ENTRANCE TEST FOR POST GRADUATE TRAINING PROGRAM
AT KINPOE AND CHASCENT,
PAKISTAN ATOMIC ENERGY COMMISSION
General Science and Engineering Aptitude

(ALL TECHNOLOGIES)

NAME:_____

FATHER'S NAME _____

TECHNOLOGY_____

CENTRE_____ ROLL No._____

ADDRESS_____

_____

TIME ALLOWED: One Hour Maximum Points: 50

Instructions:

- *Write your full name and all other information asked at the top of this page.*
- *Encircle the number of correct answer in the answer sheet attached at the end.*
- *Each correct answer carries +1 point while each incorrect answer caries − 0.25 points.*
- *Carry out your rough work somewhere in the question paper.*
- *If you have to change your answer previously encircled, cross that answer and encircle the new one.*
- *Keep your mobile telephones switched off. Use of mobile phone as a calculator is also not allowed*

58925800. A bullet of mass 10 g is fired vertically upward and it reaches to the highest point in 10 seconds. Which of the following figures is nearer to its maximum height above the firing position?

DDDDDDDDDDDDDDDDDDDDDDDD) 10 m
EEEEEEEEEEEEEEEEEEEEEEEE) 22 m
FFFFFFFFFFFFFFFFFFFFFFFF) 30 m
GGGGGGGGGGGGGGGGGGGGGGGG) 42 m
HHHHHHHHHHHHHHHHHHHHHHHH) None of the above

58945768. A bird flies from the top of a 5 m tall tree to the top of a 30m tall tree at a speed of 10 m/s. The trees are 30 m apart from each other. If the sun is exactly overhead, the speed of the shadow of the bird would be nearer to

HHHHHHHHHHHHHHHHHHHH) 10 m/s
IIIIIIIIIIIIIIIIII) 9.7 m/s
JJJJJJJJJJJJJJJJJ) 8.7 m/s
KKKKKKKKKKKKKKKKKK) 7.7 m/s
LLLLLLLLLLLLLLLLLL) none of the above

58946560. The dot product of two rectangular components of a vector is

FFFFFFFFFFFFFFFFFF) equal to the vector itself.
RRRRRRRRRRRRRRRRRR) equ
al to the square of the vector
DDDDDDDDDDDDDDDDDDDD) equal to half of the vector
JJJJJJJJJJ) equal to zero
LLLLLLL) None of the above

40393948. A heavy and a light body have equal kinetic energies. Which one has greater momentum

FFFFFFFF) Heavy body
RRRRRRRR) Light body
FFFFFF) Both have the same momentum
RRRRRR) No one has momentum
DDDDDDD) It can not be ascertained from the given data

40372884. T
wo cylindrical tanks A and B, 2 m in diameter and 4 m in diameter are filled with water upto 5 m height as shown in the figure. Pressure at the bottom of A

PPPPPPP) is greater than the pressure at the bottom of B
QQQQQQQ) is less than the pressure at the bottom of B
RRRRRRR) is equal to the pressure at the bottom of B
SSSSSSS) can not be correlated to the pressure at the bottom of B
TTTTTTT) none of the above

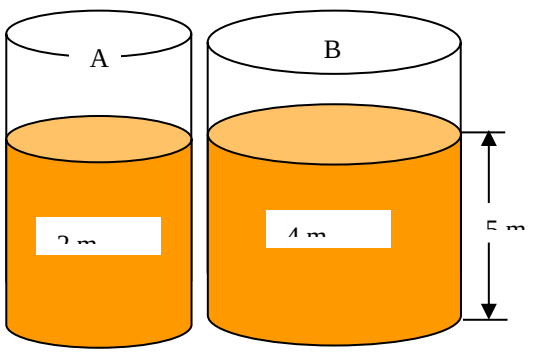


Figure for question No. 9

40372885. Water quantity in the tank A of the above problem is nearer to

PPPPPPP) 25700 kg
QQQQQQQ) 20700 kg
RRRRRRR) 15700 kg
SSSSSSS) 10700 kg
TTTTTTT) 5700 kg

