the engineers have trained two local youths to look after the system.

According to the passage, what do critics say about solar panels?

A) They are expensive and need regular maintenance.
B) They are unsafe for children.
C) They are too noisy for classrooms.
D) They do not work in the evening.

Q36. Read the passage.

In many villages of Sindh, electricity cuts last for hours every day. To deal with this problem, a small group of engineers installed solar panels on the roof of a village school. The panels now run the lights and fans in every classroom, and in the evening the school is used by adults who attend literacy classes. Villagers say the biggest change is not the electricity itself but the way the school has become a centre of community life. Critics argue that solar panels are expensive and need regular maintenance, but the engineers have trained two local youths to look after the system.

The word "maintenance" in the passage is closest in meaning to

A) design
B) payment
C) upkeep
D) removal

Q37. Read the passage.

Reading a little every day is more useful than reading for many hours once a week. The mind needs time to connect new ideas with old ones, and short daily sessions give it that time. A student who reads twenty pages each evening will finish several books in a year without feeling tired, while one who tries to read an entire book in a single night often forgets most of it.

What is the main idea of the passage?

A) Books should be read in a single night.
B) Short daily reading helps memory more than occasional long sessions.
C) Students should avoid reading in the evening.
D) Reading is useful only for exams.

Q38. Read the passage.

Reading a little every day is more useful than reading for many hours once a week. The mind needs time to connect new ideas with old ones, and short daily sessions give it that time. A student who reads twenty pages each evening will finish several books in a year without feeling tired, while one who tries to read an entire book in a single night often forgets most of it.

According to the passage, a student who reads an entire book in one night is likely to

A) feel more rested
B) finish several books a year
C) remember every detail
D) forget most of it

Q39. Fill in the blank.
"Last year, our school _____ a tree plantation drive."

A) arranging
B) arrange
C) arranged
D) was arranged

Q40. Fill in the blank.
"Students _____ over three hundred saplings in a single week."

A) plant
B) planted
C) planting
D) had plant

Q41. In which sentence is the -ing word a gerund?
A) The swimming children shouted.
B) We saw him swimming across the river.
C) She is swimming in the river.
D) Swimming is good exercise.

Q42. By next June, she _____ her degree.
A) completes
B) is completing
C) will complete
D) will have completed

Q43. He _____ swim when he was five years old.
A) could
B) shall
C) may
D) can

Q44. He was accused _____ stealing the bicycle.
A) to
B) of
C) for
D) with

Q45. He is _____ M.Sc. in Physics.
A) an
B) a
C) the
D) no article

Q46. The number of applicants for the scholarship _____ increased this year.
A) have
B) has
C) were
D) are

Q47. Which sentence is correct?
A) Walking along the river, we thought the sunset looked beautiful.
B) Walking along the river, beautiful looked the sunset.
C) Walking along the river, the sunset looked beautiful.
D) The sunset, walking along the river, looked beautiful.

Q48. _____ he was tired, he continued working.
A) Unless
B) Although
C) Since
D) Because

Q49. Which sentence is correctly punctuated?
A) It's a pleasant day isn't it?
B) It's a pleasant day, isn't it?
C) Its a pleasant day isnt it?
D) Its a pleasant day, isn't it?

Q50. Arrange the sentences in the correct order.

P. As a result, many countries have banned single-use plastic bags.

Q. Plastic waste is polluting rivers and oceans.

R. Marine animals often mistake it for food.

S. However, enforcing these bans remains difficult.

A) PQRS

B) QPRS

C) QRPS

D) RQPS

Answer Key

Q1: D	Q2: B	Q3: A	Q4: A	Q5: C	Q6: C	Q7: B	Q8: D	Q9: B	Q10: B
Q11: D	Q12: D	Q13: A	Q14: A	Q15: C	Q16: C	Q17: D	Q18: C	Q19: A	Q20: D
Q21: B	Q22: C	Q23: D	Q24: D	Q25: A	Q26: B	Q27: C	Q28: A	Q29: C	Q30: A
Q31: A	Q32: C	Q33: D	Q34: B	Q35: A	Q36: C	Q37: B	Q38: D	Q39: C	Q40: B
Q41: D	Q42: D	Q43: A	Q44: B	Q45: A	Q46: B	Q47: A	Q48: B	Q49: B	Q50: C

Next step

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Explanations

Q1 · D · Sets and Number Systems · easy
A ∪ B = {1, 2, 3, 4, 5, 6, 8}, which has 7 elements.

Q2 · B · Factorization, Exponents and Expressions · easy
Combine the powers: 5 − 3 − (−1) = 3, so the value is $2^3 = 8$.

Q3 · A · Factorization, Exponents and Expressions · medium
We need two numbers with product −14 and sum −5. These are −7 and +2.

Q4 · A · Equations and Inequalities · easy
3x − 6 = 2x + 5, so x = 11.

Q5 · C · Equations and Inequalities · medium
|x − 3| ≤ 2 means −2 ≤ x − 3 ≤ 2, so 1 ≤ x ≤ 5.

Q6 · C · Algebraic Representation · medium
Let the numbers be x, x + 2, x + 4. Then 3x + 6 = 78, so x = 24 and the largest is 28.

Q7 · B · Quadratic Equations · medium
Factorise: (2x − 1)(x − 2) = 0, so x = 1/2 or x = 2.

