

# **TPSC JE Gr-VA**

**Previous Year Paper  
(Mechanical)  
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**TEST BOOKLET**  
**GENERAL STUDIES &**  
**ENGINEERING APTITUDE**

**D**

(Signature of the Candidate)

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Time Allowed : Two (2) hours

Maximum Marks : 100

**INSTRUCTIONS**

1. PLEASE CHECK THE TEST BOOKLET DOES NOT HAVE ANY UNPRINTED OR TORN OR MISSING PAGES OR ITEMS ETC. IF SO, GET IT REPLACED BY A COMPLETE TEST BOOKLET.
2. ENCODE CLEARLY THE TEST BOOKLET SERIES A,B,C OR D AS THE CASE MAY BE IN THE APPROPRIATE PLACE IN THE ANSWER SHEET BY BLACK BALL POINT PEN ONLY.
3. This Test Booklet contains 100 items (questions). Each question has four responses (answers). You will select the responses which you want to mark on the Answer Sheet. In case you feel that there is more than one correct response, mark the response which you consider the most appropriate. In any case, choose ONLY ONE response for each item.
4. You have to mark all your responses ONLY on the separate Answer Sheet provided. See directions in the Answer Sheet.
5. All items carry equal marks.
6. Before you proceed to mark in the Answer Sheet the responses to various items in the Test Booklet, you have to fill in some particulars in the Answer Sheet as per instruction sent to you with your Admission Certificate.
7. After you have completed filling in responses on the Answer Sheet and the Examination is completed, you should handover the Answer Sheet to the Invigilator only. You are permitted to take away the Test Booklet.
8. Sheets for rough work are appended on the Test Booklet at the end.
9. **Penalty for wrong answers :**
  - (a) There will be four alternatives for the answer to every question. For each question for which a wrong answer has been given by the candidate, **one-fourth** of the marks assigned to that question will be deducted as penalty.
  - (b) If a candidate gives more than one answer, it will be treated as a **Wrong Answer** even if one of the given answers happens to be correct and there will be same penalty as above to that question.
  - (c) If a question is left blank, i.e., no answer is given by the candidate, there will be **no penalty** for that question.

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Four options are given against each of the following questions. Select the correct option from the four options and encode it in the Answer Sheet by using **Black Ball Point Pen** only as per example given below :

**Example P :** Aunt Polly wanted to trap Tom \_\_\_\_\_ damaging confessions.

- (A) into      (B) with      (C) by      (D) on

**Example Q :** Let's watch \_\_\_\_\_ movie ; I mean 'Pathar Panchali'.

- (A) a      (B) an       (C) the      (D) no article is needed

### PART - A

**Direction for Question Nos. 1 to 4.**

**Choose the most appropriate preposition/article to fill in the blanks.**

- Mosquitoes breed \_\_\_\_\_ stagnant water.  
(A) in      (B) on  
(C) into      (D) under
- He has a shop in the market where he deals \_\_\_\_\_ wheat.  
(A) with      (B) in  
(C) at      (D) of
- What did you do with \_\_\_\_\_ camera, I lent you ?  
(A) a      (B) an  
(C) the      (D) no article is needed

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4. Bring me \_\_\_\_\_ umbrella that is lying on the bed.

- (A) an (B) the  
(c) a (D) No article is needed

**Direction for Question Nos. 5 and 6.**

**Choose from the given options/words opposite in meaning to the underlined words in the following sentences :**

5. He spares no pain to come out of this problem.

- (A) Doubt (B) Pleasure  
(C) Anger (D) Hesitation

6. He confessed that he had stolen the money.

- (A) Denied (B) Refused  
(C) Opposed (D) Reacted

**Direction for Question Nos. 7 and 8.**

**Choose the most appropriate Synonym for the underlined words in the sentences :**

7. Oil is one of the principal sources of energy.

- (A) most expensive (B) most important  
(C) most difficult (D) most popular

8. The road will be closed until the blizzard ends.

- (A) snowstorm (B) hurricane  
(C) tornado (D) thunderstorm

## Direction for Question Nos. 7 and 8.

The underlined and lettered parts of each sentence below may contain an error in grammar, usage, words choice (diction), or expression (idiom). Read each sentence carefully and identify which item, if any, contains an error. If it contains no error, answer is D.

