Question Booklet Series: **A** *Question Booklet Serial No.:* **110058**

PUMEET – 2023

Important: *Please consult your Admit Card/Roll No. slip before filling your Roll Number on the Test Booklet and Answer Sheet.*

Roll No. ***(In Figure)*** ***(In Words)***

O.M.R. Answer Sheet Serial No.

Signature of Candidate: _____ *Signature of Invigilator:* _____

Time: 100 Minutes **Number of Questions: 100** **Maximum Marks: 100**

DO NOT OPEN THE SEAL ON THE BOOKLET UNTIL ASKED TO DO SO.

INSTRUCTIONS:

1. Write your Roll No. on the Questions Booklet and also on the OMR Answer Sheet in the space provided and nowhere else.
2. Enter the Question Booklet Serial No. on the OMR Answer Sheet. Darken the corresponding bubbles with **Black Gel Pen**.
3. Do not make any identification mark on the Answer Sheet or Question Booklet.
4. Please check that this Question Booklet contains **100** Questions. In case of any discrepancy, inform the Assistant Superintendent within 10 minutes of the start of Test.
5. Each question has four alternative answer (A,B,C,D) of which only one is correct. For each question, darken only one bubble (A or B or C or D), whichever you think is the correct answer, on the Answer Sheet with **Black Gel Pen. There shall be negative marking for wrong answer, ¼ of the marks of the question will be deducted for every wrong answer.**
6. If you do not want to answer a question, leave all the bubbles corresponding to that question blank in the Answer Booklet. No marks will be deducted in such cases.
7. The mediums of examination shall be English only.
8. **35 minutes extra would be given to the Persons with Disability (PwD).**
9. **Darken** the bubbles in the OMR Answer Sheet according to the Serial No. of the question given in the Question Booklet.
10. If you want to change an already marked answer, erase the shade in the darkened bubble completely.
11. For rough work only the blank sheet at the end of the Question Booklet be used.
12. The University will provide Logarithmic table. Borrowing of log table or other material is not allowed.
13. The Answer Sheet is designed for computer evaluation. Therefore, if you do not follow the instructions given on the Answer Sheet, it may make evaluation by the computer difficult. **Any resultant loss to the candidate on the above account, i.e. not following the instructions completely, shall be of the candidate only.**
14. After the test, hand over the Question Booklet and the Answer Sheet to the Assistant Superintendent on duty.
15. In no case the Answer Sheet, the Question Booklet, or its part or any material copied/noted from this Booklet is to be taken out of the examination hall. Any candidate found doing so would be expelled from the examination.
16. A candidate who creates disturbance of any kind or changes his/her seat or is found in possession of any paper possibly of any assistant or found giving or receiving assistant or found using any other unfair means during the examination will be expelled from the examination by the Centre Superintendent/Observer whose decision shall be final.
17. **Communication equipment such as pager, cellular phone, wireless set, scanner, camera or any electronic/digital gadget etc., is not permitted inside the examination hall. Use of calculators is not allowed.**
18. The candidates will not be allowed to leave the Examination Hall/Room before the expiry of the allotted time.

1. The series $\sum_{n=1}^{\infty} \frac{n}{e^n}$ converges to

(A) 0 (B) e (C) $\frac{1}{e}$ (D) $\frac{2}{e}$

2. The interval of convergence of the series $\sum_{n=1}^{\infty}(-1)^{n-1}\frac{x^n}{n^2}$ is

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

3. The series $x + \frac{x^2}{2!} + \frac{x^3}{3!} + - - - -$ is

(A) Conditionally convergent (B) Absolutely convergent
(C) Oscilatory (D) Divergent

4. If $z = \ln(x^2 + y^2)$, then

(A) $3x\frac{\partial z}{\partial x} = 2y\frac{\partial z}{\partial y}$ (B) $x\frac{\partial z}{\partial x} - y\frac{\partial z}{\partial y} = 0$
(C) $3x\frac{\partial z}{\partial x} + 2y\frac{\partial z}{\partial y} = 6$ (D) $2y\frac{\partial z}{\partial x} + 3z\frac{\partial z}{\partial y} = 6$

