DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ASKED TO DO SO

2008
TEST BOOKLET
MECHANICAL ENGINEERING

GROUP MA

Time allowed : 2 hours
Full marks : 200
Questions are of equal Mark

Serial No.................................

Roll No. [   ]

Full Signature of the Candidate : [   ]

INSTRUCTIONS

Candidates should read the following instructions carefully before answering the questions :

1. This booklet consists of 16 pages including this front page. Verify the page Nos. and Group on each page and bring at once to the Invigilator's notice, discrepancy, if any.

2. Answer will have to be given in the Answer-Sheet supplied for the purpose.

3. You should write your Roll No. & Full Signature on this page (where indicated), Full name (in BLOCK Letter), Roll No., Subject, Group & Full Signature on the front page of the Answer-Sheet and Group No. on the top of the Answer-Sheet in ink.

4. All questions are of multiple-choice answer type. You will find your probable answers (A), (B), (C) & (D) against each question. Find out which of the four answers appears to you to be correct. NOW PUT A CROSS-MARK WITH DOT PEN WITHIN THE CIRCLE BELOW THE LETTER OF THE SELECTED ANSWER IN THE ANSWER-SHEET AS SHOWN BELOW :

   Example— Question :   The Universal Law of Gravitation was Propounded by–

               (A) Keplar   (B) Galileo   (C) Newton   (D) Copernicus

           Answer :   (A)   (B)   (C)   (D)

                               ◯   ◯   ⊗   ◯

5. i) If you have already marked a wrong answer, blacken the circle completely and put cross-mark afresh within the correct circle.
   ii) If more than one circle is cross-marked for a particular answer it will be treated as a wrong answer.
   iii) Any sign other than a cross-mark inside the circle will be treated as no answer.

6. There are 100 questions carrying 2 marks each.

7. HALF (½) MARK WILL BE DEDUCTED FOR EACH INCORRECT/WRONG ANSWER. THERFORE, PLEASE TRY TO ATTEMPT THE QUESTION WHERE YOU ARE SURE OF THE CORRECT ANSWER.

8. There are extra blank pages at the end of this booklet for rough work. Roll No. & Group should be given on the sheet used for rough work. The sheet should not be torn out from the Test Booklet.

9. Candidates are not allowed to use Calculator, Pager and Mobile Phone in the Examination Hall.

10. The Entire Set (Answer-Sheet & Test Booklet including used/unused extra pages) should be handed over to the Invigilator before leaving the Examination Hall.

1.	The centre of gravity of a semi-circle lies at a distance of ...... from its base measured along the vertical radius.
	(a)	3 r / 8	☐
	(b)	4 r / 3 π	☐
	(c)	8 r / 3	☐
	(d)	3 r / 4 π	☐
	when r = radius of the semi-circle

2.	Moment of inertia of a triangular section of base 'b' and height 'h' about an axis passing through the C.G. and parallel to the base, is
	(a)	bh³/4	☐
	(b)	bh³/8	☐
	(c)	bh³/12	☐
	(d)	bh³/36	☐

3.	In a screw jack the effort required to lift the load is given by
	(a)	P = W tan (α − ∅)	☐
	(b)	P = W tan (α + ∅)	☐
	(c)	P = W tan (∅ − α)	☐
	(d)	P = W Cos (α + ∅)	☐

	when, W	= Load lifted
		α	= Helix angle
		∅	= Angle of friction

4.	The angular velocity (in Rad / sec) of a body rotating at N rpm, is
	(a)	π N/20	☐
	(b)	π N/30	☐
	(c)	π N/60	☐
	(d)	π N/90	☐

5.	One horsepower is equal to
	(a)	450 kgm / min	☐
	(b)	550 kgm / min	☐
	(c)	4500 kgm / min	☐
	(d)	5550 kgm / min	☐

6.	The product of Young's Modulus (E) and moment of Inertia (I) is known as
	(a)	modulus of rigidity	☐
	(b)	bulk modulus	☐
	(c)	flextural rigidity	☐
	(d)	torsional rigidity	☐

7.	A shaft revolving at N rpm, transmits torque (T) in kgm. The power developed, is
	(a)	$\frac{\pi NT}{750}$ hp	☐
	(b)	2 π NT/750 hp	☐
	(c)	π NT/4500 hp	☐
	(d)	π NT/2250 hp	☐

