

Sl. No. : 20000389

DEAE 2012

Register
Number

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2012

**AUTOMOBILE ENGINEERING
(Diploma Standard)**

Time Allowed : 3 Hours]

[Maximum Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. This Booklet has a cover (this page) which should not be opened till the invigilator gives signal to open it at the commencement of the examination. As soon as the signal is received you should tear the right side of the booklet cover carefully to open the booklet. Then proceed to answer the questions.
2. This Question Booklet contains 200 questions.
3. Answer all questions.
4. All questions carry equal marks.
5. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
6. An Answer Sheet will be supplied to you separately by the Invigilator to mark the answers. You must write your Name, Register No., Question Booklet Sl. No. and other particulars with Blue or Black ink Ball point pen on side 2 of the Answer Sheet provided, failing which your Answer Sheet will not be evaluated.
7. You will also encode your Register Number, Subject Code, Question Booklet Sl. No. etc. with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, your Answer Sheet will not be evaluated.
8. Each question comprises *four* responses (A), (B), (C) and (D). You are to select **ONLY ONE** correct response and mark in your Answer Sheet. In case, you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose **ONLY ONE** response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
9. In the Answer Sheet there are four brackets [A] [B] [C] and [D] against each question. To answer the questions you are to mark with Ball point pen **ONLY ONE** bracket of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. e.g. If for any item, [B] is the correct answer, you have to mark as follows :
[A] [C] [D]
10. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
11. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
12. Do not tick-mark or mark the answers in the Question booklet.
13. The last sheet of the Question Booklet can be used for Rough Work.

SEAL

1. The rivets are generally made of
- (A) Brass (B) Tin
(C) Steel (D) Copper
2. The diameter of the rivet (d) and thickness of the plate (t) follow the relation
- (A) $d = 3\sqrt{t}$ (B) $d = 4\sqrt{t}$
(C) $d = 5\sqrt{t}$ (D) $d = 6\sqrt{t}$

3. Match List I with List II and select the correct answer from the codes given below :

List I	List II
(a) The _____ is the deformation produced by the stress	1. cantilever
(b) _____ is the property that enables the deformation of a permanent deformation in a material	2. section modulus
(c) A _____ is a beam whose one end is fixed and the other end free	3. plasticity
(d) The strength of the beam mainly depends on _____	4. strain

Codes :

	(a)	(b)	(c)	(d)
(A)	4	3	2	1
(B)	4	3	1	2
(C)	1	2	3	4
(D)	2	3	4	1

4. When a beam is subjected to a bending moment the strain in a layer is _____ the distance from the neutral axis.
- (A) equal to (B) directly proportional to
(C) inversely proportional to (D) independent of

The maximum deflection of a simply supported beam subjected to uniformly distributed load 'W' over the span is (where $W = w.L$)

- (A) $\frac{WL^3}{8EI}$ (B) $\frac{WL^3}{48EI}$
(C) $\frac{5WL^3}{48EI}$ (D) $\frac{5WL^3}{384EI}$

6. A gear which has its teeth cut on a conical surface is
(A) bevel gear (B) helical gear
(C) spur gear (D) worm gear
7. Arc welding uses following electric supply
(A) A.C. (B) D.C.
(C) both A.C. and D.C. (D) spiral waveform
8. Case hardening is
(A) done to get a soft ductile interior with a very hard surface
(B) done to get a hard ductile interior with a very hard surface
(C) followed by tempering
(D) none of the above
9. A body having similar properties throughout its volume is said to be
(A) homogeneous (B) isotropic
(C) isentropic (D) anisotropic
10. There are fourteen atoms in a unit cell of
(A) body centered cubic space lattice (B) face centered cubic space lattice
(C) close packed hexagonal space lattice (D) none of these
11. In iron-carbon diagram the
(A) abscissa is time (B) ordinate is time
(C) abscissa is temperature (D) abscissa is carbon percentage
12. The primary purpose of annealing is to
(A) restrict the hardness of steel
(B) soften the steel for machining after cold working
(C) reduce carbon percentage
(D) change the crystalline structure
13. 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