9. I hope you'll come in Spain soon. No error

A B C D

(A) I hope

(B) in

(C) soon

(D) No error

10. I shall buy one of the radios that is on sale. No error

A B C D

(A) I shall

(B) one of

(C) that is

(D) No error

11. 'Sethusamudram Project' will connect the Palk strait with

(A) Gulf of Khambat

(B) Gulf of Kutch

(C) Gulf of Mannar

(D) None of these

12. What is 'Angel Tax'?

(A) Tax on sales

(B) Tax on individual income

(C) Tax on Capital Gains

(D) Tax on startups

(2)

13. What is 'Saharsh' initiative of Tripura Government ?
- (A) Education drive for sanitation workers  
(B) To encourage social and emotional learning in children  
(C) Financial help for poor  
(D) Drive against child marriages
14. Which institution is a watchdog for money laundering and terror financing and issues 'Grey List' ?
- (A) WHO (B) IMF  
(C) FATF (D) WTO
15. Which institution has commissioned India's first green hydrogen blending project ?
- (A) ONGC (B) GAIL  
(C) NTPC (D) IOL
16. Which State of India has become country's Fully Digital Banking according to SLBC ?
- (A) Kerala (B) Assam  
(C) Uttar Pradesh (D) Punjab
17. The Tripura Merger Agreement was signed in New Delhi on
- (A) 15th October, 1949 (B) 15th August 1947  
(C) 9th September, 1949 (D) 26th November 1949

18. Who abolished Slavery from Tripura ?
- (A) Maharaja Radhakrishore Manikya (B) Maharaja Bir Chandra Manikya  
(C) Maharaja Dhanya Manikya (D) Maharaja Birendra Kishore Manikya
19. India won the Under-19 Women's T-20 World Cup Cricket Championship in January, 2023 by beating
- (A) Pakistan (B) England  
(C) Australia (D) South Africa
20. Who was the Chief Guest in India's Republic Day Celebration - 2023 in New Delhi ?
- (A) Prime Minister of England (B) President of France  
(C) Prime Minister of Nepal (D) President of Egypt.



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## PART – B

21. For a closed system, the difference between the heat added to the system and the work done by the system is equal to
- (A) Change in enthalpy (B) change in entropy  
(C) change in temperature (D) change in internal energy
22. An inventor says that his new concept of an engine, while working between temperature limits of  $27^{\circ}\text{C}$  and  $327^{\circ}\text{C}$  rejects 45% of heat absorbed from the source. His engine is then equivalent to which one of the following engines ?
- (A) Carnot engine (B) Diesel engine  
(C) An impossible engine (D) Ericsson engine
23. Air at  $20^{\circ}\text{C}$  blows over a hot plate of  $50 \times 60 \text{ cm}^2$  made of carbon steel maintained at  $220^{\circ}\text{C}$ . The convective heat transfer coefficient is  $25 \text{ W/m}^2\text{K}$ . What will be the heat loss from the plate ?
- (A) 1500W (B) 2500W  
(C) 3000W (D) 4000W
24. Which property of mercury is the main reason for its use in barometers ?
- (A) high density (B) negligible capillary effect  
(C) very low vapor pressure (D) low compressibility
25. The height to which a liquid will rise in an open capillary tube is *inversely* proportional to
- (A) temperature of liquid (B) density of liquid  
(C) air pressure (D) surface tension

26. What acceleration would cause the free surface of a liquid contained in an open tank moving in a horizontal track to dip by  $45^\circ$  ?
- (A)  $g/2$  (B)  $2g$   
(C)  $g$  (D)  $3g/2$
27. The piston rod of diameter 20 mm and length 700 mm in a hydraulic cylinder is subjected to a compressive force of 10 kN due to the internal pressure. The end conditions for the rod can be assumed as guided at the piston end and hinged at the other end. The Young's modulus is 200 GPa. The factor of safety for the piston rod is
- (A) 6.32 (B) 2.75  
(C) 0.68 (D) 11.05
28. If the number of rivets are 3, diameter of rivets is 10 mm, thickness of the plate to be riveted is 5 mm, bearing strength of rivets is 150 MPa, Tensile strength of the plate is 200 MPa, Shear strength of rivets is 100 MPa. If the rivets are to be designed to avoid crushing failure, the maximum permissible load P in kN is
- (A) 7.50 (B) 15  
(C) 22.50 (D) 30.00
29. For a four-bar linkage in toggle position, the value of mechanical advantage is
- (A) 0.0 (B) 0.5  
(C) 1.0 (D)  $\infty$
30. A line of 1 meter is shown by 1 cm on a scale. Its Representative Fraction (RF) is
- (A) 1 (B) 100  
(C) 1/100 (D) 1/50