5. If $u = \tan^{-1}\left(\frac{x^3-y^3}{x+y}\right)$, then the value of $x\frac{\partial u}{\partial x} + y\frac{\partial u}{\partial y}$ is

(A) 2 sin u (B) 2 tan u (C) sin2u (D) 2 cos2u

6. If f(x, y) is a homogeneous function of degree n, then the value of $y\frac{\partial^2 f}{\partial x^2} + x\frac{\partial^2 f}{\partial x\,\partial y}$ is

(A) $n\frac{\partial f}{\partial x}$ (B) $(n-1)\frac{\partial f}{\partial y}$ (C) $(n-1)\frac{\partial f}{\partial x}$ (D) $n\frac{\partial f}{\partial y}$

7. The Taylor series expansion of $2e^x + 3\sin x$ about $x = 0$ is

(A) $2 + 5x + x^2 + \frac{x^3}{6} + \frac{x^4}{12} + \frac{x^5}{24} + - - -$ (B) $2 + 5x + x^2 - \frac{x^3}{6} + \frac{x^4}{12} + \frac{x^5}{24} + - - -$
(C) $2 + 5x + x^2 + \frac{x^3}{6} - \frac{x^4}{12} + \frac{x^5}{24} + - - -$ (D) $2 + 5x + x^2 + \frac{x^3}{3} + \frac{x^4}{12} + \frac{x^5}{24} + - - -$

8. The area bounded by the curves $y^2 = 9x$ and $x^2 = 9y$ is equal to

(A) 36 sq. unit (B) 48 sq. unit (C) 54 sq. unit (D) 27 sq. unit

9. The value of $\int_0^3 \int_0^x (6 - x - y)\,dx\,dy$ is equal to

(A) 13.5 (B) 26.0 (C) 41.5 (D) 55.0

10. The length of arc of the curve $y = \ln(\cos x)$ from $x = 0$ to $x = \frac{\pi}{4}$ is

(A) $\ln(1+\sqrt{2})$ (B) $\ln(\sqrt{2}-1)$ (C) $\ln(2+\sqrt{3})$ (D) $\ln(2-\sqrt{3})$

11. The value of an integral $\iiint (x^2 + y^2 + z^2)\,dx\,dy\,dz$ taken over the volume enclosed by the sphere $x^2 + y^2 + z^2 = 1$ is

(A) 4π (B) 5π (C) $\frac{5\pi}{4}$ (D) $\frac{4\pi}{5}$

12. The values of div $\vec{r}$ and curl $\vec{r}$ respectively, when $\vec{r} = 2x\,\hat{i} - y\hat{j} + 3z\hat{k}$ is equal to

(A) 4; $\hat{i}$ (B) 0; $\vec{0}$ (C) 4; $4\hat{k}$ (D) 4; $\vec{0}$

13. The directional derivative of $f(x,y) = x^3y^2 + 3xy$ at $(1,2)$ in the direction of unit vector which makes an angle of $\frac{\pi}{4}$ with the x-axis is

(A) $8\sqrt{2}$ (B) $16\sqrt{3}$ (C) $\frac{15}{\sqrt{2}}$ (D) $\frac{25}{\sqrt{2}}$

14. The value of the integral $\oint_c (x+2y)\,dx + x^2\,y\,dy$, c is the triangle with vertices (0,0), (3, 0) and (3, 3) taken in this order is given by

(A) $\frac{45}{4}$ (B) $\frac{37}{3}$ (C) 15 (D) 18

15. If $\vec{r} = 2x\,\hat{\imath} + 3y\,\hat{\jmath} + z\hat{k}$ and V is the volume of the sphere $x^2 + y^2 + z^2 = 16$, then $\iint_S \vec{r}.\hat{n}\,dA$ is equal to

