

EXAMINATION CODE : **04**

Dist. Code	Registration No.

QUESTION BOOKLET SL. NO.

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QUESTION BOOKLET - PAPER-II

(Before answering questions read carefully the instructions given in the Question Booklet)

SUBJECTS : PHYSICS & MATHEMATICS

MAXIMUM MARKS : 100

MAXIMUM TIME : 2 HOURS

SUBJECT CODE : **PS**

2.00 p.m. to 4.00 p.m.

(Including initial 10 minutes for filling O.M.R. Answer Sheet)

INSTRUCTIONS TO THE CANDIDATES

1. The sealed Question Booklet containing **100** questions enclosed with O.M.R. Answer Sheet is given to you.
2. Verify whether the given question booklet is of the same subject which you have opted.
3. Open the question paper seal carefully and take out the enclosed O.M.R. Answer sheet outside the question booklet. Fill up the general information and shade the relevant circle from Sl. No. 1 to 8 of O.M.R. Answer Sheet. If you fail to fill up the details in the form of alphabet and signs as instructed, you will be personally responsible for consequences arising during scoring of your answer sheet.
4. See that the Question Paper Booklet No. and the O.M.R. Answer Sheet No. are same. If there is difference, inform the Room Supervisor immediately.
5. Enter the Question Paper Booklet Sl. No. in the O.M.R. Answer Sheet at Sl. No. 4.
6. Enter the Code of the subject you have opted at Sl. No. 9 of O.M.R. Answer Sheet and shade the circle given before the subject.
7. During the Examination :-
 - (a) Read each question carefully.
 - (b) Select the correct answer out of the four choices given under each Question.
 - (c) Completely darken/shade the relevant circle against Question No. in the O.M.R. Answer Sheet. For example, in a question paper if Sl. No. 3 is correct answer for Question No. 20, then darken before Sl. No. 20 of O.M.R. Answer Sheet using blue / black ball point pen as follows :
20. ① ② ● ④ (Only example)
8. Rough work should be done only on the blank space provided in the Question Booklet. Rough work should not be done on the O.M.R. Answer Sheet.
9. If more than one circle is darkened for a given question, such answer is treated as wrong and no mark will be given. See the example in O.M.R. Answer Sheet.
10. The candidate and the Room Supervisor should sign in the O.M.R. Sheet at specified place. Candidate has to put left hand thumb impression at specified place compulsorily.
11. Each of the candidate is given carbonless O.M.R. Answer sheet in duplicate. Candidate should return the original O.M.R. Answer sheet to the Room Supervisor and retain carbon copy of the same with him after the examination.
12. Log Tables, Calculator, Pager & Mobile phones are not allowed inside the examination hall.
13. After answering the questions writing the information at Sl. No. 8 is compulsory.
14. Do not use white fluid to change the answer, such answer will not be considered for valuation.
15. **If a candidate is found committing malpractice, such a candidate shall not be considered for recruitment and action will be taken against such candidate as per rules.**

INSTRUCTIONS TO FILL UP THE O.M.R. SHEET

1. There is only one correct answer for each question.
2. Circles must be darkened with **BLUE** or **BLACK** ball point pen only. Do not try to alter the entry.
3. Circle should be darkened completely so that the numeral inside the circle is not visible.
4. Do not make any stray marks on this sheet.
5. This is a carbonless Answer Sheet. There is no need to shade the second copy separately.