8.	The strain energy stored in a solid circular shaft subjected to a shear stress (fs), is
	(a)	fs / 2C × Volume of shaft	☐
	(b)	fs² / 2C × Volume of shaft	☐
	(c)	fs / 4C × Volume of shaft	☐
	(d)	fs² / 4C × Volume of shaft	☐
	where C = Modulus of rigidity for the shaft material

9.	The springs in brakes and clutches are used to
	(a)	apply forces	☐
	(b)	store strain energy	☐
	(c)	absorb shocks	☐
	(d)	all of the above	☐

10.	A thin cylindrical shell is subjected to an internal pressure. The ratio of longitudinal stress to hoop stress developed in the shell is
	(a)	1.5	☐
	(b)	1.0	☐
	(c)	0.75	☐
	(d)	0.50	☐

11. The pull required to shear off a rivet, in double shear, per pitch length is

(a) $\frac{\pi}{4} \times d^2 \times f_t$ ☐

(b) $\frac{\pi}{4} \times d^2 \times f_s$ ☐

(c) $\frac{\pi}{2} \times d^2 \times f_t$ ☐

(d) $\frac{\pi}{2} \times d^2 \times f_s$ ☐

where, d = diameter of rivet hole

t = thickness of plates

f_t, f_s = Permissible tensile and shear stresses respectively of the rivet material

12. A glass tube of small diameter (d) is dipped in fluid. The height of rise or fall in the tube is given by

(a) 4 wd / σ cos ∅ ☐

(b) σ cos ∅ / 4 wd ☐

(c) 4 σ cos ∅ / wd ☐

(d) wd / 4 σ cos ∅ ☐

where, w = Sp. weight of fluid

σ = Surface tension

∅ = angle of contact of fluid surface

13. A fluid having no viscosity is known as

(a) Real fluid ☐

(b) Ideal fluid ☐

(c) Newtonian fluid ☐

(d) Non-newtonian fluid ☐

14. A definite area or a space where some thermodynamic process takes place, is known as

(a) thermodynamic system ☐

(b) thermodynamic cycle ☐

(c) thermodynamic process ☐

(d) thermodynamic law ☐

15. Which of the following is an intensive property of a thermodynamic system?

(a) Volume ☐

(b) Temperature ☐

(c) Mass ☐

(d) Energy ☐

16. First law of thermodynamics deals with

(a) conservation of heat ☐

(b) conservation of momentum ☐

(c) conservation of mass ☐

(d) conservation of energy ☐

17. The entropy may be expressed as a function of

(a) pressure and temperature ☐

(b) temperature and volume ☐

(c) heat and work ☐

(d) all of the above ☐

18. Carnot cycle consists of

(a) two constant volume and two adiabatic processes ☐

(b) two isothermal and two adiabatic processes ☐

(c) two constant pressure and two adiabatic processes ☐

(d) One constant volume, one constant pressure and two adiabatic processes ☐

19. The efficiency of a Diesel cycle increases with

(a) decrease in cut-off ☐

(b) increase in cut-off ☐

(c) constant cut-off ☐

(d) none of the above ☐

20. Theoretically, a four stroke cycle engine should develop.......power as that of a two-stroke cycle engine.

(a) half ☐

(b) same ☐

(c) double ☐

(d) four times ☐

21. In a four stroke cycle petrol engine, the inlet valve
   (a) opens at top dead centre and closes at bottom dead centre ☐
   (b) opens at 20° before top dead centre and closes at 40° after bottom dead centre ☐
   (c) opens at 20° after top dead centre and closes at 20° before bottom dead centre ☐
   (d) may open or close anywhere ☐

22. If petrol is used in a diesel engine by mistake, then
   (a) low power will be produced ☐
   (b) efficiency will be low ☐
   (c) higher knocking will occur ☐
   (d) black smoke will be produced ☐

23. A carburettor is used to supply
   (a) petrol, air and lubricating oil ☐
   (b) air and diesel ☐
   (c) petrol and lubricating oil ☐
   (d) petrol and air ☐

24. A higher compression ratio causes
   (a) pre-ignition ☐
   (b) increase in detonation ☐
   (c) an acceleration in the rate of combustion ☐
   (d) any one of the above ☐

25. The operation of forcing additional air under pressure into the engine cylinder, is known as
   (a) supercharging ☐
   (b) carburation ☐
   (c) turbulence ☐
   (d) delay period ☐