14. The co-efficient of discharge (C_d) interms of C_v and C_c is
- (A) $C_d = \frac{C_v}{C_c}$ (B) $C_d = C_v \times C_c$
- (C) $C_d = \frac{C_c}{C_v}$ (D) None of the above
15. Which one of the following does not come under the minor losses in flow through pipes?
- (A) Loss of head due to change in direction
 (B) Loss of head due to an obstruction
 (C) Loss of head due to friction
 (D) Loss of head due to sudden enlargement
16. Consider the following statements :
- Assertion (A) : Reciprocating pumps are also known as positive displacement pumps.
 Reason (R) : In Reciprocating pumps, the liquid lifted due to the thrust exerted on it by a moving piston or plunger.
- (A) Both (A) and (R) are true. (R) is the correct explanation of (A)
 (B) Both (A) and (R) are true but (R) is not the correct explanation of (A)
 (C) (A) is true but (R) is false
 (D) (A) is false but (R) is true
17. In the following statement which does not come under the qualities of a good hydraulic fluid
- (A) It should emulsify with the water (B) It should reduce foaming action
 (C) It should prevent rusting (D) It should prevent pitting action
18. A sand employed on the faces of the pattern before moulding is called
- (A) Green sand (B) Dry sand
 (C) Parting sand (D) Oil sand
19. In oblique cutting of metals the cutting edge of the tool is
- (A) perpendicular to the work piece
 (B) perpendicular to the direction of tool travel
 (C) parallel to the direction of tool travel
 (D) inclined at an angle less than 90° to the direction of tool travel

20. The tool used to withdraw a drill from its sleeve is called
(A) Allen key (B) Drift
(C) Taper key (D) None of the above
21. The normal value of the point angle of a drill is
(A) 98° (B) 108°
(C) 118° (D) 128°
22. Quick return mechanism is used in
(A) Milling machine (B) Broaching machine
(C) Grinding machine (D) Slotter
23. Milling machine is classified as horizontal or vertical type, depending on the position of
(A) Spindle (B) Milling cutter
(C) Work table (D) Knee
24. Find out indexing movement required to divide the periphery of the workpiece into 6 equal parts by direct indexing. The index plate has 24 slots.
(A) 5 (B) 4
(C) 3 (D) 7
25. The soft grade grinding wheels are denoted by the letters
(A) A to H (B) I to P
(C) Q to Z (D) A to P
26. The process of removing metal by a cutter which is rotated in the same direction of travel of the workpiece is called
(A) end milling (B) face milling
(C) up milling (D) down milling
27. A bit of solder iron is generally made of
(A) cast iron (B) mild steel
(C) stainless steel (D) copper

28. When used in circuit, the zener diode is always
- (A) forward-biased (B) connected in series
(C) troubled by overheating (D) reverse-biased
29. A LED is made up of a _____ junction.
- (A) PNP (B) NPN
(C) PIN (D) PN
30. The series field of a short-shunt D.C. generator is excited by _____ current.
- (A) shunt (B) armature
(C) load (D) external
31. The r.m.s. value of a sinusoidal alternating current is _____ times its maximum value.
- (A) 0.5 (B) 1.414
(C) 0.707 (D) 0.82
32. Capacitance of combined capacitors when connected in series is given by
- (A) $c = c_1 + c_2$ (B) $c = \frac{c_1 \cdot c_2}{c_1 + c_2}$
(C) $c = \frac{c_1 + c_2}{c_1 \cdot c_2}$ (D) $c = c_1 - c_2$
33. When load is removed, _____ motor will run at the highest speed.
- (A) shunt (B) series
(C) cumulative-compound (D) differential-compound
34. A full-wave bridge rectifier uses _____ diodes.
- (A) 1 (B) 2
(C) 3 (D) 4
35. Capacity of dry cell is
- (A) more when it is supplying current for intermittent periods
(B) more when it is supplying current for continuous periods
(C) unaffected by the type of discharge
(D) none of the above

36. General gas equation is
- (A) $P.V = c$ (B) $P.V^n = c$
 (C) $P.V = mRT$ (D) $P.V = nRT$
37. Air standard Otto cycle efficiency is expressed as
- (A) $1 - \frac{1}{(r)^\gamma}$ (B) $1 - \frac{1}{(r)^{\frac{\gamma}{\gamma-1}}}$
 (C) $1 - \frac{1}{(r)^{\gamma-1}}$ (D) $1 - \frac{1}{(r)^{\frac{\gamma}{\gamma-1}}}$
38. For a closed cycle a thermodynamic system should undergo a minimum of
- (A) four processes (B) three processes
 (C) two processes (D) one process
39. Reversible adiabatic process is known as
- (A) Hyperbolic process (B) Isentropic process
 (C) Isothermal process (D) Polytropic process
40. From the following statements which does not come under the requirements of a good fuel
- (A) It has high calorific value
 (B) It has not produced any harmful gases
 (C) It has a high ignition temperature
 (D) It has to produce less smoke
41. Indicated power is defined as
- (A) the actual power developed inside an engine
 (B) the useful power available at the crankshaft
 (C) the power lost mainly due to friction
 (D) none of the above
42. Which one of the following is constant volume cycle?
- (A) Brayton cycle (B) Carnot cycle
 (C) Diesel cycle (D) Otto cycle