40373676. One mole of O_2, at standard temperature and pressure conditions, has

NNNNNNNNNNNNNNNNNNNNNNNN) a mass about 32 gram
ZZZZZZZZZZZZZZZZZZZZZZZZ) has a volume about 22.4 litre
LLLLLLLLLLLLLLLLLLLLLLLL) has 6.02×10^{-23} number of molecules
XXXXXXXXXXXXXXXXXXXXXXXX) all A) , B) and C)
JJJJJJJJJJJJJJJJJJJJJJJJ) A) and B)

40400684. Conduction heat transfer through a body depends upon

HHHHHHHHHHHHHHHHHHHHHHHHHHHH) area of the body
TTTTTTTTTTTTTTTTTTTTTTTTTT) thickness of the body
FFFFFFFFFFFFFFFFFFFFFFFFFF) length of the body
RRRRRRRRRRRRRRRRRRRRRRRRRR) All of the above
DDDDDDDDDDDDDDDDDDDDDDDDDDDD) Non of the above

40405436. The amount of heat produced when unit mass of a solid fuel is completely burnt under normal conditions is called;
BBBBBBBBBBBBBBBBBBBBBBBBBBB) Specific heat of fuel
NNNNNNNNNNNNNNNNNNNNNNNNNNNN) Co-efficient of fuel
ZZZZZZZZZZZZZZZZZZZZZZZZZZZZ) Calorific value of fuel
L) Thermal efficiency of fuel
X) None of the above

40379392. If water flows at a rate of 360 T/h in a pipe having a cross-section area of $0.1m^2$, the velocity of flow is
JJJJJJJJJJJJJJJ) 360 m/s
VVVVVVVVVVVVVVVVV) 36 m/s
HHHHHHHHHHHHHHHHHH) 3.6 m/s
TTTTTTTTTTTTTTTTT) 1 m/s
FFFFFFFFFFFFFFFFFF) None of the above

40384144. The S.I unit of thermal conductivity is
RRRRRRRRRRRRRRRRRR) W/(r
SSSSSSSSSSSSSSSSSS) J/K
TTTTTTTTTTTTTTTTTT) m/(V
UUUUUUUUUUUUUUUUUU) W/m
VVVVVVVVVVVVVVVVVV) None of the abone

W ≡watt
J ≡Joule
K ≡Kelvin

40384145. The thermal conductivity of copper is_____ the thermal conductivity of CO_2
RRRRRRRRRRRRRRRRRR) greater than.
SSSSSSSSSSSSSSSSSS) less than
TTTTTTTTTTTTTTTTTT) equal to
UUUUUUUUUUUUUUUUUU) can't be filled in until the temperature is known.
VVVVVVVVVVVVVVVVVV) can't be filled in until the pressure of CO_2 is known

40384936. The linear speed of a body revolving at 3000 rpm in a circular path of 0.955 meter radius would be nearest to
BBBBBBBBBBBBBBBBBBBBBBBBBB) 400 m/s
DDDDDDDDDD) 300 m/s
NN) 200 m/s
JJJJJJJJJJ) 100 m/s
XXXXXXXXXXXXXXXX) 80 m/s

58950424. γ- rays
VVVVVVVVVVVVVVVVV) are positively charged particles
HHHHHHHHHHHHHHHHHH) are negatively charged particles
TTTTTTTTTTTTTTTTT) are neutral particles
FFFFFFFFFFFFFFFFFF) can have any charge
XXXXXXXXXXXXXXXXX) are very heavy particles

58955156. A nuclear bomb is more dangerous than an equivalent TNT bomb because
VVVVVVVVVVVVVVVVVV) of more weight
HHHHHHHHHHHHHHHHHH) of radiation
TTTTTTTTTTTTTTTTTT) of bad smell
FFFFFFFFFFFFFFFFFF) both B) and C)
RRRRRRRRRRRRRRRRRR) None of the above