26. The ratio of the indicated thermal efficiency to the air standard efficiency, is known as
   (a) mechanical efficiency ☐
   (b) overall efficiency ☐
   (c) volumetric efficiency ☐
   (d) relative efficiency ☐

27. The power transmitted by a belt is maximum when the maximum tension in the belt is....of centrifugal tension.
   (a) one-half ☐
   (b) two-third ☐
   (c) double ☐
   (d) three times ☐

28. The included angle for the V-belt is usually
   (a) 10° to 20° ☐
   (b) 20° to 25° ☐
   (c) 30° to 40° ☐
   (d) 60° to 80° ☐

29. The arrangement is called bevel gearing, when two........are connected by gears.
   (a) intersecting and coplaner shafts ☐
   (b) non-intersecting and non-coplaner shafts ☐
   (c) parallel and coplaner shafts ☐
   (d) parallel and intersecting shafts ☐

30. The working depth of a gear is the radial distance from the
   (a) pitch circle to the bottom of a tooth ☐
   (b) pitch circle to the top of a tooth ☐
   (c) top of a tooth to the bottom of a tooth ☐
   (d) addendum circle to the clearance circle ☐

31. The engine of an aeroplane rotates clockwise direction when seen from the tail end. If the aeroplanes takes a turn to the left. The effect of gyroscopic couple on the aeroplane will be
   (a) to dip the nose and tail ☐
   (b) to raise the nose and tail ☐
   (c) to raise the nose and dip the tail ☐
   (d) to dip the nose and raise the tail ☐

32. Balancing of rotating and reciprocating parts of an engine is necessary when it runs at
   (a) slow speed ☐
   (b) moderate speed ☐
   (c) high speed ☐
   (d) any one of the above ☐

33. Torsional vibrations are said to occur when the particles of a body move
    (a) perpendicular to its axis ☐
    (b) parallel to its axis ☐
    (c) in a circle about its axis ☐
    (d) none of the above ☐

34. When a body is subjected to transverse vibrations, the stress induced in the body will be
    (a) shear stress ☐
    (b) bending stress ☐
    (c) tensile stress ☐
    (d) compressive stress ☐

35. The critical speed of a shaft depends upon its
    (a) mass ☐
    (b) stiffness ☐
    (c) mass and stiffness ☐
    (d) stiffness and eccentricity ☐

36. Stress concentration is caused due to
    (a) variations in load acting on a member ☐
    (b) variations in properties of materials in a member ☐
    (c) abrupt change in cross-section ☐
    (d) all of the above ☐

37. Stress concentration factor is defined as the ratio of
    (a) maximum stress to the endurance limit ☐
    (b) nominal stress to the endurance limit ☐
    (c) maximum stress to the nominal stress ☐
    (d) nominal stress to the maximum stress ☐

38. In order to avoid tearing of the plate at an edge, the distance from the centre line of the rivet hole to the nearest edge of the plate should not be less than
    (a) d ☐
    (b) 1.5 d ☐
    (c) 2.0 d ☐
    (d) 2.5 d ☐

    where d = diameter of rivet hole

39. For longitudinal joint in boilers, the type of joint used is
    (a) lap joint with one ring overlapping the other ☐
    (b) butt joint with single cover plate ☐
    (c) butt joint with double cover plate ☐
    (d) none of the above ☐

40. When screw threads are to be used in a situation where power is being transmitted in one direction only, then the screw threads suitable for this, will be
    (a) square threads ☐
    (b) acme threads ☐
    (c) knuckle threads ☐
    (d) buttress threads ☐

41. When a nut is tightened by placing a washer below it, the bolt will be subjected to
    (a) tensile stress ☐
    (b) compressive stress ☐
    (c) shear stress ☐
    (d) none of the above ☐

42. A cotter joint is used to connect two...rods.
    (a) co-axial ☐
    (b) perpendicular ☐
    (c) parallel ☐
    (d) intersecting ☐

43. Two shafts A and B are made of the same material. The diameter of shaft A is twice as that of shaft B. The power transmitted by shaft A will be.... that transmitted by shaft B.
   (a) twice ☐
   (b) four times ☐
   (c) eight times ☐
   (d) sixteen times ☐

44. The usual proportion for the width of a key is
   (a) d / 8 ☐
   (b) d / 6 ☐
   (c) d / 4 ☐
   (d) d / 2 ☐
   where d = Diameter of shaft or diameter of hole in the hub