❁ Paper-II PS

ENGLISH VERSION

1. Which of the following has zero Baryon number ?
- (1) Δ^{++}
 - (2) Pion
 - (3) Proton
 - (4) Neutron
2. What is a typical conduction voltage for a silicon diode ?
- (1) 0.3 V
 - (2) 1.1 V
 - (3) 0.7 V
 - (4) 0.1 V
3. A 6.2 V zener is rated at 1 watt. The maximum safe current the zener can carry is
- (1) 161 mA
 - (2) 1.61 A
 - (3) 1.61 mA
 - (4) 16.1 mA
4. Energy required to move a body of mass m from the earth's orbit of radius $2R$ to $3R$ is
- (1) $GMm/6R$
 - (2) $GMm/12R$
 - (3) $GMm/3R$
 - (4) $GMm/8R$
5. The rate of flow of liquid through a capillary tube under constant pressure head is Q . If the diameter of the tube is reduced to half and if its length is doubled, then the new rate of flow of fluid will be
- (1) $Q/32$
 - (2) $Q/4$
 - (3) $Q/8$
 - (4) $16Q$
6. The condition for secondary maximum in the Fraunhofer diffraction pattern at a single slit is given by
- (1) $d \sin \theta = 3\lambda/2$
 - (2) $d \sin \theta = \lambda/2$
 - (3) $d \sin \theta = 5\lambda/2$
 - (4) $d \cos \theta = \lambda$
7. A Carnot engine with a source at 500 K and sink at 375 K, consumes 600 K cal of heat in one cycle. The heat rejected to the sink per cycle is
- (1) 250 K cal
 - (2) 550 K cal
 - (3) 450 K cal
 - (4) 350 K cal

Space For Rough Work

8. The characteristic property of light waves which is independent of the nature of the medium through which it passes is
- (1) Amplitude
 - (2) Wavelength
 - (3) Frequency
 - (4) Velocity
9. Interaction between neighbouring dipoles is negligible in the case of
- (1) Antiferromagnetic
 - (2) Paramagnetic
 - (3) Diamagnetic
 - (4) Ferromagnetic
10. The charge and spin of neutrino are respectively
- (1) $(-e, \frac{1}{2})$
 - (2) $(0, \frac{1}{2})$
 - (3) $(0, 0)$
 - (4) $(+e, \frac{1}{2})$
11. A p-n junction diode can be used for
- (1) Modulation
 - (2) Oscillation
 - (3) Rectification
 - (4) Amplification
12. If the ratio of the concentration of electrons to that of holes in a semiconductor is $\frac{7}{5}$ and the ratio of currents is $\frac{7}{4}$, then the ratio of their drift velocities is
- (1) $\frac{4}{7}$
 - (2) $\frac{5}{8}$
 - (3) $\frac{4}{5}$
 - (4) $\frac{5}{4}$
13. In Ruby laser the pumping method used to achieve population inversion is
- (1) Thermal pumping
 - (2) Electrical pumping
 - (3) Chemical pumping
 - (4) Optical pumping

Space For Rough Work

14. The physical quantity that remains constant in adiabatic expansion is

- (1) Temperature
- (2) Entropy
- (3) Enthalpy
- (4) Pressure

15. The wavelength range for γ -rays is

- (1) $100 \text{ \AA} - 1000 \text{ \AA}$
- (2) $0.1 \text{ \AA} - 10 \text{ \AA}$
- (3) $0.001 \text{ \AA} - 0.1 \text{ \AA}$
- (4) $4000 \text{ \AA} - 8000 \text{ \AA}$

16. The graphite rods are used in a nuclear reactor to

- (1) provide shield against leakage of radiation.
- (2) slow down the speed of neutrons.
- (3) control the chain reaction.
- (4) provide fuel.

17. The electrical conductivity of a semiconductor increases when electromagnetic radiation of wavelength shorter than 2480 nm is incident on it. The band gap in eV for the semiconductor is

- (1) 0.7 eV
- (2) 1.1 eV
- (3) 2.5 eV
- (4) 0.5 eV

18. In a common base amplifier the phase difference between the output signal voltage and the input signal voltage is

- (1) $\pi/2$
- (2) $\pi/4$
- (3) π
- (4) zero

19. The spectral series that lies completely in the ultraviolet region is

- (1) Pfund
- (2) Lyman
- (3) Balmer
- (4) Brackett

Space For Rough Work

20. β -decay means emission of electrons from

- (1) Outermost electron orbit
- (2) Radioactive nucleus
- (3) Innermost electron orbit
- (4) A stable nucleus

21. The critical angle of a medium is 40° and a ray incident on it has maximum polarization after reflection. The angle of incidence is