(A) 38π (B) 512π (C) 348π (D) 438π

16. The solution of $3(x\,dy + y\,dx) = 2x\,y\,dy$, when $x = 1, y = 1$ is

(A) $\log(x\,y) + y - 2 = 0$ (B) $3\log(x\,y) - 2y + 2 = 0$

(C) $\log(x) + \log(y) + 2 = 0$ (D) $\log(x\,y) - 5y + 2 = 0$

17. The integrating factor of $x^2ydx - (x^3 + y^3)dy = 0$ is

(A) $\frac{1}{x\,y^2}$ (B) $\frac{1}{y^4}$ (C) $\frac{1}{x\,y^3}$ (D) $\frac{1}{x^4}$

18. Orthogonal trajectories of $y^2 = 4ax$ are given by

(A) $2y^2 + x^2 = c^2$ (B) $2x^2 + y^2 = c^2$ (C) $y^2 + x^2 = c^2$ (D) $2x^2 - y^2 = c^2$

19. The particular integral of $(D^2 + 3D + 2)\,y = \cos 2x$ is

(A) $3\sin 2x - \cos 2x$ (B) $\frac{3\sin 2x - \cos 2x}{20}$

(C) $\frac{\cos 2x - 3\sin 2x}{10}$ (D) $\frac{\cos x - \sin 2x}{40}$

20. If $y_1 = e^{2x}$ and $y_2 = x\,e^{2x}$ are two solutions of a second order linear differential equation, then the Wronskian of y_1 and y_2 is

(A) e^{4x} (B) $x\,e^{4x}$ (C) $2\,e^{4x}$ (D) $2\,xe^{4x}$

21. If $f(x) = x^3$ in $(-\pi, \pi)$, then the value of Fourier coefficient b_n is

(A) $\frac{2}{n^3}[n^2\pi^2 + 6]$ (B) $\frac{2\cos n\pi}{n^3}[6 - n^2\pi^2]$

(C) $\frac{2}{n^3}[6 - n^2\pi^2]$ (D) $\frac{\cos n\pi}{n^3}[6 + n^2\pi^2]$

22. If $f(x) = e^x$ in $(0,1)$, then Fourier coefficient a_n in cosine series is equal to

(A) $\frac{2}{n^2\pi^2+1}[(-1)^n\,e - 1]$ (B) $\frac{2}{n^2\pi^2+1}[(-1)^n\,e + 1]$

(C) $\frac{4}{n^2\pi^2+1}[(-1)^n\,e - 1]$ (D) $\frac{4}{n^2\pi^2+1}[(-1)^n\,e + 1]$

23. The partial differential equation that can be formed from $z = ax + by + ab$ has the form

(A) $z = px + qy$ (B) $z = px + pq$

(C) $z = px + q\,y + pq$ (D) $z = qy + pq$

24. The first order partial differential equation by elimination of arbitrary function from $z = f(x^3 - y^3)$ is

(A) $p + q = 0$ (B) $yp + xq = 0$ (C) $y^2p + x^2q = 0$ (D) $2y^2p + 3x^2q = 0$

25. The solution of the equation $p = \log(px - y)$ is

(A) $y = cx - e^c$ (B) $y = cx - \log c$ (C) $y = cx + c^2$ (D) $y = cx + e^c$

26. The partial differential equation of $z = f(x + at) - g(x - at)$ is

(A) $\frac{\partial^2 z}{\partial t^2} = a^2 \frac{\partial^2 z}{\partial x^2}$ (B) $\frac{\partial z}{\partial t} = a \frac{\partial z}{\partial x}$ (C) $\frac{\partial^2 z}{\partial t^2} = \frac{\partial^2 z}{\partial x^2}$ (D) $\frac{\partial^2 z}{\partial t^2} = \frac{\partial z}{\partial x}$

27. A string is stretched between the fixed points $(0, 0)$ and $(1, 0)$ and released at rest from the position $u = P \sin \pi x$. The subsequent displacement $u(x, t)$ is given by

(A) $P \sin(\pi x + ct)$ (B) $P \cos c\pi t \cos \pi x$

(C) $P \sin c\pi t \sin \pi x$ (D) $P \cos c\pi t \sin \pi x$

28. The Laplace transformation of $f(t) = t^2 \cos 3t$ is equal to

(A) $\frac{s^2-27}{(s^2+9)^4}$ (B) $\frac{2s(s^3-27)}{(s^2+9)^3}$ (C) $\frac{(s^3-27)}{(s^2+9)^4}$ (D) $\frac{s(s^3-27)}{(s^2+9)^3}$