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31. A tetrahedron has four equal \_\_\_\_\_ faces.
- (A) Square (B) Rectangular  
(C) Triangular (D) None of these
32. A right circular cone resting on HP on its base is cut by a section plane parallel to HP, bisecting its axis. The true shape of the section is
- (A) Parabola (B) Hyperbola  
(C) Ellipse (D) Circle
33. \_\_\_\_\_ is the property that allows the sand grains to stick together.
- (A) Adhesiveness (B) Collapsibility  
(C) Cohesiveness (D) Permeability
34. Centroid determination involves the calculations of various forces. In that forces are having various properties. That is force is developed by a support that not allows the \_\_\_\_\_ of its attached member.
- (A) Subtraction (B) Rotation  
(C) Addition (D) Translation
35. The ratio of the inertia force to the viscous force is called
- (A) Reynold's number (B) Froude's number  
(C) Weber's number (D) Euler's number
36. A body is subjected to a direct tensile stress of 300 MPa in one plane accompanied by a simple shear stress of 200 MPa. The maximum normal stress will be
- (A) 100 MPa (B) 250 MPa  
(C) 300 MPa (D) 400 MPa

37. Gas Metal Arc Welding (GMAW) is used for
- (A) thicker metals with consumable wire electrode
  - (B) thinner metals with consumable wire electrode
  - (C) thicker metals with non-consumable wire electrode
  - (D) thinner metals with non-consumable wire electrode
38. The loss of head due to friction in a pipe of uniform diameter in which a viscous flow is taking place, is (where  $R_N$  = Reynold number)
- (A)  $1/R_N$
  - (B)  $4/R_N$
  - (C)  $16/R_N$
  - (D)  $64/R_N$
39. A tensile load of 60 kN is suddenly applied to a circular bar of 4 cm diameter. What will be the maximum instantaneous stress induced ?
- (A) 95.493 N/mm<sup>2</sup>
  - (B) 45.25 N/mm<sup>2</sup>
  - (C) 85.64 N/mm<sup>2</sup>
  - (D) 102.45 N/mm<sup>2</sup>
40. Atomic Packing Factor (APF) in the case of copper crystal is \_\_\_\_.
- (A) 0.52
  - (B) 0.68
  - (C) 0.74
  - (D) 1.633
41. Annealing temperature is
- (A) same as normalizing temperature
  - (B) greater than normalizing temperature
  - (C) less than normalizing temperature
  - (D) sometimes greater and sometimes lesser than normalizing temperature

42. Which of the following items is not a path function ?
- (A) Heat (B) Work  
(C) Kinetic energy (D) Thermal conductivity
43. Work done in a free expansion process is
- (A) Positive (B) Negative  
(C) Zero (D) Maximum
44. Maxwell's thermodynamic relations are applicable to
- (A) Reversible process (B) Irreversible process  
(C) Mechanical system in equilibrium (D) Chemical system in equilibrium
45. The rate of energy transferred by convection to that by conduction is called
- (A) Stanton number (B) Nusselt number  
(C) Biot number (D) Peclet number
46. If air is heated without changing its moisture content, the dew point will
- (A) Increase (B) Decrease  
(C) Remains same (D) None of these
47. The knocking tendency in spark ignition engines may be decreased by
- (A) Controlling the air-fuel mixture  
(B) Controlling the ignition timing  
(C) Controlling the exhaust temperature  
(D) Reducing the compression ratio

48. In gear systems, speed reduction means torque
- (A) Stabilization (B) Increase  
(C) Reduction (D) None of these
49. In the high gear in the transmission, main shaft turns at the same speed as the
- (A) Idler shaft (B) Counter shaft  
(C) Clutch shaft (D) None of these
50. Queuing theory is applied best in situations where
- (A) Arrival rate of customers equal to service rate  
(B) Average service time is greater than average arrival time  
(C) There is only one channel of arrival at random and the service time is constant  
(D) The arrival and service rates cannot be analysed through any standard statistical distribution
51. Which is the equivalent value of 1 ton refrigeration in kJ/min ?
- (A) 3000 (B) 12600  
(C) 50 (D) 210
52. Water at  $42^{\circ}\text{C}$  is sprayed into a stream of air at atmospheric pressure, dry bulb temperature of  $40^{\circ}\text{C}$  and a wet bulb temperature of  $20^{\circ}\text{C}$ . The air leaving the spray humidifier is not saturated. Which of the following statements is true ?
- (A) Air gets cooled and humidified (B) Air gets heated and humidified  
(C) Air gets heated and dehumidified (D) Air gets cooled and dehumidified