- (1) $58^\circ 43'$ (2) $57^\circ 16'$
- (3) $58^\circ 04'$ (4) $58^\circ 45'$

22. Radius of ${}_{13}\text{Al}^{27}$ nucleus in units of Fermi is

- (1) 4 (2) 1.2
- (3) 2.4 (4) 3.6

23. A coil having a resistance of $120\ \Omega$ s and an inductance of 24H is connected across a power supply of 12V . The time constant of the circuit is

- (1) 6s (2) 0.2s
- (3) 288s (4) 0.5s

24. The inductance of a coil of 120 turns wound on a tube of length 8cm and diameter 6cm with relative permittivity $= 1$ is

- (1) 0.84mH (2) 0.456mH
- (3) 0.638mH (4) 0.72mH

25. Two tuning forks A and B produce notes of frequencies 258Hz and 262Hz respectively. An unknown note sounded with A produces certain beats. When the same note is sounded with B, the beat frequency gets doubled. The frequency is

- (1) 252Hz (2) 254Hz
- (3) 256Hz (4) 250Hz

26. In an experiment, the displacement of the stretched wire of length L is $Y_1 = A \sin(\pi x/L) \sin \omega t$ and energy is E_1 . In another experiment, its displacement is $Y_2 = A \sin(2\pi x/L) \sin 2\omega t$ and energy is E_2 . Then

- (1) $E_2 = 16E_1$
- (2) $E_2 = E_1$
- (3) $E_2 = 2E_1$
- (4) $E_2 = 4E_1$

Space For Rough Work

27. Television was invented by

- (1) Graham Bell
- (2) Marconi
- (3) Thomas Alva Edison
- (4) J L Baird

28. If R_s and R_m are respectively the distances of the geostationary satellite and moon from the centre of the earth, then R_m/R_s is nearly equal to

- (1) $29^{3/2}$
- (2) $(29)^{1/2}$
- (3) $(29)^{2/3}$
- (4) 29

29. A star rotates in a circle of radius 10^8 km at an angular speed of 10^{-6} rad/s. If its radius collapses to 10^6 km, its new angular speed is

- (1) 0.01 rad s^{-1}
- (2) 0.08 rad s^{-1}
- (3) $0.314 \times 10^{-6} \text{ rad s}^{-1}$
- (4) 0.05 rad s^{-1}

30. In Young's double slit experiment the ratio of maximum to minimum intensities in a interference pattern is 25 : 1. The ratio of the amplitudes of the two waves is

- (1) 1 : 5
- (2) 3 : 2
- (3) 4 : 3
- (4) 5 : 1

31. Which of the following is a dextro rotatory substance ?

- (1) Nicotine
- (2) Fruit sugar
- (3) Turpentine
- (4) Cane Sugar

32. An electron moving relativistically has its mass equal to two times rest mass. Its speed is

- (1) $\sqrt{\frac{3}{2}} C$
- (2) $\frac{\sqrt{3}}{2} C$
- (3) $\frac{3}{4} C$
- (4) $\frac{3}{2} C$

Space For Rough Work

33. For a transistor amplifier in common emitter configuration for load impedance of $1\text{ K}\Omega$, $h_{fe} = 50$ and $h_{oe} = 25\ \mu\text{ A/V}$, the current gain is

- (1) -48.78
- (2) -5.2
- (3) -15.7
- (4) -24.8

34. A proton and an alpha particle are subjected to same potential difference V . Their de-Broglie wavelengths λ_p and λ_α will be in the ratio

- (1) $1:2$ (2) $2:1$
- (3) $\sqrt{2}:1$ (4) $4:1$

35. A logic circuit whose output will be in logic 0 state only, when all inputs are in logic 1 state is called

- (1) NAND Gate
- (2) AND Gate
- (3) OR Gate
- (4) NOR Gate

36. The phase difference between the electric and magnetic vectors E and B of an electromagnetic wave in free space is

- (1) $\pi/4$
- (2) 0
- (3) $\pi/2$
- (4) $\pi/3$

37. The Electrostatic potential is the

- (1) Potential difference per unit volume.
- (2) Potential energy per unit time.
- (3) Potential energy per unit charge.
- (4) Potential difference per unit time.