58959908. $_6C^{11}$ and $_5B^{11}$ are two

PPPPPPPPPPPPPPPPPPPPP) isotopes
BBBBBBBBBBBBBBBBBBBBB) isobars
NNNNNNNNNNNNNNNNNNNNN) isotones
ZZZZZZZZZZZZZZZZZZZZZ) isomers
LLLLLLLLLLLLLLLLLLLLL) None of the above

58963869. Mass can be converted to energy. Einstein gave a mathematical relation for this statement. How much energy can be obtained approximately from 1 micro-gram of mass according to that formula?
LLLLLLLLLLLLLLLLLLLLL) 1 micro-joule
MMMMMMMMMMMMMMMMMMMMM) 900 joules
NNNNNNNNNNNNNNNNNNNNN) 90000 joules
OOOOOOOOOOOOOOOOOOOOO) 9×10^9 joules
PPPPPPPPPPPPPPPPPPPPP) 90×10^9 joules

58964660. Which of the following is/are real number(s)?
JJJJJJJJJJJJJJJJJJJJJ) 0
VVVVVVVVVVVVVVVVVVVVV) -1
HHHHHHHHHHHHHHHHHHHHH) π
TTTTTTTTTTTTTTTTTTTTT)
FFFFFFFFFFFFFFFFFFFFF) All of the above

58969412. A quadratic equation has always
DDDDDDDDDDDDDDDDDDDDD) real roots
PPPPPPPPPPPPPPPPPPPPP) imaginary roots
BBBBBBBBBBBBBBBBBBBBB) equal roots
NNNNNNNNNNNNNNNNNNNNN) no roots
ZZZZZZZZZZZZZZZZZZZZZ) None of the above

58974164. $\text{Log}_5 124$ is
X) greater than 0 and less than 1
JJ) greater than 1 and less than 2
VV) greater than 2 and less than 3
HHH) greater than 3 and less than 4
TTT) None of the above

58978916. If y be the function of x as given in the figure, then =_____
RRRR) 1
DDDDD) 0
PPPPP) -1
BBBBBB) 0.5
RRRRRRRRRRR) None of the above

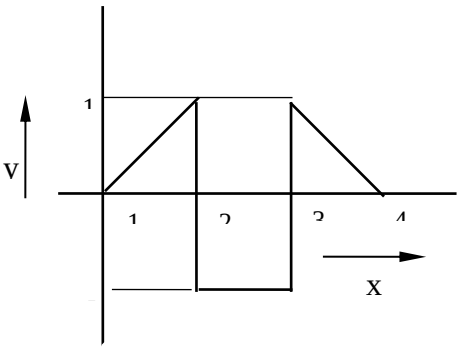


Figure for question 34 –

40420608. In the figure, $\frac{dy}{dx}$ during the interval (1 - 2) is_____
PPPPPPPPPPPP) 1
BBBBBBBBBBBBB) 0
NNNNNNNNNNNNN) -1
ZZZZZZZZZZZZZ) 0.5
LLLLLLLLLLLLLL) None of the above

40425360. In the figure, $\int_2^3 y dx$ =_____
JJJJJJJJJJJJJJ) 1
VVVVVVVVVVVVVVV) 0
HHHHHHHHHHHHHHHH) -1
TTTTTTTTTTTTTTTT) 0.5
FFFFFFFFFFFFFFFFF) None of the above

TITLE PAGE

40430112. In the figure, $\frac{dy}{dx}$ during the interval (2 - 3) is_____

DDDDDDDDDDDDDDDDDD) 1
PPPPPPPPPPPPPPPPPP) 0
BBBBBBBBBBBBBBBBBB) -1
NNNNNNNNNNNNNNNNNN) 0.5
ZZZZZZZZZZZZZZZZZZ) None of the above