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53. The first law of thermodynamics is a statement of
- (A) Conservation of mass (B) Conservation of energy  
(C) Conservation of momentum (D) Conservation of angular momentum
54. In the steady state heat transfer problem, 'Steady' defines correctly by any one of the four options given below. Find the correct answer
- (A) Temperature is constant with space  
(B) Heat flow is constant with time  
(C) Temperature varies with time  
(D) Heat flow varies with space
55. Arc length in arc welding is generally kept approximately equal to
- (A) half the diameter of electrode  
(B) diameter of electrodes  
(C) two times the diameter of electrode  
(D) equal to minimum plate thickness
56. Example of four different types of fluids has been suggested in four different options given below. From these options, choose the correct example for the Pseudo plastic fluid.
- (A) Tooth paste (B) Paint  
(C) Gasoline (D) Butter
57. Soldering wire is essentially a
- (A) lead tin (B) tin silver  
(C) bismuth lead (D) nickel tin

58. The ratio of the specific heats of a gas at constant pressure and at constant volume \_\_\_\_\_. (Choose the correct answer).

- (A) varies with pressure (B) varies with temperature  
(C) is always a constant (D) None of these

59. Which of the following relationships is valid only for responsible processes undergone by a closed system of simple compressible substance? Neglect changes in kinetic and potential energy.

- (A)  $\delta Q = dU + \delta W$  (B)  $T \cdot dS = dU + \delta W$   
(C)  $T \cdot dS = dU + p \cdot dV$  (D)  $\delta Q = dU + p \cdot dV$

60. Consider the following two processes :

- (I) A heat source at 1200K, losses 2500 kJ of heat to the sink at 800K;  
(II) A heat source at 800K, losses 2000 kJ of heat to the sink at 500K.

Which of the following is true ?

- (A) Process I is more irrelevant than Process II  
(B) Process II is more irrelevant than Process I  
(C) Irreversibility associated in both the processes are equal  
(D) None of these

61. Along the neutral axis of a simply supported beam \_\_\_\_\_. (Fill up the blank from options given below)

- (A) Fibres do not undergo strain (B) Fibres undergo to minimum strain  
(C) Fibres undergo to maximum (D) None of these



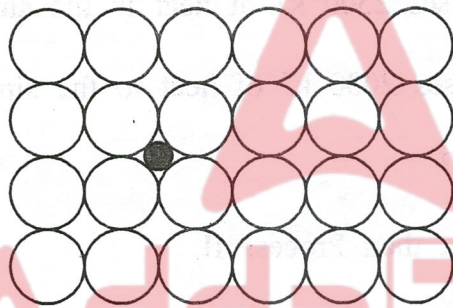
62. If the width of a simply supported beam carrying an isolated load at its centre is doubled, how the deflection of the beam at the centre will be changed?

- (A) 2 times
- (B) 4 times
- (C) 8 times
- (D)  $\frac{1}{2}$  times

63. We know that the section modulus of a rectangular section is proportional to a parameter. Name that parameter.

- (A) Area of the section
- (B) Square of the area of the section
- (C) Product of the area and depth
- (D) Product of the area and width

64. Which defect does the following diagram represent?



- (A) Vacancy defect
- (B) Schottky defect
- (C) Frankel defect
- (D) Interstitial defect

65. The acute angle between the tangent to the helix and the axis of the cylinder on which teeth are cut, is known as \_\_\_\_\_. (Fill up the blank from the options given below)

- (A) Lead angle
- (B) Helix angle
- (C) Arc of approach
- (D) No such angle exists

66. Match List 1 with List 2 and select the correct answer by using codes given below :

List - I (Euler's crippling load)	List - 2 (End conditions of column)
(a) $\frac{\pi^2 EI}{L^2}$	(i) Both ends hinged
(b) $\frac{\pi^2 EI}{4L^2}$	(ii) Both ends fixed
(c) $\frac{2\pi^2 EI}{L^2}$	(iii) One end fixed, other end free
(d) $\frac{4\pi^2 EI}{L^2}$	(iv) One end fixed, other end hinged

(A) (a)–(i), (b)–(iii), (c)–(ii), (d)–(iv)

(B) (a)–(iv), (b)–(i), (c)–(iii), (d)–(ii)

(C) (a)–(i), (b)–(ii), (c)–(iv), (d)–(iii)