38. The retarding potential required to stop the emission of photoelectrons when a photo-sensitive material of work function 1.2 eV is irradiated with ultraviolet photons of 6.2 eV is

- (1) 7.4 V
- (2) 1.2 V
- (3) 5.0 V
- (4) 6.2 V

Space For Rough Work

39. The carrier frequency ranges of AM and FM radio transmitters are

- (1) AM : 200 to 400 kHz,
FM : 8 to 12 MHz
- (2) AM : 100 to 500 kHz,
FM : 188 to 308 MHz
- (3) AM : 530 to 1600 kHz,
FM : 88 to 108 MHz
- (4) AM : 10 to 700 kHz,
FM : 800 to 900 MHz

40. In normal Zeeman effect, the spectral lines are

- (1) unpolarized and unequally spaced.
- (2) unpolarized and equally spaced.
- (3) polarized and unequally spaced.
- (4) polarized and equally spaced.

41. The excess of pressure inside one soap bubble is three times that inside a second one. The ratio of the volumes of the two bubbles is

- (1) 2 : 27 (2) 1 : 3
(3) 1 : 9 (4) 1 : 27

42. A wire of length L and cross-sectional area A is made up of material of Young's modulus Y . The work done in stretching the wire by an amount ' x ' is given by

- (1) $YA^2/2x$ (2) YAx^2/L
(3) $YAx^2/2L$ (4) YA^2/x

43. Mercury behaves as a superconductor below the critical temperature equal to

- (1) .24 K (2) 4.2 K
(3) 2.4 K (4) .42 K

44. The fine structure of atomic spectral lines is due to

- (1) The higher energy state of the nucleus.
- (2) The interaction of the orbital and spin magnetic moments of the electron.
- (3) The bonding of the atoms.
- (4) The strong force of the nucleus.

Space For Rough Work

45. The temperature of a black body increases from T to $2T$. The factor by which the rate of emission will increase is
- (1) 16 (2) 2
(3) 4 (4) 8
46. The induced emf in a coil is proportional to
- (1) product of magnetic flux and area of the coil.
(2) magnetic flux through the coil.
(3) area of the coil.
(4) rate of change of magnetic flux through the coil.
47. A radioactive isotope has a half life T years. The time after which its activity is reduced to 6.25% of its original activity is
- (1) $8T$ years
(2) $2T$ years
(3) $4T$ years
(4) $6T$ years
48. The masses m_A , m_B and spring constants k_A ; k_B of two quantum oscillators A and B satisfy $m_A = 2 m_B$; $k_A = 2k_B$. If E_A and E_B are the ground state energies of A and B, then
- (1) $E_A = 4E_B$
(2) $E_A = E_B$
(3) $E_A = 2E_B$
(4) $E_A = 3E_B$
49. The electrical entity inductance can be compared to the mechanical entity
- (1) Inertia
(2) Energy
(3) Momentum
(4) Torque
50. The audio (sound) signal is changed into corresponding electrical signal using a
- (1) Transducer
(2) Modulator
(3) Detector
(4) Loud speaker

Space For Rough Work

51. Which of the following is not a prime number ?

- (1) 811 (2) 137
(3) 173 (4) 319

52. Solution of the congruence

$$5x^2 \equiv 3 \pmod{7} \text{ is}$$

- (1) 1, 2 (2) 2, 3
(3) 3, 4 (4) 4, 5

53. The value of $7\sqrt[3]{2} + \sqrt[3]{16} - \sqrt[3]{54}$ is

- (1) $6\sqrt[4]{3}$ (2) $6\sqrt[3]{2}$
(3) $3\sqrt[6]{2}$ (4) $3\sqrt{6}$

54. If $a + b + c = 2s$, then $a^2 + b^2 - c^2 + 2ab$ is identically equal to

- (1) $4s(s - c)$
(2) $2s(s - c)$
(3) $4s(s - b)(s - c)$
(4) $(s - a)(s - b)(s - c)$