43. The commonly used material for insulator of spark plug is
(A) Bakelite (B) Mica
(C) Alumina (D) Asbestos
44. Ignition timing can be adjusted by a
(A) accurate clock (B) stop watch
(C) stroboscopic light (D) vacuum gauge
45. Battery electrolyte consists of approximately (by volume)
(A) 35% sulphuric acid and 65% water (B) 65% sulphuric acid and 35% water
(C) 65% nitric acid and 35% water (D) 35% nitric acid and 65% water
46. Most commonly used lubricants in automobiles are the
(A) Animal oils (B) Vegetable oils
(C) Mineral oils (D) Synthetic oils
47. The distance between the axis of the main journal and the crankpin centre lines is exactly one half of the engine stroke and is called the
(A) valve lead (B) valve lag
(C) valve lash (D) crank throw
48. A heat dam is a
(A) groove cut near the top of the piston
(B) groove cut near the bottom of the piston
(C) cut in the compression rings
(D) cut in the piston pin
49. The boiling point of diesel fuel may be expected to be in the range
(A) 100°C to 112°C (B) 125°C to 135°C
(C) 150°C to 200°C (D) 230°C to 375°C
50. Supercharging is essential in
(A) Gas turbine (B) Petrol engines
(C) Aircraft engines (D) Marine engines

51. In a SI engine, the throttle valve controls the supply of
(A) air only (B) fuel only
(C) air fuel mixture (D) none of these
52. The three components of primary ignition circuit are
(A) the contact breaker, condenser and distributor cap
(B) the contact breaker, ignition coil and spark plugs
(C) the contact breaker, ignition switch and condenser
(D) the contact breaker, ignition switch and rotor
53. Compression ratio for S.I. engine usually varies between
(A) 2 – 4 (B) 4 – 6
(C) 6 – 12 (D) 12 – 18
54. Which instrument is used to measure specific gravity?
(A) Hygrometer (B) Hydrometer
(C) Anemometer (D) Barometer
55. All the four operation in two stroke engine are performed in following number of revolution of crank shaft
(A) half (B) one
(C) two (D) four
56. The calorific value of diesel is about
(A) 42 J/kg (B) 42 kJ/kg
(C) 42 MJ/kg (D) 42 GJ/kg
57. The specific gravity of diesel oil is
(A) 1.0 (B) 0.85
(C) 0.7 (D) 0.5
58. The boiling point of diesel fuel may be expected to be in the range
(A) 70°C to 100°C (B) 125°C to 135°C
(C) 150°C to 200°C (D) 230°C to 375°C

59. A four stroke diesel engine is operating at 1800 rpm. The duration of fuel injection is 20° . The time in seconds during which fuel is injected would be
- (A) $\frac{1}{540}$ sec (B) $\frac{1}{270}$ sec
 (C) 0.01 sec (D) 0.02 sec
60. Which one of the following does not form a part of the fuel supply for a diesel engine?
- (A) Supply pump (B) Spray nozzle
 (C) Air cleaner (D) Injector
61. Which air cleaner is considered to be most effective in Diesel Engines?
- (A) Dry type (B) Wet type
 (C) Oil bath type (D) Whirl type
62. In a diesel engine the pipe carrying fuel from fuel pump to nozzle is made of
- (A) Plastic (B) P.V.C.
 (C) Steel (D) Copper
63. Thermal efficiency of a diesel engine is about
- (A) 15% (B) 25%
 (C) 30% (D) 70%
64. In a diesel engine the duration between the start of injection and start of ignition is called
- (A) Spill cut off (B) Delay period
 (C) Period of injection (D) Period of ignition
65. Ignition quality of diesel fuel oil is expressed by an index called
- (A) Octane number (B) Cetane number
 (C) Calorific value (D) Carbon content
66. The valve is opened as the cam lobe on the cam raises the
- (A) Valve lifter (B) Bearing
 (C) Piston pin (D) Valve guide