40434864. The equation of a line with slope – 2 and passing through the point (2,3) is

LLLLLLLLLLLLLLLLLLL) x – y = 0
MMMMMMMMMMMMMMMMMMM) x + 4y = 16
NNNNNNNNNNNNNNNNNNN) 2y + 4x – 16 = 0
OOOOOOOOOOOOOOOOOOO) x + 2y +16 = 0
PPPPPPPPPPPPPPPPPPP) none of the above

40435656. The slope of the equation $y - x^2 + 7 = 0$ is

RRRRRRRRRRRRRRRRRRRR) -1
DDDDDDDDDDDDDDDDDDDD) +1
PPPPPPPPPPPPPPPPPPPP) 0
BBBBBBBBBBBBBBBBBBBB) $2x$
NNNNNNNNNNNNNNNNNNNN) Slope is not defined for such an expression

40571508. The probability to draw a QUEEN OR a KING from a deck of 52 cards is

LLLLLLLLLLLLLLLLLLLLLLLL) 52
XXXXXXXXXXXXXXXXXXXXXXXX) 13
JJJJJJJJJJJJJJJJJJJJJJJJ) 8
VVVVVVVVVVVVVVVVVVVVVVVV) 2/13
HHHHHHHHHHHHHHHHHHHHHHHH) None of the above

40576260. How many possibilities are there to select a team of 3 members from 9 players?

FFFFFFFFFFFFFFFFFFFFFFFF) 20
RRRRRRRRRRRRRRRRRRRRRRRR) 34
D) 70
P) 84
BB) None of the above

40581012. A bus leaves a station at 5 O'clock with an average speed of 50 km/h. A car leaves the same station at 8 O'clock with an average speed of 80 km/h. At what time will the car catch the bus

ZZ) 11 O'clock
LLL) 12 O'clock
XXX) 1 O'clock
JJJJ) 30 past 1 O'clock
VVVV) None of the above

40585764. Oil in the transformer is used for

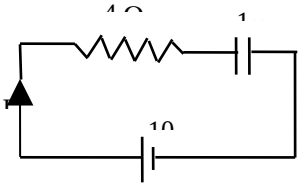
TTTTT) lubrication purposes
FFFFFF) cooling and insulation
RRRRRR) killing the germs
DDDDDDD) all of the above
PPPPPPP) None of the above

40590516. Load shedding is mainly done to

NNNNNNNN) store electrical energy for later use
ZZZZZZZZ) increase electrical energy in the grid

LLLLLLLLL) reduce energy losses
XXXXXXXXX) all of the above
JJJJJJJJJ) None of the above

40595268. How much current (I) will flow after a long time in the given circuit.



HHHHHHHHHHH) 10 A
TTTTTTTTTTT) 2.5 A
FFFFFFFFFFF) 2 A
RRRRRRRRRRR) 0 A
DDDDDDDDDDDDD) None of the above

40600020. Transformer is a device which can
BBBBBBBBBBBBB) increase the electrical energy
NNNNNNNNNNNNN) increase the voltage
ZZZZZZZZZZZZZ) increase the current
LLLLLLLLLLLLLL) both B) and C)
XXXXXXXXXXXXXX) None of the above

40604772. The equivalent resistance across A & B in the given circuit is
VVVVVVVVVVVVVVV) 5 Ω
HHHHHHHHHHHHHHHHH) 22 Ω
TTTTTTTTTTTTTTTT) 18 Ω
FFFFFFFFFFFFFFFFF) 2 Ω
RRRRRRRRRRRRRRRRR) None of the above

40609524. Choose fourth member for the team of Jamal, Kamal, Latif
PPPPPPPPPPPPPPPPP) Akram
BBBBBBBBBBBBBBBBBB) Majid
NNNNNNNNNNNNNNNNNN) Aman
ZZZZZZZZZZZZZZZZZZ) Ali
LLLLLLLLLLLLLLLLLLL) Ijaz