29. The inverse Laplace transform of $f(s) = \frac{4(2s+3)}{(s^2+4s+20)}$ is equal to

(A) $e^{2t}\{2\cos 4t - \sin 4t\}$ (B) $e^{2t}\{2\sin 4t - \cos 4t\}$

(C) $e^{-2t}\{2\cos 4t - \sin 4t\}$ (D) $e^{-2t}\{2\sin 4t - \cos 4t\}$

30. The value of $\int_0^\infty t\, e^{-2t} \sin 3t\, dt$ is equal to

(A) $\frac{5}{169}$ (B) $\frac{10}{169}$ (C) $\frac{6}{169}$ (D) $\frac{12}{169}$

31. For an electrically driven LCR circuit, absorbed power is maximum at

(A) frequency of current amplitude resonance

(B) frequency of charge amplitude resonance

(C) frequency at which current amplitude reduces to 1/e of maximum value

(D) any frequency large than natural frequency

32. Which of the statement is not true about power absorption curve?

(A) Band-width does not depend on the spring constant

(B) Large quality factor implies sharper absorption curve

(C) Band-width inversely varies with the resistive component

(D) Absorption curve has maxima at natural frequency

33. A damped harmonic oscillator has a frequency of 5 Hz. The amplitude drops to half its value after every 10 oscillations. The time it will take to drop to 1/1000 of the original amplitude is close to

(A) 20s (B) 50s (C) 10s (D) 100s

34. Which of the statement is not true for a Simple Harmonic Motion
(A) Kinetic energy oscillates with the frequency double of the natural frequency
(B) Displacement and velocity have a phase difference of 90 degrees
(C) Potential energy has parabolic dependence on the displacement
(D) Kinetic and potential energy are always in phase

35. Which of following does not play a role in stimulated emissions in a LASER?
(A) Metastable state
(B) Energy gap value of transition levels
(C) Resonator cavity
(D) Population inversion

36. Pick the correct statement for working of a Nicol Prism
(A) It involves the phenomena of refraction only
(B) It can be designed with quartz crystal
(C) E-ray is transmitted whereas O-ray is absorbed
(D) O-ray is transmitted whereas E-ray is absorbed

37. In young double slits experiment, the width of the fringes obtained from a light of wavelength 500 nm is 3.6 mm. What is the fringe width if the apparatus is immersed in a liquid of refractive index 1.2?
(A) 3 mm (B) 2 mm (C) 3.2 mm (D) 2.6 mm

38. Pick the wrong statement about N-slits diffraction phenomena
(A) It involves interference as well
(B) Central maxima is of white colour in case of white light source
(C) All maxima are of same width
(D) Intensity of diffraction maxima keep decreasing as away from the central maxima

39. A man, in a rocket, weighs 10% more than as an earth. Speed of rocket is about (where c is the speed of light in vacuum)
(A) 0.17c (B) 1.21c (C) 0.21c (D) 1.17c

40. A photon has energy of 3×10^{-17} J. Its momentum is
(A) 9×10^{-9} Kg m/s (B) 10^{-25} Kg m/s (C) 3×10^{-25} Kg m/s (D) 3×10^{-9} Kg m/s

41. Which of the following statement is not true for the special theory of relativity
(A) No massive object cannot have speed more than speed of light
(B) Particles moving with speed comparable with that of light have larger mass as compared to when at rest
(C) There is no frame at absolute rest
(D) Ether is a medium spread out in the space and is at absolute rest

42. The Michelson-Morley experiment was designed to measure
(A) The relativistic energy of the electron.
(B) The velocity of the Earth relative to the ether.
(C) The relativistic mass of the electron.
(D) The acceleration due to gravity on the Earth's surface.