67. The operation of removing trapped air from hydraulic braking system is known as
(A) Trapping (B) Tapping
(C) Sliding (D) Bleeding
68. Connecting rod is attached to the piston by the
(A) Rod cap (B) Piston pin
(C) Cap bolt (D) Cap roller bearing
69. The distance between the centres of the front wheel is called
(A) Wheel track (B) Wheel base
(C) Axle width (D) Turning circle
70. In a three-way converter, the first converter controls
(A) HC (B) CO
(C) NO_x (D) All of these
71. In a starter motor the field windings are wound around
(A) armature (B) commutator
(C) brush (D) pole shoes
72. The three units contained in a regulator for automobile d.c generator are
(A) voltage regulator, current regulator and zener diode
(B) voltage regulator, current regulator and temperature compensator
(C) voltage regulator, current regulator and cutout relay
(D) any one of the above
73. In a d.c. generator, magnetic field is produced in the
(A) armature (B) commutator
(C) carbon brushes (D) stator
74. Most popular manual steering gear for cars today is
(A) rack and pinion type (B) worm and wheel type
(C) cam and roller type (D) worm and nut type

75. Pan hard rod is used to absorb the
- (A) vertical loading (B) driving thrust
 (C) side thrust (D) braking torque
76. The king pin inclination is usually
- (A) less than $\frac{1}{2}^\circ$ (B) between 1° and 2°
 (C) between 2° and 5° (D) above 7°
77. The hand brake usually operates on
- (A) front wheels (B) rear wheels
 (C) left wheels (D) right wheels
78. Brake lining is mounted on
- (A) brake shoe (B) brake drum
 (C) master cylinder (D) wheel cylinder
79. Which of the following does not come under the daily maintenance of a vehicle?
- (A) Check the fuel in the fuel tank
 (B) Check brake pressure
 (C) Check engine mountings nut and cylinder head nuts
 (D) Check the water level in the radiator
80. F.W. Taylor introduced a system of organisation known as
- (A) Line organisation
 (B) Functional organisation
 (C) Line and staff organisation
 (D) None of the above
81. Authoritarian type of leadership is also termed as
- (A) Autocratic (B) Democratic
 (C) Laissez-fair (D) None of the above

82. The information sheet to access the condition of the vehicle at the particular time is
(A) Vehicle movement sheet (B) Vehicle log sheet
(C) Vehicle trip sheet (D) Vehicle access sheet
83. Line organisation is of
(A) complex in nature (B) simple in nature
(C) both (A) and (B) (D) none of the above
84. Communication skill is one of qualities of
(A) motivation (B) directing
(C) leadership (D) organisation
85. Stop watch time study is a technique of
(A) method study (B) improving production
(C) work measurement (D) inspection study
86. The abbreviation for PMTS is
(A) Predetermined Motion Time System
(B) Predetermined Measurement Time System
(C) Predetermined Method Time System
(D) Predetermined Motion Tool System
87. The motor vehicles act was first framed in the year
(A) 1929 (B) 1939
(C) 1937 (D) 1927
88. "Articulated vehicle" means
(A) a truck with container
(B) a truck without a container
(C) a tractor with a trailer attached, so that, the part of trailer is superimposed on
(D) a tractor without a trailer

89. A frame consisting of side and cross members of channel section is normally used on
(A) light cars (B) motor cycles
(C) heavy motor cars (D) heavy commercial vehicles
90. The centre-pillar is otherwise called to be as
(A) A-B post (B) B-C post
(C) C-B post (D) C-A post
91. The part of the vehicle holds the passengers and the cargo to be transported is known as
(A) Chassis (B) Hull
(C) Cabin (D) Sedan
92. Most motor cars use a specially constructed body shell onto which is attached the main components. This construction is called
(A) Channel (B) Integral
(C) Separate (D) Independent
93. The metal cover over the engine compartment
(A) Body sill (B) Bonnet
(C) Boot (D) Bulk head
94. A small holes appears on the painted surface is called
(A) Cracking (B) Pin points
(C) Roughness (D) Wrinkling
95. Compact disc is a
(A) Main memory (B) Primary memory
(C) Cache memory (D) Secondary memory
96. In a computer, ALU is a part of
(A) Software (B) Logic unit
(C) CPU (D) Input/output unit