Q8 · D · Quadratic Equations · hard
Equal roots need a zero discriminant: $k^2 - 4(1)(9) = 0$, so $k^2 = 36$ and k = ±6.

Q9 · B · Decimal Fractions and Percentages · easy
0.45 = 45/100 = 9/20.

Q10 · B · Decimal Fractions and Percentages · medium
1.20 × 1.10 = 1.32, so the overall increase is 32%.

Q11 · D · Ratio, Proportion, Rate and Variations · easy
There are 9 parts in total and one part is Rs 200. The largest share is 4 × 200 = Rs 800.

Q12 · D · Ratio, Proportion, Rate and Variations · medium
xy is constant: 6 × 4 = 24. So y = 24 ÷ 8 = 3.

Q13 · A · Sequences and Series · medium
S10 = (10/2)[2(3) + 9(4)] = 5 × 42 = 210.

Q14 · A · Sequences and Series · medium
Here a = 8 and r = 1/2, so S = a ÷ (1 − r) = 8 ÷ (1/2) = 16.

Q15 · C · Matrices and Determinants · easy
Determinant = (2)(4) − (1)(3) = 8 − 3 = 5.

Q16 · C · Matrices and Determinants · medium
Multiplying by B swaps the columns of A, so the rows become (2, 1) and (4, 3). The last option is BA, not AB.

Q17 · D · Logarithms · medium
$\log_2 32 = 5$ and $\log_3 9 = 2$, so the sum is 7.

Q18 · C · Logarithms · medium
log 5 + log 20 = log (5 × 20) = log 100 = 2.

Q19 · A · Plane, Solid and Coordinate Geometry · medium
It is a right triangle with base 6 and height 4: ½ × 6 × 4 = 12.

Q20 · D · Plane, Solid and Coordinate Geometry · easy
Interior angle = (6 − 2) × 180° ÷ 6 = 120°.

Q21 · B · Permutation, Combination and Probability · medium
5P3 = 5 × 4 × 3 = 60.

Q22 · C · Permutation, Combination and Probability · hard
(4/10) × (3/9) = 12/90 = 2/15.

Q23 · D · Trigonometry · medium
(1/2)(1/2) + 1 = 1/4 + 1 = 5/4.

Q24 · D · Trigonometry · hard
Height = 10 sin 60° = 10 × (√3/2) = 5√3 m, about 8.66 m.

Q25 · A · Functions and Graphs · medium
f(−2) = 2(4) − 3(−2) + 1 = 8 + 6 + 1 = 15.

Q26 · B · Word Problems · hard
Together they do 1/12 + 1/18 = 5/36 of the job each day, so they need 36/5 = 7.2 days.

Q27 · C · Vocabulary · easy
"Diligent" means showing steady, careful effort, which is hardworking.

Q28 · A · Vocabulary · medium
"Frugal" means careful with money; the opposite is extravagant (spending too freely).

Q29 · C · Sentence Correction and Completion · medium
"Although" signals contrast: the judge asked for more inquiry even though the evidence looked conclusive.

Q30 · A · Sentence Correction and Completion · hard
Remarks that leave listeners unsure of his position are ambiguous.

Q31 · A · Error Identification · medium
"Neither" takes a singular verb, so it should be "was satisfied".

Q32 · C · Error Identification · easy
With a period of time (five years) we use "for", not "since".

Q33 · D · Sentence Correction and Completion · hard
"Hardly" is followed by an inverted auxiliary (had he) and pairs with "when", not "than".

Q34 · B · Reading Comprehension · easy
The passage describes how the solar project helped the school and the whole village community.

Q35 · A · Reading Comprehension · easy
The passage says critics argue that solar panels are expensive and need regular maintenance.

Q36 · C · Reading Comprehension · easy
"Maintenance" means keeping something in working order, which is upkeep.

Q37 · B · Reading Comprehension · medium
The writer compares short daily sessions with one long session and favours the daily habit.

Q38 · D · Reading Comprehension · easy
The passage says such a student often forgets most of the book.

Q39 · C · Cloze Passages · easy
The sentence needs the simple past tense with "school" as the doer: "arranged".

Q40 · B · Cloze Passages · easy
The action is finished and in the past: "planted".

Q41 · D · Grammatical Concepts · hard
In "Swimming is good exercise" the -ing word works as a noun (the subject). In the others it is a participle.

Q42 · D · Tenses and Modal Verbs · medium
An action finished before a future time uses the future perfect: will have completed.

Q43 · A · Tenses and Modal Verbs · easy
"Could" expresses ability in the past.

Q44 · B · Verbs, Articles and Prepositions · easy
The correct phrase is "accused of".

Q45 · A · Verbs, Articles and Prepositions · hard
"M.Sc." begins with the vowel sound "em", so we use "an".

Q46 · B · Subject-Verb Agreement · medium
"The number of" is singular, so the verb is "has".

Q47 · A · Sentence Modifiers · hard
The opening phrase must describe the people walking (we), not the sunset.

Q48 · B · Conjunctions and Clauses · easy
The two clauses contrast, so "although" fits.

Q49 · B · Punctuation · medium
"It's" is the short form of "it is", and a tag question needs a comma before it.

Q50 · C · Sentence Ordering · medium
The problem (Q) leads to its effect (R), then the result (P: bans), and finally the difficulty (S: However...).