40614276. Separate the odd member from "Iron, Gold, Carbon, Silver"
JJJJJJJJJJJJJJJJJJJ) Iron
VVVVVVVVVVVVVVVVVVVV) Gold
HHHHHHHHHHHHHHHHHHHH) Carbon
TTTTTTTTTTTTTTTTTTTT) Silver
FFFFFFFFFFFFFFFFFFFF) No one is odd

40619028. Complete the series 23, 32, 43, 56, 71, -----, -----
DDDDDDDDDDDDDDDDDDDDDDDD) 100, 127
PPPPPPPPPPPPPPPPPPPPPPP) 98, 128
BBBBBBBBBBBBBBBBBBBBBBB) 88, 107
NNNNNNNNNNNNNNNNNNNNNNNN) 92, 111
ZZZZZZZZZZZZZZZZZZZZZZZZ) None of the above

40623780. The population of Bacteria in some blood sample was observed to be 5.3 millions. The rate of increase in population was proportional to the present population. The population was observed to be 6.4 million after 10 hours. Estimate population after further 20 hours.
LLLLLLLLLLLLLLLLLLLLLLLLL) 7.33 million
MMMMMMMMMMMMMMMMMMMMMMMM) 8.33 million
NNNNNNNNNNNNNNNNNNNNNNNNN) 9.33 million
OOOOOOOOOOOOOOOOOOOOOOOOO) 10.33 million
PPPPPPPPPPPPPPPPPPPPPPPPP) 11.33 million

40623781. The half life of some radioactive element is 24 days. How much mass will remain unchanged of 100g after 48 days?
LLLLLLLLLLLLLLLLLLLLLLLLL) 0 g
MMMMMMMMMMMMMMMMMMMMMMMM) 25 g
NNNNNNNNNNNNNNNNNNNNNNNNN) 50 g

OOOOOOOOOOOOOOOOOOOOOOOOOO) 75 g
PPPPPPPPPPPPPPPPPPPPPPPPP) 100 g

40624572. The maximum value of pH for any solution is
JJJJJJJJJJJJJJJJJJJJJJJJJ) 1
VVVVVVVVVVVVVVVVVVVVVVVVVV) 10
HHHHHHHHHHHHHHHHHHHHHHHHHHHHH) 100
TTTTTTTTTTTTTTTTTTTTTTTTTT) 1000
FFFFFFFFFFFFFFFFFFFFFFFFFF) None of the above

40629324. Identify as acid
D) H_3BO_3
P) HOH
BB) CH_3Cl
NNNNNNNNNNNNNNNNNNNNNNNNN) H_2O_2
ZZZZZZZZZZZZZZZZZZZZZZZZZ) All of the above

59049720. If $X = A\,t + B\,t^2$ where X is in kilograms and t is in hours, the unit of B will be
XXXXXXXXXXXXXXXXXXXXXXXXX) kg^2/hr
JJJJJJJJJJJJJJJJJJJJJJJJJ) kg/hr^2
VVVVVVVVVVVVVVVVVVVVVVVVV) kg/hr
HHHHHHHHHHHHHHHHHHHHHHHHHHHHH) kg
TTTTTTTTTTTTTTTTTTTTTTTTT) None of the above

59054472. Light year is a unit of
RRRRRRRRRRRRRRRRRRRRRRRRRRRRR) light intensity
D) very long time
P) weight
BB) power
NN) None of the above

59059224. If A be a binary number then =_____
LLL) A
MMM)
NNN) 0
OOO) 1
PPP) None of the above

59059225. A 1.5 kW electrical motor was run on full load for 4 hours. Consider the efficiency of the motor to be 100%, how much energy was spent?
LLL) 21.6×10^6 Joules.
MMM) 21.6×10^3 Joules
NNN) 43.2×10^4 Joules
OOO) No energy is consumed
PPP) None of the above