45. Idler pulley is used for
   (a) increasing velocity ratio ☐
   (b) applying tension ☐
   (c) changing the direction of motion of the belt ☐
   (d) all of the above ☐

46. The type of 'Brake' commonly used in motor cars, is a
   (a) shoe brake ☐
   (b) band and block brake ☐
   (c) hand brake ☐
   (d) internal expanding brake ☐

47. The minimum number of teeth on the pinion which will mesh with any gear without interference for 20° full depth involute teeth, will be
   (a) 12 ☐
   (b) 14 ☐
   (c) 18 ☐
   (d) 24 ☐

48. In helical gears, the distance parallel to the axis between similar faces of adjacent teeth, is called
   (a) normal pitch ☐
   (b) axial pitch ☐
   (c) diametral pitch ☐
   (d) module ☐

49. Steel containing 0.8 to 1.5% carbon, is known as
   (a) mild steel ☐
   (b) dead mild steel ☐
   (c) medium carbon steel ☐
   (d) high carbon steel ☐

50. A steel alloy containing 36% nickel, is called
   (a) stainless steel ☐
   (b) high speed steel ☐
   (c) Invar ☐
   (d) heat resisting steel ☐

51. The alloying element which can replace tungsten in high speed steels, is
   (a) nickel ☐
   (b) vandium ☐
   (c) cobalt ☐
   (d) molybdenum ☐

52. The hardness of steel increases if it contains
   (a) pearlite ☐
   (b) ferrite ☐
   (c) cementite ☐
   (d) martensite ☐

53. The heat treatment process used for castings, is
   (a) carburising ☐
   (b) normalising ☐
   (c) annealing ☐
   (d) tempering ☐

54. An alloy of copper, tin and zinc is known as
   (a) brass ☐
   (b) bronze ☐
   (c) gunmetal ☐
   (d) muntzmetal ☐

55. German silver contains
    (a) Copper and Zinc
    (b) Copper, Zinc & lead
    (c) Copper, Zinc & nickel
    (d) Copper, Zinc & tin

56. With the same tool life, the maximum quantity of material per minute is removed by
    (a) increasing the cutting speed
    (b) decreasing the cutting speed
    (c) increasing the depth of cut
    (d) increasing the feed rate

57. The lathe centres are provided with standard taper, known as
    (a) Morse taper
    (b) Seller's taper
    (c) Chapman taper
    (d) Brown and Sharpe taper

58. The left hand rule is applicable to
    (a) generator
    (b) motor
    (c) transformer
    (d) (a) & (b) both

59. Which of the following rules states that the direction of an induced current is always such that the magnetic field which it produces reacts in opposition to the change of flux.
    a) Thumb rule
    b) Lenz's law
    c) Kirchhoff's law
    d) Faraday's law

60. Which of the following machines will be preferred to charge the batteries?
    a) Series generator
    b) Series motor
    c) Shunt generator
    d) Compound generator

61. How many poles will be required if an alternator runs at 1500 rpm and gives frequency of 50 Hz?
    a) 8 poles
    b) 6 poles
    c) 4 poles
    d) 2 poles

62. The capacity of a cell is measured in
    a) amperes
    b) volts
    c) ampere-hours
    d) Watts

63. Creeping is a phenomenon which occurs in
    a) Voltameter
    b) Wattmeter
    c) Energymeter
    d) Ammeter

64. The centre of gravity of an equilateral triangle with each side 'a', is .... from any of the three sides.
    a) $\frac{\sqrt{3}}{2} \times a$
    b) $2\sqrt{3}.a$
    c) $\frac{1}{2\sqrt{3}} \times a$
    d) $3\sqrt{2} \times a$

65. If $f(x) = \frac{x-1}{x}$ for all real numbers except $x = 0$ and $g(u) = u^2 + 1$ for all real numbers of u, then $f[g(-1)]$ is
    a) 2
    b) 1
    c) $\frac{1}{2}$
    d) -1

66. As per the standard prefixes of S.I. unit, 10^{12} is called
    a) peta ☐
    b) exa ☐
    c) tera ☐
    d) giga ☐

67. The dimensional formula of the capacitance, C is
    a) $M^{-2}L^{-2}IT^3$ ☐
    b) $M^{-1}L^{-2}I^2T^4$ ☐
    c) ML^2IT^4 ☐
    d) $ML^2I^2T^3$ ☐
    where M, L, T and I represent mass, length, time and electric current respectively.