97. The friction experienced by a body, when at rest is
- (A) Dynamic friction (B) Rolling friction
(C) Sliding friction (D) Static friction
98. The maximum frictional force, which comes into play when a body just begins to slide over the surface of another body, is known as
- (A) Sliding friction (B) Limiting friction
(C) Kinetic friction (D) Rolling friction
99. If percentage reduction in area of certain specimen made of material 'A' under tensile test is 60% and percentage reduction in area of a specimen with same dimensions made of material 'B' is 40%, then
- (A) the material A is more ductile than material B
(B) the material B is more ductile than material A
(C) the ductility of material A and B is equal
(D) the material A is brittle and material B is ductile
100. The capacity of a material to undergo permanent deformation due to load is called
- (A) Ductility (B) Elasticity
(C) Plasticity (D) Stiffness
101. Factor of safety is defined as the ratio of
- (A) ultimate stress to working stress (B) working stress to ultimate stress
(C) breaking stress to ultimate stress (D) ultimate stress to breaking stress
102. The internal resistance which the body offers to meet with the load or external force is called
- (A) stress (B) strain
(C) pressure (D) none of the above
103. When a tensile or compressive force (P) acts on the body, the change in length (δl) is given by
- (A) $\frac{Pl}{AE}$ (B) $\frac{AE}{Pl}$
(C) $\frac{PE}{Al}$ (D) $\frac{PA}{lE}$

104. The 'Simple bending equation' is

(A) $\frac{M}{I} = \frac{f}{Y} = \frac{E}{R}$

(B) $\frac{M}{F} = \frac{Y}{I} = \frac{f}{R}$

(C) $\frac{M}{R} = \frac{f}{I} = \frac{Y}{E}$

(D) $\frac{M}{E} = \frac{I}{R} = \frac{f}{Y}$

105. When the rate of loading increases or decreases at a uniform rate over the length of the beam, it is known as

(A) concentrated load

(B) point load

(C) uniformly distributed load

(D) uniformly varying load

106. The polar moment of inertia of a hollow shaft of outer diameter ' D ' and inner diameter ' d ' is

(A) $\frac{\pi}{16}(D^3 - d^3)$

(B) $\frac{\pi}{16}(D^4 - d^4)$

(C) $\frac{\pi}{32}(D^4 - d^4)$

(D) $\frac{\pi}{64}(D^4 - d^4)$

107. The formula for shear stress (f_s) is

(A) $\frac{TJ}{R}$

(B) $\frac{J}{TR}$

(C) $\frac{TR}{J}$

(D) $\frac{R}{JT}$

108. Rivets are generally specified by

(A) thickness of the plates to be joined

(B) overall length

(C) shank diameter

(D) diameter of head

109. When one plate overlaps the other and the two plates are riveted together with two rows of rivets, the joint is known as

(A) single riveted lap joint

(B) double riveted lap joint

(C) double riveted single cover butt joint

(D) double riveted double cover butt joint

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

(A) $\frac{\pi}{4}d^2f_t$

(B) $\frac{\pi}{4}d^2f_s$

(C) $\frac{\pi}{2}d^2f_t$

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

111. Normalising is the heat treatment process to get grain refinement after
(A) cold working (B) hot working
(C) both (A) and (B) (D) none of the above
112. The surface hardening process by adding both carbon and nitrogen on the surface of metal is called
(A) carbonitriding (B) carburising
(C) cyaniding (D) nitriding
113. Fluid is a substance which offers no resistance to change of
(A) pressure (B) flow
(C) shape (D) volume
114. The specific weight of water in S.I. units is taken as
(A) 9.81 kN/m^3 (B) $9.81 \times 10^3 \text{ N/m}^3$
(C) $9.81 \times 10^{-6} \text{ N/mm}^3$ (D) any one of the above
115. Slip of a reciprocating pump is negative, when
(A) suction pipe is short and pump is running at low speeds
(B) delivery pipe is long and pump is running at high speeds
(C) suction pipe is short and delivery pipe is long and the pump is running at low speeds
(D) suction pipe is long and delivery pipe is short and the pump is running at high speeds
116. In a centrifugal pump, the liquid enters the pump
(A) at the centre (B) at the bottom
(C) at the top (D) from sides
117. A flow in which each liquid particle has a definite path and the paths of individual particles do not cross each other, is called
(A) steady flow (B) uniform flow
(C) streamline flow (D) turbulent flow
118. The mercury does not wet the glass. This is due to the property of the liquid known as
(A) cohesion (B) adhesion
(C) viscosity (D) surface tension