43. De-Broglie wavelength of a material particle having a kinetic energy, E is proportional to
(A) E (B) 1/E (C) $\sqrt{E}$ (D) $1/\sqrt{E}$

44. An electron is in a box 2 nm across. What will be the lowest energy for the electron?
(A) 0.01 eV (B) 0.08375 eV (C) 0.2 eV (D) 1.5 eV

45. Compton shifts is maximum when angle of scattering of photon is:
(A) 0 (B) π (C) $\pi/2$ (D) $\pi/4$

46. The velocity of X-rays in vacuum is:
(A) less than velocity of light
(B) equal to the velocity of light
(C) greater than velocity of light
(D) cannot travel in vacuum

47. If X-ray of wavelength 500 angstrom is incident an atom at angle of 90°. What will be the interplanar spacing 'd' for first order spectrum?
(A) 250 angstroms (B) 500 angstroms (C) 100 angstroms (D) 150 angstroms

48. Bravais lattice consists of how many space lattices?
(A) 11 (B) 12 (C) 13 (D) 14

49. Atomic packing fraction of BCC structure is
(A) 0.54 (B) 0.68 (C) 0.74 (D) 0.96

50. In which type of point defect are the cations and anions absent in stoichiometric proportions?
(A) Schottky defect
(B) Frenkel defect
(C) Impurity defect
(D) The given situation does not occur for any point defect

51. Which among the following pairs are paramagnetic?
(A) O_2 and N_2 (B) O_2 and CO (C) O_2 and NO (D) CO and NO

52. According to the valence bond theory, a bond between two atoms is formed when
(A) half filled atomic orbitals overlap
(B) fully filled atomic orbitals overlap
(C) non-bonding atomic orbitals overlap
(D) electrons of the two atoms overlap

53. The correct bond order of O_2^{2-} is
(A) 2 (B) 2.5 (C) 1 (D) 1.5

54. The work done when 1 mole of a gas expands reversibly and isothermally from 5 atm to 1 atm at 300 K is
(A) -4015 J (B) +4015 J (C) 1500 J (D) zero

55. The enthalpy of neutralization of a strong base and weak acid is
(A) equal to 57.1 kj/mol (B) less than 57.1 kj/mol
(C) more than 57.1 kj/mol (D) none of these

56. A spontaneous reaction is not possible if
(A) ΔH and $T\Delta S$ are both negative (B) ΔH is –ve and $T\Delta S$ is +ve
(C) ΔH is +ve and $T\Delta S$ is –ve (D) ΔH and $T\Delta S$ are both positive

57. For an ionic crystal of formula AX, the radius ratio lies between 0.732-1.000, the coordination number is
(A) 3 (B) 4 (C) 6 (D) 8

58. In a solid lattice, a cation has left a lattice site and is present in interstitial position, the lattice defect is
(A) Schottky defect (B) Frenkel defect (C) Vacancy defect (D) Interstitial defect

59. The ratio of the colligative effect produced by an electrolyte solution to the corresponding effect for the same concentration of a non-electrolyte solution is known as
(A) degree of dissociation (B) degree of association
(C) activity coefficient (D) van't Hoff factor

60. One mole of sugar is dissolved in three moles of water. The relative lowering of vapour pressure is
(A) ½ (B) 1/3 (C) ¼ (D) 1/5

61. Waterline corrosion is enhanced by the presence of
(A) hydroxide (B) chlorides (C) carbonates (D) silicates

62. Which of the following metals can provide cathodic protection to Fe?
(A) Zn and Cu (B) Al and Ni (C) Al and Cu (D) Al and Zn

63. The species responsible for the propagation of polymerization of ethylene using benzoyl peroxide as initiator is
(A) cation (B) anion (C) free radical (D) carbene

64. Among following polymers, amide group is present in
(A) Bakelite (B) Kevlar (C) Araldite (D) Teflon

65. Ziegler Natta catalyst is used to perform
(A) cationic polymerization (B) anionic polymerization
(C) coordination polymerization (D) free radical polymerization

66. Nylon 6 can be obtained by
(A) ring opening polymerization of caprolactum
(B) self-condensation of ϵ-amino caproic acid
(C) both A and B
(D) neither A nor B