59059226. If P, U and V be the pressure, internal energy and volume of a gas sample, the enthalpy, h, is defined by the equation
LLL) $h = P - UV$
MMM) $h = PU - V$
NNN) $h = U + PV$
OOO) $h = P + UV$
PPP) None of the above

59059227. MeV (Mega electron Volt) is unit of energy
LLL) It is equivalent to 1 joule
MMM) It is equivalent to 1.6×10^{-19} joules
NNN) It is equivalent to 6.02×10^{23} joules
OOO) It is equivalent to 1 erg.
PPP) It is not a unit of energy

59059228. A certain element with atomic number Z and mass number A released one alpha particle. Which of the following will be the Z and A numbers of the new-formed nucleus?

LLL) Z + 4 , A + 4
MMM) Z – 4 , A – 4
NNN) Z – 4 , A – 2
OOO) Z + 4 , A + 2
PPP) none of the above

59059229. Identify the incorrect segment in the sentence given here, and encircle the corresponding letter

LLL) A
MMM) B
NNN) C
OOO) D
PPP) The sentence is correct

59059230. The area of a square is 40000cm^2. What will be length of diagonal?

LLL) meter
MMM) 2 meter
NNN) meter
OOO) 200 meter
PPP) None of these

59059231. A spherical balloon is being inflated by inducting air at the rate of 0.08 m^3 per second. Which of the following figures is nearer to the elongation rate of the diameter when it is 40 cm?

LLL) 2.56 m/s
MMM) 1.64 m/s
NNN) 0.64 m/s
OOO) 0.01 m/s
PPP) Not enough data to calculate

ANSWER SHEET

Roll Number: _____

Name:_____Father's Name_____

Technology_____Centre:_____

Q. 1.	A	B	C	D	E	Q 26.	A	B	C	D	E
Q. 2.	A	B	C	D	E	Q 27.	A	B	C	D	E
Q. 3.	A	B	C	D	E	Q 28.	A	B	C	D	E
Q. 4.	A	B	C	D	E	Q 29.	A	B	C	D	E
Q. 5.	A	B	C	D	E	Q 30.	A	B	C	D	E
Q. 6.	A	B	C	D	E	Q 31.	A	B	C	D	E
Q. 7.	A	B	C	D	E	Q 32.	A	B	C	D	E
Q. 8.	A	B	C	D	E	Q 33.	A	B	C	D	E
Q. 9.	A	B	C	D	E	Q 34.	A	B	C	D	E
Q. 10.	A	B	C	D	E	Q 35.	A	B	C	D	E
Q. 11.	A	B	C	D	E	Q 36.	A	B	C	D	E
Q. 12.	A	B	C	D	E	Q 37.	A	B	C	D	E
Q. 13.	A	B	C	D	E	Q 38.	A	B	C	D	E
Q. 14.	A	B	C	D	E	Q 39.	A	B	C	D	E
Q. 15.	A	B	C	D	E	Q 40.	A	B	C	D	E
Q. 16.	A	B	C	D	E	Q 41.	A	B	C	D	E
Q. 17.	A	B	C	D	E	Q 42.	A	B	C	D	E
Q. 18.	A	B	C	D	E	Q 43.	A	B	C	D	E
Q. 19.	A	B	C	D	E	Q 44.	A	B	C	D	E
Q. 20.	A	B	C	D	E	Q 45.	A	B	C	D	E
Q. 21.	A	B	C	D	E	Q 46.	A	B	C	D	E
Q. 22.	A	B	C	D	E	Q 47.	A	B	C	D	E
Q. 23.	A	B	C	D	E	Q 48.	A	B	C	D	E
Q. 24.	A	B	C	D	E	Q 49.	A	B	C	D	E
Q. 25.	A	B	C	D	E	Q 50.	A	B	C	D	E

TITLE PAGE

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Correct Answers	Incorrect Answers	Total Marks	Signature of Examiner

TITLE PAGE