119. The purpose of gate is to
- (A) deliver molten metal in to the mould cavity
 - (B) act as a reservoir for the molten metal
 - (C) feed the molten metal to the casting in order to compensate for the shrinkage
 - (D) deliver molten metal from pouring basin to gate
120. The oxygen gas cylinder is usually painted with
- (A) Black colour
 - (B) White colour
 - (C) Maroon colour
 - (D) Yellow colour
121. A casting defect which occurs due to improper venting of sand is known as
- (A) cold shuts
 - (B) blow holes
 - (C) shift
 - (D) swell
122. The unit of magnetic flux is
- (A) Tesla
 - (B) Henry
 - (C) Weber
 - (D) Ampere-turn
123. The included angle of the lathe centres is
- (A) 30°
 - (B) 45°
 - (C) 60°
 - (D) 90°
124. In a centre lathe, the cutting tool is fed in _____ with reference to the lathe axis.
- (A) cross direction only
 - (B) longitudinal direction only
 - (C) both cross and longitudinal direction
 - (D) any direction
125. The drill spindles are provided with standard taper known as
- (A) Morse taper
 - (B) Seller's taper
 - (C) Chapman taper
 - (D) Brown and sharpe taper

126. In a centrifugal casting method,
- (A) core is made of sand
 - (B) core is made of ferrous metal
 - (C) core is made of non-ferrous metal
 - (D) no core is used
127. The unit of capacitance is
- (A) Farad
 - (B) Coulomb
 - (C) Volt
 - (D) Metre
128. The magnetising force produced by a solenoid depends on
- (A) the number of its turns
 - (B) the current carried by it
 - (C) its length
 - (D) all of the above
129. The direction of an ac current
- (A) keeps changing
 - (B) cannot be found
 - (C) keeps reversing
 - (D) is fixed
130. A torque of 50 N-m driving a rotor at 600 rpm produces a power of _____ watts.
- (A) 500
 - (B) 1570
 - (C) 3140
 - (D) 30000
131. The efficiency of a d.c generator is maximum when its
- (A) variable loss equals constant loss
 - (B) variable loss is more than constant loss
 - (C) variable loss is less than constant loss
 - (D) none of the above
132. In a d.c. generator, magnetic and mechanical losses are collectively known as
- (A) eddy current losses
 - (B) stray losses
 - (C) variable losses
 - (D) electro-magnetic losses
133. A d.c. series motor is best suited for driving
- (A) lathes
 - (B) heavy machine tools
 - (C) cranes and hoists
 - (D) shears and punches

134. A gas constant (R) is equal to the
(A) sum of two specific heats (B) difference of two specific heats
(C) product of two specific heats (D) ratio of two specific heats
135. When a gas is heated at constant pressure, the heat supplied is utilised in
(A) increasing the internal energy of gas
(B) doing some external work
(C) increasing the internal energy of gas and also for doing some external work
(D) none of the above
136. In a four stage compressor, if the pressure at the first and third stage are 1 kg/cm^2 , and 16 kg/cm^2 , then the delivery pressure at fourth stage will be,
(A) 1 kg/cm^2 (B) 16 kg/cm^2
(C) 64 kg/cm^2 (D) 256 kg/cm^2
137. The direction of flow of water through the radiator of a thermosyphon cooling system is from the
(A) top to the bottom (B) bottom to the top
(C) front to the back (D) back to the front
138. Most commonly used lubricants in automobiles are the
(A) animal oils (B) mineral oils
(C) vegetable oils (D) synthetic oils
139. From the oil pump the oil goes directly to
(A) oil gallery (B) oil strainer
(C) oil filter (D) main bearings
140. Lean air-fuel mixture is required for
(A) starting (B) idling
(C) cruising (D) acceleration
141. The carburettor provides the correct quality of air-fuel mixture during
(A) starting (B) idling
(C) acceleration (D) all conditions

142. With the increase of battery temperature, the specific gravity of electrolyte
- (A) increases
 - (B) decreases
 - (C) stays the same
 - (D) none of these
143. Otto cycle consists of
- (A) two constant pressure and two adiabatic processes
 - (B) two constant volume and two adiabatic processes
 - (C) two constant volume and two isothermal processes
 - (D) one constant volume, one constant pressure and two adiabatic processes
144. On modern four stroke engines the exhaust valve opens just
- (A) before T.D.C
 - (B) after T.D.C
 - (C) before B.D.C
 - (D) after B.D.C
145. The _____ states that change of internal energy of a perfect gas is directly proportional to the change of temperature.
- (A) Boyle's law
 - (B) Charle's law
 - (C) Joule's law
 - (D) Avogadro's law
146. $3 \text{ m}^3/\text{min}$ compressor means that it
- (A) delivers $3 \text{ m}^3/\text{min}$ of compressed air
 - (B) delivers $3 \text{ m}^3/\text{min}$ of compressed air at delivery pressure
 - (C) compresses $3 \text{ m}^3/\text{min}$ of standard air
 - (D) compresses $3 \text{ m}^3/\text{min}$ of free air
147. A diesel engine has compression ratio from
- (A) 6 to 10
 - (B) 10 to 15
 - (C) 15 to 25
 - (D) 25 to 40
148. The calorific value of gaseous fuel is expressed in
- (A) kJ
 - (B) kJ/kg
 - (C) kJ/m²
 - (D) kJ/m³