68. The dimensional formula $ML^{-1}T^{-2}$ may correspond to
    a) work done by a force ☐
    b) linear momentum ☐
    c) pressure ☐
    d) centripetal force ☐

69. An elevator is descending with uniform acceleration. To measure the acceleration, a person in the elevator drops a coin at the moment the elevator starts. The coin is 2 metres above the floor of the elevator at the time it is dropped and takes 1 second to strike the floor. The acceleration of the elevator is (taking g=10 m/sec²)
    a) 8 m/sec³ ☐
    b) 7 m/sec² ☐
    c) 6 m/sec² ☐
    d) 5 m/sec² ☐

70. A particle is kept at rest at a distance R (earth's radius) above the earth surface. The minimum speed with which it should be projected so that it does not return, is
    a) $\sqrt{\dfrac{GM}{4R}}$ ☐
    b) $\sqrt{\dfrac{GM}{2R}}$ ☐
    c) $\sqrt{\dfrac{GM}{R}}$ ☐
    d) $\sqrt{\dfrac{2GM}{R}}$ ☐
    where G = universal gravitational constant
    M = mass of the earth

71. The pressure measured with the help of a piezometer tube is in
    a) N / mm^2 ☐
    b) N / m^2 ☐
    c) head of liquid ☐
    d) all of these ☐

72. If the atmospheric pressure on the surface of an oil tank (sp. gr. – 0.8) is 0.1 kg/cm², the pressure at a depth 2.5 metres below the oil surface will be
    a) 2.1 metres of water ☐
    b) 2.6 metres of water ☐
    c) 3.0 metres of water ☐
    d) 3.5 metres of water ☐

73. A flow through an expanding tube at a constant rate is called
    a) steady uniform flow ☐
    b) steady non-uniform flow ☐
    c) unsteady uniform flow ☐
    d) unsteady non-uniform flow ☐

74. In order to avoid tendency of separation at throat in a venturimeter, the ratio of the diameter at throat to the diameter of pipe should be

   a) $\frac{1}{16}$ to $\frac{1}{8}$ ☐

   b) $\frac{1}{8}$ to $\frac{1}{4}$ ☐

   c) $\frac{1}{4}$ to $\frac{1}{3}$ ☐

   d) $\frac{1}{3}$ to $\frac{1}{2}$ ☐

75. The loss of head at the exit of a pipe is

   a) $\frac{v^2}{2g}$ ☐

   b) $\frac{0.5v^2}{2g}$ ☐

   c) $\frac{0.375v^2}{2g}$ ☐

   d) $\frac{0.75v^2}{2g}$ ☐

   where v = velocity of liquid in the pipe

76. During flow of a liquid, the power transmitted (in watts) through a pipe is

   a) $W \times Q \times H$ ☐
   b) $W \times Q \times h_f$ ☐
   c) $W \times Q \times (H-h_f)$ ☐
   d) $W \times Q \times (H+h_f)$ ☐

   where W = Specific weight of the liquid in N/m^3

   Q = Discharge in m^3/sec

   H = Total supply head in metre

   h_f = Head lost due to friction in the pipe in metre

77. A heat engine operates between a cold reservoir at a temperature $T_2 = 300$ K and a hot reservoir at a temperature T_1. It takes 200J of heat from the hot reservoir and delivers 120 J of heat to the cold reservoir in a cycle. Considering Carnot's theorem, the minimum temperature of the hot reservoir is

   a) 450 K ☐
   b) 500 K ☐
   c) 550 K ☐
   d) 600 K ☐

78. Keeping the number of moles, volume and temperature the same, which of the following is the same for all ideal gases?

   a) root mean square speed of a molecule ☐
   b) density ☐
   c) pressure ☐
   d) average magnitude of momentum ☐

79. A system can be taken from the initial state p_1 (pressure), V_1 (volume) to the final state p_2, V_2 by two different methods. Let ΔQ and ΔW represent the heat given to the system and the work done by the system. Which of the following must be the same in both the methods?

   a) ΔQ ☐
   b) ΔW ☐
   c) $\Delta Q + \Delta W$ ☐
   d) $\Delta Q - \Delta W$ ☐

80. A thin metallic spherical shell contains a charge Q on top of its outer surface. A point charge q is placed at the centre of the shell and another charge q_1 is placed outside the cell but closed to it. All the charges are positive. The force on the charge at the centre (q) is

   a) towards q_1 ☐
   b) away from q_1 ☐
   c) upward ☐
   d) zero ☐

81. A beam consisting of electrons and protons moving at the same speed goes through a thin region in which there is a magnetic field perpendicular to the beam. The protons and electrons
   a) will go undeviated ☐
   b) will be deviated by the same angle and will not separate ☐
   c) will be deviated by different angles and hence separate ☐
   d) will be deviated by the same angle and will separate ☐