67. Which of the following gas reduces the blood's ability to carry oxygen to different parts of the body?
(A) Carbon monoxide (B) Carbon dioxide (C) Sulphur dioxide (D) Nitrous dioxide

68. Choose the correct distribution of d^6 electrons in a weak field octahedral complex.
(A) t_{2g}^3, e_g^3 (B) t_{2g}^2, e_g^4 (C) t_{2g}^6, e_g^0 (D) t_{2g}^4, e_g^2

69. The correct number of unpaired electron(s) and crystal field stabilization energy (CFSE) for d^7 system in tetrahedral complex are
(A) 3 and - 0.54 Δ_o respectively (B) 2 and - 0.54 Δ_o respectively
(C) 3 and -0.9 Δ_o respectively (D) 2 and -0.9 Δ_o respectively

70. For complex $[Fe(CN)_6]^{3-}$, the magnetic moment value is
(A) 2.82 BM (B) 4.89 BM (C) 1.73 BM (D) 3.87 BM

71. A planar graph has 4 nodes and 5 branches. The number of meshes in the dual graph is
(A) 1 (B) 2 (C) 3 (D) 4

72. In an RLC series circuit, the impedance at resonance is
(A) Zero (B) R (C) Infinity (D) L/(CR)

73. In a DC machine, the angle between the stator and rotor field is
(A) 0^0 (B) 90^0
(C) 180^0 (D) Dependent upon the load

74. An induction motor has 24 poles is running at a slip of 10% when connected to a 3-phase 400 V, 50 Hz supply. Its synchronous speed will be
(A) 225 rpm (B) 250 rpm (C) 275 rpm (D) 50 rad/minute

75. In a two-wattmeter method of measuring power in a balanced three phase circuit. One wattmeter shows zero the other one is positive maximum the load power factor is
(A) zero (B) 0.5 (C) 0.866 (D) 1

76. No load test on a transformer is carried out to determine
(A) copper loss (B) magnetising current
(C) magnetising current and losses (D) efficiency of transformer

77. If V_m is peak value of an applied voltage in a half-wave rectifier with a large capacitor across the load, then the peak inverse voltage will be
(A) $V_m/2$ (B) V_m (C) $\sqrt{2}\ V_m$ (D) $2\ V_m$

78. The decimal equivalent of the hexadecimal number E5 is
(A) 279 (B) 229 (C) 427 (D) 3000

79. The gate whose output is low, if and only if all inputs, are High, is
(A) NAND (B) NOR (C) OR (D) AND

80. In a JK flip-flop, J is connected to Q and K is connected to Q outputs. The JK flip-flop converts into a
(A) R-S flip-flop (B) D flip-flop (C) T flip-flop (D) clocked R-S flip-flop

81. In an experiment it is found that the bulk modulus (K) of a material is equal to its shear modulus (G). The Poisson's ratio is;
(A) 0.125 (B) 0.25 (C) 0.375 (D) 0.5

82. The law of conservation of momentum is applicable for;
(A) only two particles (B) individual particles only
(C) a system of particles (D) more than three particles only

83. Which of the following operation is used for grinding a flat surface.
(A) Form grinding (B) Centerless grinding
(C) Cylindrical grinding (D) Surface grinding

84. In 1st angle projection the _____ lies between _____ and _____ .
(A) object, projection plane, observer (B) projection plane, object, observer
(C) reference line, side view, front view (D) reference line, left side view, right side view

85. The Coefficient of restitution of a perfectly plastic impact is;
(A) 0 (B) 1 (C) 2 (D) 3

86. Which of the following represents the van der Waals' equation for real gases (*for one mole of gas*) at high pressure, where a and b are the constants depending on the gas, P is the absolute pressure, V is the volume occupied by the gas and R is the universal gas constant.