55. The value of $\frac{5}{\sqrt{3} + \sqrt{2}}$ is

- (1) $5\sqrt{3} - 5\sqrt{2}$
(2) $5\sqrt{2} + 5\sqrt{3}$
(3) $5\sqrt{2} - 5\sqrt{3}$
(4) $-5\sqrt{3} + 5\sqrt{2}$

56. The value of p is

$$(p - 3)^2 + (p + 1)^2 = 16$$

- (1) $-1, -3$
(2) $1, -3$
(3) $1, 3$
(4) $3, -1$

57. For what values of m roots of the equation $x^2 + mx + 4 = 0$ are distinct ?

- (1) $m = 5$
(2) $m \geq \pm 4$
(3) $m < \pm 4$
(4) $m = 4$

58. If A and B are two matrices of same order, then which of the following is not true ?

- (1) $AB = BA$
(2) $A + B = B + A$
(3) A + B is of the same order
(4) $AB \neq BA$

59. The value of $\sum a(b - c)$ is

- (1) $a(b + c)$
(2) abc
(3) $a + b + c$
(4) 0

Space For Rough Work

60. The number of prime numbers in $(25)^{13} \times 10^7 \times 27^5$ is
- (1) 50 (2) 25
(3) 32 (4) 55
61. How many 3 digit numbers are divisible by 7 in all ?
- (1) 129 (2) 126
(3) 128 (4) 127
62. The HCF and LCM of two numbers are 11 and 385 respectively. If one number lies between 75 and 125, then that number is
- (1) 110 (2) 77
(3) 88 (4) 99
63. The charges of a hired car are ₹ 4 per km for the first 60 km, ₹ 5 per km for the next 60 km and ₹ 8 for every 5 km for further journey. If the balance amount left over with Mahesh is one-fourth of what he paid towards the charges of the hired car for travelling 320 km, how much money did he have initially with him ?
- (1) 1075 (2) 1255
(3) 1540 (4) 2000
64. A sum of ₹ 750 is distributed among A, B, C and D in such a manner that A gets as much as B and C together, B gets ₹ 125 more than C and D gets as much as C. What is A's share ?
- (1) 325
(2) 100
(3) 225
(4) 275
65. A General wishes to draw up his 36581 soldiers in the form of a solid sphere. After arranging them he found that some of them are left over. How many are left ?
- (1) 125
(2) 65
(3) 100
(4) 81
66. If $abc = 1$ then $\frac{1}{1+a+b^{-1}} + \frac{1}{1+b+c^{-1}} + \frac{1}{1+c+a^{-1}}$ is
- (1) 1
(2) 0
(3) $\frac{1}{ab}$
(4) ab

Space For Rough Work

67. The largest number among $\sqrt{2}$, $\sqrt[3]{3}$ and $\sqrt[4]{4}$ is

- (1) All are equal
 (2) $\sqrt{2}$
 (3) $\sqrt[4]{4}$
 (4) $\sqrt[3]{3}$

68. In a certain office, 72% of the workers prefer tea and 44% prefer coffee. If each of them prefer tea or coffee and 40 like both, the total number of workers in the office is

- (1) 320
 (2) 200
 (3) 240
 (4) 250

69. A train 800 metres long is running at a speed of 78 km/hour. If it crosses a tunnel in 1 minute, then the length of the tunnel (in metres) is

- (1) 540
 (2) 130
 (3) 360
 (4) 500

70. Two pipes A and B can fill a tank in 6 hours and 4 hours respectively. If they are opened on alternate hours and if pipe A is opened first, in how many hours the tank shall be full ?