82. The unit of dynamic viscosity in S.I. units is
   a) $N - m / sec^2$ ☐
   b) $N - sec / m^2$ ☐
   c) poise ☐
   d) stoke ☐

83. Reynold's number is the ratio of the inertia force to the
   a) surface tension force ☐
   b) elastic force ☐
   c) gravity force ☐
   d) viscous force ☐

84. An impulse turbine is used for
   a) low head of water ☐
   b) high head of water ☐
   c) medium head of water ☐
   d) high discharge ☐

85. Which of the following turbine is preferred for 0 to 25 metres head of water?
   a) Pelton wheel ☐
   b) Kaplan turbine ☐
   c) Francis turbine ☐
   d) None of these ☐

86. Which of the following pumps is suitable for small discharge and high heads?
   a) Centrifugal pump ☐
   b) Axial pump ☐
   c) Mixed flow pump ☐
   d) Reciprocating pump ☐

87. The efficiency of a hydraulic press is given by
   a) $\dfrac{W}{P} \times \dfrac{A}{a}$ ☐
   b) $\dfrac{P}{W} \times \dfrac{a}{A}$ ☐
   c) $\dfrac{W}{P} \times \dfrac{a}{A}$ ☐
   d) $\dfrac{P}{W} \times \dfrac{A}{a}$ ☐

   where W = weight lifted by ram
   P = force applied on plunger
   A = area of ram
   a = area of plunger

88. The principle of working of which of the following hydraulic units is based on Pascal's law?
   a) Air lift pump ☐
   b) Jet pump ☐
   c) Hydraulic coupling ☐
   d) Hydraulic press ☐

89. A turbine develops 10,000KW under a head of 16 metres at 128 r.p.m. Its specific speed is
   a) 250 r.p.m. ☐
   b) 300 r.p.m. ☐
   c) 350 r.p.m. ☐
   d) 400 r.p.m. ☐

90. If the resultant of two equal forces has the same magnitude as either of the forces, then the angle between the two forces is
    a) 30°
    b) 60°
    c) 90°
    d) 120°

91. A simply supported beam 'A' of length I carries a central point load W. Another similar beam 'B' is loaded with a uniformly distributed load such that the total load on the beam is W. The ratio of maximum deflections between the beams 'A' and 'B' is
    a) 5 / 8
    b) 8 / 5
    c) 5 / 4
    d) 4 / 5

92. When a bar is subjected to a change of temperature and its deformation is prevented, the stress induced in the bar is
    a) tensile stress
    b) compressive stress
    c) shear stress
    d) thermal stress

93. A section of beam is said to be in pure bending, if it is subjected to
    a) constant bending moment and constant shear Force
    b) constant S.F. and zero B.M.
    c) constant B.M. and zero S.F.
    d) none of the above

94. In a thick cylindrical shell subjected to an internal pressure (p), the maximum radial stress at the inner surface of the shell is
    a) zero
    b) p (tensile)
    c) – p (compressive)
    d) 2p (tensile)

95. A closed cycle gas turbine works on
    a) Carnot cycle
    b) Rankine cycle
    c) Ericsson cycle
    d) Joule cycle

96. High air-fuel ratio in gas turbines
    a) increases power output
    b) improves thermal efficiency
    c) reduces exhaust temperature
    d) none of the above

97. Which of the following does not relate to a compression ignition engine?
    a) Fuel pump
    b) Fuel injector
    c) Governor
    d) Carburettor

98. The ratio of the number of teeth to the pitch circle diameter in millimetres, is called
    a) circular pitch
    b) diametral pitch
    c) module
    d) none of the above

99. How many atoms are there in a unit cell of a body centred cubic space lattice?
    a) 6
    b) 9
    c) 14
    d) 17

100. A wheel rotates with a constant acceleration of 4.4 rad / sec². If the wheel starts from rest, how many revolutions will it make in the first 10 seconds?
    a) 25 revolutions
    b) 30 revolutions
    c) 35 revolutions
    d) 40 revolutions

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