(D) (a)–(ii), (b)–(iv), (c)–(i), (d)–(iii)

67. Which of the following is an amorphous material ?

(A) Glass

(B) Rubber

(C) Lead

(D) Mica

68. In a gas turbine plant, what is the purpose of using a regenerator ?

(A) increases work output

(B) increases pressure ratio

(C) increases thermal efficiency

(D) None of these

69. What kind of crystal structure Austenite have ?

(A) bcc

(B) hcp

(C) fcc

(D) Orthorhombic

70. What is the shape of woodruff key ?

(A) Cylinder

(B) Semicircle

(C) Sphere

(D) Trapezoid

71. For designing a plate clutch for uniform wear, what is the expression for the mean radius of friction surface ( $r$ ) ? Assume that the  $r_1$  and  $r_2$  are the external and internal radii of friction faces respectively.

(A)  $r = \frac{2}{3} \left[ \frac{(r_1)^3 - (r_2)^3}{(r_1)^2 - (r_2)^2} \right]$

(B)  $r = \frac{2}{3} \left[ \frac{(r_1)^3 - (r_2)^3}{(r_1)^2 + (r_2)^2} \right]$

(C)  $r = \frac{r_1 - r_2}{2}$

(D)  $r = \frac{r_1 + r_2}{2}$

72. Assume that for a belt drive,  $F_1$  is the tension on the tight side of the belt in kg ;  $F_2$  is the tension on the slack side of the belt in kg ;  $F$  is the maximum tension to which the belt can be subjected to (in kg) ; and,  $F_c$  is the centrifugal tension in the belt in kg. Now, select the condition for the transmission of the maximum power by a belt.

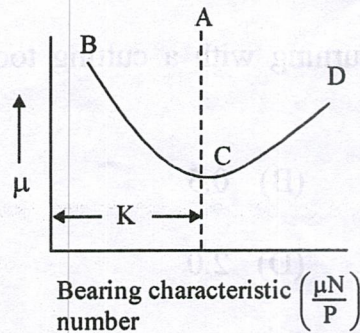
(A)  $F = F_c - (F_2 - F_1)$

(B)  $F = F_c + (F_2 - F_1)$

(C)  $F = \frac{(F_2 - F_1)}{3F_c}$

(D)  $F = \frac{1}{3}F_c$

73. This is a graphical representation of relation between the absolute viscosity of lubricant in kg/m.s and the bearing characteristic number required for Journal bearing design. There are four points, viz, A, B, C, and D in this graph. Now, from the options given below select the term by which point 'C' is represented ?



- (A) Rating life
  - (B) Bearing modulus
  - (C) Specific dynamic capacity
  - (D) Rotation factor
74. Manufacturing a product requires processing on four machines A, B, C, and D in the order A–B–C–D. The capacities of four machines are A = 100, B = 110, C = 120 and D = 130 units per shift. If the expected output is 90% of the system capacity, then what is the expected output ?
- (A) 90 units
  - (B) 99 units
  - (C) 108 units
  - (D) 117 units
75. Between which parameters, Break even analysis chart is drawn ?
- (A) Overhead cost and fixed cost
  - (B) volume of production and income
  - (C) material cost and labour cost
  - (D) None of these
76. Economic Order Quantity is the quantity at which the cost of carrying is \_\_\_\_\_.  
(Fill up the blank from the options given below)
- (A) Minimum
  - (B) Less than the cost or ordering
  - (C) Equal to the cost of ordering
  - (D) Cost of over-stocking

77. In oxyacetylene welding, the tubes for acetylene are made of
- (A) copper (B) brass  
(C) steel (D) aluminium
78. Minimum shear strain in orthogonal turning with a cutting tool of zero rake angle is
- (A) 0.0 (B) 0.5  
(C) 1.0 (D) 2.0
79. In turning operation, the feed ( $f$ ) could be doubled to increase the metal removal rate. To keep the same level of surface finish ( $h_r$ ), the nose radius ( $r$ ) of the tool should be
- (A) halved (B) kept unchanged  
(C) doubled (D) made four times
80. In an assembly line for assembling toys, five workers are assigned tasks which take times of 10, 8, 6, 9 and 10 minutes respectively. The balance delay for the line is
- (A) 43.5% (B) 14.8%  
(C) 14.0% (D) 16.3%
81. The coefficient of thermal expansion is defined as
- (A) The change in volume per unit volume per degree Celsius  
(B) The change in length per unit length per degree Celsius  
(C) The change in pressure per unit pressure per degree Celsius  
(D) The change in entropy per unit entropy per degree Celsius