- (1) $5\frac{1}{2}$ (2) 5
 (3) 4 (4) $4\frac{1}{2}$

71. Speed of a boat in standing water is 9 kmph and the speed of a stream is 1.5 kmph. A man rows to a place at a distance of 105 km and comes back to the starting point. The total time taken by him is

- (1) 24 hours (2) 16 hours
 (3) 18 hours (4) 20 hours

72. If $A - B = \{1, 3, 7, 11\}$, $B - A = \{2, 6, 8\}$ and $A \cap B = \{4, 9\}$ then

- (1) $A = \{2, 4, 6, 8, 9\}$
 $B = \{1, 2, 3, 7, 8\}$
 (2) $A = \{1, 3, 4, 7, 9, 11\}$
 $B = \{2, 4, 6, 8, 9\}$
 (3) $A = \{1, 3, 7, 11\}$
 $B = \{2, 4, 6, 8, 9\}$
 (4) $A = \{1, 2, 3, 4, 5, 6, 7\}$
 $B = \{1, 4, 7, 8\}$

Space For Rough Work

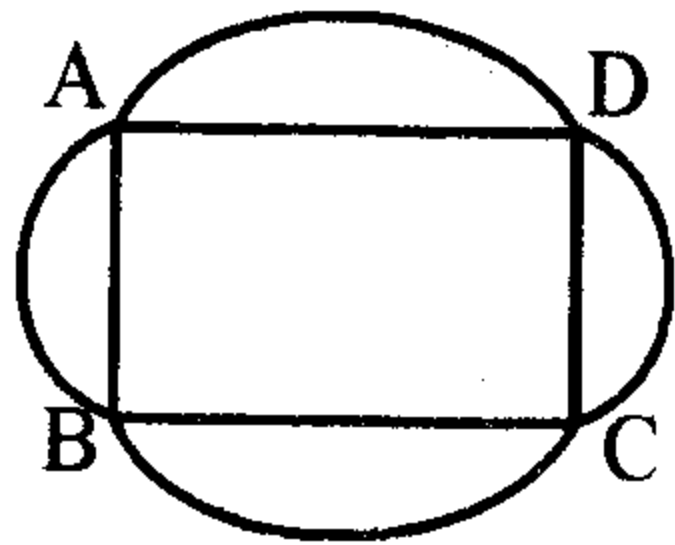
73. From a group of 7 men and 6 women, 5 persons are to be selected to form a committee so that at least 3 men are there on the committee. The number of ways this can be done in
- (1) 735 (2) 564
(3) 645 (4) 756
74. How many three digit numbers can be formed from the digits 2, 3, 5, 6, 7 and 9 which are divisible by 5 and none of the digit is repeated ?
- (1) 10 (2) 5
(3) 20 (4) 15
75. If $\begin{pmatrix} 8 & 5 \\ 3 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 9 \\ 4 \end{pmatrix}$ then x, y respectively are
- (1) 9, 4
(2) 8, 3
(3) 2, -5
(4) -2, 5
76. The product of $(101)_2$ and $(100)_2$ is
- (1) $(100001)_2$
(2) $(11000)_2$
(3) $(10000)_2$
(4) $(10100)_2$
77. The number of arrangements of the letters of the word "MATHEMATICS" is
- (1) $\frac{(11)!}{2!}$
(2) $11!$
(3) $\frac{(11)!}{2!2!2!}$
(4) $8!$
78. The sum of four consecutive odd number is 80. The number is
- (1) 58
(2) 85
(3) 78
(4) 80
79. The age of Mohan and Sohan is in the ratio 5 : 7. If Mohan were 9 years older and Sohan 9 years younger, the age of Mohan would have been twice the age of Sohan. The ages are
- (1) 24, 18
(2) 21, 15
(3) 15, 21
(4) 18, 24

Space For Rough Work

80. Divide 38 into two equal parts such that thrice the square, the larger the part exceeds the square of the smaller part by 1532. The required parts are
- (1) 34, 44
 - (2) 24, 14
 - (3) 34, 24
 - (4) 34, 18
81. If $\left(\frac{1}{5}\right)^{3y} = 0.008$, then the value of $(0.25)^y$ is
- (1) 0.0156
 - (2) 0.25
 - (3) 0.0625
 - (4) 0.5
82. If $2^{n-1} + 2^{n+1} = 320$, then n is equal to
- (1) 8
 - (2) 6
 - (3) 7
 - (4) 5
83. The value of $5^{\frac{1}{4}} \times (125)^{0.25}$ is
- (1) 25
 - (2) $\sqrt{5}$
 - (3) $5\sqrt{5}$
 - (4) 5
84. The lateral surface area of a thin circular bottomed tin is 1760 sq. cm and the radius is 10 cm. What is the height of the tin ?
- (1) 28
 - (2) 18
 - (3) 24
 - (4) 42
85. The height of water level in a circular well is 7 metres and its diameter is 10 metres. The volume of the water stored in the well is
- (1) 50
 - (2) 550
 - (3) 600
 - (4) 700
86. The diameter of a cone is 10 cm and height is 12 cm. The total surface area of the cone is given by
- (1) 305
 - (2) 285
 - (3) 282.85
 - (4) 280
87. Total volume of 21 steel balls in a bearing is 88 cc. The diameter of each ball is given by
- (1) 2
 - (2) 1
 - (3) 4
 - (4) 8