149. Which one of the following type of combustion chamber is not used as a cold starting device?
(A) Turbulent chamber (B) Direct injection type
(C) Precombustion chamber (D) None of the above
150. The pour point of diesel oil must be
(A) lower than the coldest atmospheric temperature at which oil is to be pumped
(B) higher than above
(C) has no such relation
(D) more than 100°C
151. The compression ratio in an automotive diesel engine is usually
(A) 7 : 1 (B) 10 : 1
(C) 12 : 1 (D) 22 : 1
152. The ignition coil acts as a
(A) Inductor (B) Capacitor
(C) RC circuit (D) Step up transformer
153. Which of the following part is not needed on spark ignition engines using magneto ignition?
(A) Battery (B) Spark plug
(C) Distributor (D) Induction coil
154. High sulphur content in petrol affects the engine performance by
(A) causing corrosion of muffler and exhaust pipe
(B) bad odours
(C) poor explosion characteristics
(D) all the above
155. The most commonly used valve in an automobile engine is
(A) Poppet valve (B) Rotary valve
(C) Sleeve valve (D) None of above
156. Camshaft in an engine is always mounted
(A) parallel to crankshaft (B) perpendicular to crankshaft
(C) inclined to crankshaft (D) none of these

157. The fuel feed pump in a diesel engine is mounted
(A) on the fuel tank (B) on the injection pump
(C) on the injector (D) inside the fuel tank
158. The firing order for a six cylinder diesel engine is
(A) 1-5-3-6-2-4
(B) 1-6-3-5-2-4
(C) 1-4-2-6-3-5
(D) 1-3-5-2-4-6
159. Which of the following does not relate to C.I. Engine?
(A) Fuel pump (B) Fuel injector
(C) Govenner (D) Carburettor
160. Method of governing used in diesel engine is
(A) Quality governing (B) Quantity governing
(C) Partial governing (D) Combined governing
161. In a diesel engine the function of a fuel injector is
(A) to mix fuel and air
(B) to ignite air fuel mixture
(C) to spray atomised fuel into the cylinder
(D) to provide adequate air fuel mixture for combustion
162. The actual volume of fresh air admitted in a four stroke petrol engine is
(A) more than the stroke volume
(B) equal to the stroke volume
(C) equal to the stroke volume plus clearance volume
(D) less than stroke volume
163. The escape of burned gases from the combustion chamber past the pistons and into the crank case is called
(A) Gas loss (B) Blow-by
(C) Passed gas (D) Crank case explosion

164. Central portion of a propeller shaft is made from a
- (A) Steel shaft (B) Gun metal shaft
(C) Cast iron rod (D) Steel tube
165. The included angle is the sum of the
- (A) Camber and castor (B) Castor and S.A.I
(C) S.A.I and camber (D) Camber and toe-in
166. Automobile gears are generally made of
- (A) Brass (B) Cast iron
(C) Stainless steel (D) Alloy steel
167. Clutch slip could be caused by
- (A) excessive clearance at pedal
(B) seizure of the spigot bearing
(C) lack of clearance in pedal linkage
(D) excessive friction between lining and flywheel
168. The clutch is located between the transmission and the
- (A) engine (B) rear axle
(C) propeller shaft (D) differential
169. Clutch facings are usually attached to the plate by
- (A) steel rivets (B) brass rivets
(C) aluminium screws (D) steel screws
170. The purpose of gear box in an automobile is to
- (A) vary speed
(B) vary torque
(C) provide permanent speed reduction
(D) to disconnect the road wheels from the engine

171. Another name for a torsion bar is
(A) stabilizer bar (B) strut rod
(C) panhard rod (D) radius rod
172. The central gear of an epicyclic gear set is called a
(A) Internal gear (B) Planet gear
(C) Ring gear (D) Sun gear
173. The smallest gears inside the differential casing are
(A) Pinion gear (B) Sun gear
(C) Side gears (D) Ring gears
174. The function of universal joint is to allow the propeller shaft to
(A) bend Sideways (B) change inclination
(C) change length (D) transfer torque at an angle
175. If the ply cords run in the direction of the tyre axis then it is called
(A) Bias ply type (B) Belted-bias ply type
(C) Cross ply type (D) Radial ply type
176. Component of the wheel cylinder which seals the brake fluid is
(A) spring (B) piston
(C) dust cover (D) cup
177. During braking, the push rod directly operates
(A) compensating port (B) piston
(C) primary seal (D) residual pressure valve
178. The speedometer is driven from the gear box shaft called
(A) primary (B) counter
(C) lay (D) main