(A) $\left(P-\frac{a}{V^2}\right)(V+b)=RT$ (B) $\left(P-\frac{V^2}{a}\right)(V-b)=RT$

(C) $\left(P+\frac{V^2}{a}\right)(V-b)=RT$ (D) $\left(P+\frac{a}{V^2}\right)(V-b)=RT$

87. Gauge pressure is negative when
(A) Atmospheric pressure is less than Absolute pressure
(B) Absolute pressure is less than Atmospheric pressure
(C) Atmospheric pressure is same as Absolute pressure
(D) Gauge pressure cannot be negative

88. The vapour pressure of ethanol (molecular weight: 46 g/mole) and methanol (molecular weight: 32 g/mole) are 44.5 mm Hg and 88.7 mm Hg respectively. An ideal solution is formed at the same temperature by mixing 60g of ethanol and 40g of methanol. The total pressure of the solution is:
(A) 66.16 mm Hg (B) 16.66 mm Hg
(C) 54.50 mm Hg (D) 50.54 mm Hg

89. In a textile mill, a double-effect evaporated system concentrates weak liquor containing 4% (by weight) caustic soda to produce a lye containing 25% solids (by weight). The amount of water evaporated per 100 kg of feed in the evaporated is:
(A) 64 kg (B) 74 kg
(C) 84 kg (D) 94 kg

90. For the reaction $A + 3B \rightarrow 5C + 7D$, which of the following is correct:
(A) $-r_A = -\frac{1}{3}r_B = \frac{1}{5}r_C = \frac{1}{7}r_D$ (B) $-r_B = -\frac{1}{3}r_A = \frac{1}{7}r_C = \frac{1}{5}r_D$
(C) $-r_A = -3r_B = 5r_C = 7r_D$ (D) $-r_B = -3r_A = 7r_C = 5r_D$

91. In the given sentence fill in the blanks using the articles a / an
"I need to fit.....engine in the car. I also need to buy .....radiator and .....exhaust pipe."
(A) a , a, an (B) an , a , an (C) an , a ,a (D) a, an , a

92. What will be the passive of the following sentence
"The earthquake is destroying many buildings"

(A) Many buildings are being destroyed by the earthquake
(B) Many building will have been destroyed by the earthquake
(C) Many buildings will be destroyed by the earthquake
(D) Many buildings are destroyed by the earthquake

93. Change the tense of the given sentence to past continuous

"The convoy will cross the bridge"

(A) The convoy was crossing the bridge
(B) The convoy has crossed the bridge
(C) The convoy has been crossing the bridge
(D) The convoy shall have been crossing the bridge

94. Which of the following is not a component of Body Language
(A) Gestures (B) Postures (C) Facial Expressions (D) Voice Modulation

95. Identify the noun and adjective in the given sentence

"It was a dark night and the darkish clouds added to the darkness, making it scary."

(A) Noun: night, clouds; Adjective : dark, scary
(B) Noun: night, clouds, darkness ; Adjective: darkish, scary
(C) Noun: night, clouds, darkness ; Adjective : dark, darkish, scary
(D) Noun: clouds, night ; Adjective : dark, darkish, darkness

96. Choose the pair that best expresses a relationship similar to that expressed in the original pair.
SNEER : CONTEMPT :: ?
(A) APPLAUD : APPROVAL (B) COUGH : THROAT
(C) GRIMACE : PAIN (D) CRINGE : FEAR

97. Complete the sentence by filling in the blanks with appropriate pair of words

A few of the people on the island may live.....but most have no hope of .....even the basic amenities of life.

(A) poorly, enjoying (B) pretentiously, yielding
(C) responsibly, acquiring (D) lavishly, attaining

98. In the sentence that follows, four parts of a sentence have been labeled as 1, 2 ,3 and 4. Only one part is grammatically wrong. Select the part that is grammatically incorrect.

1. Unless you do not 2. walk fast
3. you cannot reach 4. the station in time.
(A) 1 (B) 4 (C) 3 (D) 2

99. Identify the pronouns in the given sentence
"I am again asking you to take care of yourself and her"

(A) I, you, yourself
(B) yourself, her, I, you
(C) yourself, her
(D) I , you, her

100. Identify all the verbs in the following sentence
I think I can calculate the answer and then I can go for playing.

(A) think, calculate, can, go
(B) playing, go, calculate, think
(C) think, go, playing, can
(D) think, calculate, go, playing, can

x-x-x

SPACE FOR ROUGH WORK