Space For Rough Work

88. The number of nodes, arc and region for the following network is given by



- (1) 2, 4, 6 (2) 8, 4, 6
 (3) 6, 8, 4 (4) 4, 8, 6

89. In the triangle ABC, $XY \parallel BC$, $AX = S - 2$, $BX = 2S - 5$ and $\frac{AY}{CY} = \frac{1}{4}$, then the value of S is

- (1) $-\frac{3}{2}$
 (2) $\frac{1}{2}$
 (3) $-\frac{1}{2}$
 (4) $\frac{3}{2}$

90. A man whose height is 1.5 metres standing 8 metres from a lamp post, observes that his shadow cast by the height is 2 m in length. How high is the lamp above the ground?

- (1) 7.5
 (2) 6.5
 (3) 10.5
 (4) 9.5

91. $\Delta ABC \parallel \Delta PQR$. Area of the $\Delta^{le} ABC$ is 64 cm^2 and area of $\Delta^{le} PQR$ is 49 cm^2 . If $QR = 8$, the length of the side of $\Delta^{le} ABC$ corresponding to QR is given by

- (1) 6.5
 (2) 9.14
 (3) 8.24
 (4) 7.14

92. In a right angled $\Delta^{le} ABC$, $\angle B = 90^\circ$, $AC = 17 \text{ cm}$, $AB = 8 \text{ cm}$, then BC is

- (1) 6
 (2) 8
 (3) 17
 (4) 15

93. Given below are the sides of a triangle. In which cases are the triangles right angled?

- (1) 3, 4, 6
 (2) 9, 10, 14
 (3) 2, 3, 4
 (4) 8, 15, 7

Space For Rough Work

94. Three circles of radii 3 cm, 4 cm, 5 cm with centres A, B and C respectively touch externally. The perimeter of the Δ^{le} ABC is
- (1) 24
 - (2) 14
 - (3) 12
 - (4) 48
95. Two concentric circles of radii are 5 and 3 cms. The length of the chord of the outer circle which touches the inner circle is
- (1) 8
 - (2) 6
 - (3) 12
 - (4) 24
96. The value of π is
- (1) $\frac{\text{diameter}}{\text{circumference}}$
 - (2) $\frac{\text{circumference}}{\text{radius}}$
 - (3) $\frac{\text{radius}}{\text{circumference}}$
 - (4) $\frac{\text{circumference}}{\text{diameter}}$
97. The sum of the interior angles of a polygon of n-sides is
- (1) $n + 4$ right angles
 - (2) $(2n + 4)$ right angles
 - (3) $(n - 4)$ right angles
 - (4) $(2n - 4)$ right angles
98. The perimeter of a semi-circle is given by
- (1) $\pi r^2 + 2r$
 - (2) $\pi r - 2r$
 - (3) πr^2
 - (4) $\pi r + 2r$
99. In a sequence $T_n = 4n^2 - 1$, find the value of n so that $T_n = 35$.
- (1) $n = 3$
 - (2) $n = 4$
 - (3) $n = 5$
 - (4) $n = 6$
100. If $A = \begin{bmatrix} 1 & x+2 \\ 2x+1 & -1 \end{bmatrix}$ is a symmetric matrix, then x is
- (1) 1
 - (2) -1
 - (3) 2
 - (4) -2

Space For Rough Work