179. Identify the correct order :

- (A) General manager, works manager, superintendent, supervisor, workers
- (B) General manager, superintendent, works manager, supervisor, worker
- (C) General manager, works manager, supervisor, superintendent, worker
- (D) General manager, superintendent, supervisor, works manager, worker

180. Standard time is equal to

- (A) Normal time minus allowances
- (B) Normal time plus allowances
- (C) Normal time taken by an operation
- (D) Representative time multiplied by rating power

181. Match List-I with List-II and select the correct answer using the codes given below the lists :

- | List-I | List-II |
|-------------------------------|-----------------------------|
| (a) Pre-combustion chamber | 1. Compression swirl |
| (b) Turbulent chamber | 2. Masked inlet valve |
| (c) Open combustion chamber | 3. Spark ignition |
| (d) F-head combustion chamber | 4. Combustion induced swirl |
| | 5. M-chamber |

Codes :

- | | (a) | (b) | (c) | (d) |
|-----|-----|-----|-----|-----|
| (A) | 4 | 5 | 3 | 2 |
| (B) | 1 | 3 | 5 | 2 |
| (C) | 2 | 3 | 1 | 5 |
| (D) | 4 | 1 | 2 | 3 |

182. The basic tool in work study is

- (A) Process chart
- (B) Planning chart
- (C) Bar chart
- (D) Stop watch

183. Railway time table gives the exact timing at which all the trains start and the time they take to reach at various stations and how long they halt there. It is known as

- (A) Dispatching
- (B) Follow-up
- (C) Routing
- (D) Scheduling

184. From the following which is suitable for single ownership

- (A) Automobile workshop
- (B) Automobile industry
- (C) Co-operative societies
- (D) Private limited company

185. Reduced price of the goods come under the benefits for

- (A) Customers
- (B) Management
- (C) Nation
- (D) Workers

186. Binary 101010 is equivalent to decimal number
(A) 24 (B) 42
(C) 44 (D) 64
187. In a decimal digital computer, the number 127 is stored as
(A) 1111111 (B) 00010010011
(C) 10001 (D) 11000111
188. If the lubricant for an automobile to be used under sub-zero temperatures is to be selected, which of the following properties will get priority consideration?
(A) Calorific value (B) Power point
(C) Specific gravity (D) Carbon content
189. A 12 V lead acid battery consists of
(A) three cells in series (B) six cells in series
(C) three cells in parallel (D) six cells in parallel
190. Which of the following is not a High Level Computer Programming Language?
(A) FORTRAN (B) MODEM
(C) COBOL (D) ALGOL
191. A memory used for storing variable quantity is
(A) ROM (B) RAM
(C) PROM (D) EPROM
192. Binary 10101 in decimal system is equivalent to
(A) 13 (B) 19
(C) 21 (D) 23
193. A device that converts from decimal to binary number is called
(A) Decoder (B) Encoder
(C) CPU (D) Converter

194. The background of the NO PARKING sign board is
(A) White (B) Blue
(C) Black (D) Red
195. Traffic Sign Board Borders are _____ in colour.
(A) Black (B) Red
(C) White (D) Yellow
196. Which one of the following frame section offers the least resistance to bending and twisting?
(A) Flat (B) Tubular
(C) Channel (D) Box
197. When the main operating components are attached onto the mainframe, the assembly is called a
(A) Unit (B) Chassis
(C) Body shell (D) Sub-section
198. Which one of the following car body shapes has the largest internal dimensions?
(A) Coupe (B) Saloon
(C) Convertible (D) Estate
199. Paint reduces corrosion of steel body panel by
(A) giving surface which can be polished
(B) smoothing the porous surfaces which trap water
(C) acting as a barrier between the air and the steel
(D) causing a flow of electricity between the steel body parts
200. As applied to the specification of a heavy commercial vehicle the abbreviation g.v.w. is
(A) General Vehicle Width
(B) Gross Vehicle Weight
(C) Gives Variable Wheel Base
(D) Gross Vehicle Width

SPACE FOR ROUGH WORK

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