82. A Rankine cycle operates between a boiler temperature of  $600^{\circ}\text{C}$  and a condenser temperature of  $40^{\circ}\text{C}$ . What is the Carnot efficiency of the cycle?
- (A) 23.5% (B) 42.9%  
(C) 56.5% (D) 62.5%
83. The ratio of specific heat capacities of air at constant pressure and constant volume is \_\_\_\_\_.
- (A) 0.4 (B) 0.7  
(C) 1.4 (D) 1.0
84. The efficiency of a screw jack is maximum, when (where  $\alpha$  = Helix angle, and  $\phi$  = Angle of friction.)
- (A)  $\alpha = 45^{\circ} + \phi/2$  (B)  $\alpha = 45^{\circ} - \phi/2$   
(C)  $\alpha = 90^{\circ} + \phi$  (D)  $\alpha = 90^{\circ} - \phi$
85. The maximum shear stress theory of failure is also known as
- (A) Guest's theory (B) Rankine's theory  
(C) Von Mises' theory (D) Tresca's theory
86. Simplex method of solving Linear Programming Problem uses
- (A) all the points in the feasible region  
(B) only the corner points of the feasible region  
(C) intermediate points within the infeasible region  
(D) only the interior points in the feasible region

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87. A company has an annual demand  $D$  of certain equipments. If its holding cost per annum per piece is equal to the ordering cost per order, then Economic Order Quantity will be equal to
- (A)  $\sqrt{D}$  (B)  $\sqrt{2D}$   
(C)  $D/2$  (D) indeterminate
88. In a tool life test, doubling the cutting speed reduces the tool life to  $1/8$ th of the original. The Taylor's tool life index is
- (A)  $1/2$  (B)  $1/8$   
(C)  $1/4$  (D)  $1/3$
89. During orthogonal cutting of mild steel with a  $10^\circ$  rake angle, tool the chip thickness ratio was obtained as 0.4. The shear angle (in degrees) evaluated from this data is
- (A) 6.53 (B) 20.22  
(C) 22.94 (D) 50.00
90. The frequency of the tool in case of Ultrasonic Machining (USM) is approximately in the range of
- (A) 10 – 15 kHz (B) 15 – 25 kHz  
(C) 25 – 35 kHz (D) 35 – 50 kHz
91. Which of the following processes does not cause tool wear ?
- (A) ultrasonic machining (B) electrochemical machining  
(C) electric discharge machining (D) anode mechanical machining
92. The selection of diameter of electrodes in arc welding is based on
- (A) workpiece material (B) thickness of workpieces  
(C) voltage (D) current

93. Seamless tubes are made by
- (A) piercing (B) direct extrusion  
(C) hot rolling (D) drawing
94. Two streams of liquid metal, which are not hot enough to fuse properly, result in a casting defect known as
- (A) cold shut (B) swell  
(C) sand wash (D) scab
95. Which one of the following is correct? If the number of jets in a Pelton turbine is  $n$ , then the specific speed is
- (A)  $\propto \sqrt{n}$  (B)  $\propto n$   
(C)  $\propto n^2$  (D) Independent of  $n$
96. Cavitation in a centrifugal pump is likely to occur at the
- (A) impeller exit (B) impeller inlet  
(C) diffuser exit (D) involute casing
97. The gross head ( $H_g$ ) on a turbine is 300m. The length of penstock ( $L$ ) supplying water from reservoir to the turbine is 400m. The diameter of the penstock ( $D$ ) is 1m and velocity of water through penstock ( $V$ ) is 5 m/s. If coefficient of friction ( $4f$ ) is 0.0098, the net head on the turbine ( $H_n$ ) would be, nearly
- (A) 310m (B) 295m  
(C) 200m (D) 150m
98. The amount of  $\text{CO}_2$  produced by 1 kg of carbon on complete combustion in kg is
- (A) 3/11 (B) 3/8  
(C) 8/3 (D) 11/3



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99. If the enthalpy drop in the moving blades and fixed blades of a steam turbine is 10 kJ/kg and 15 kJ/kg, respectively, then what is the degree of reaction ?

- (A) 67% (B) 60%  
(C) 40% (D) 33%

100. The air-fuel ratio for idling speed of an automobile petrol engine is closer to

- (A) 10 : 1 (B) 15 : 1  
(C) 17 : 1 (D) 21 : 1.

