DIPLOMA - COMMON ENTRANCE TEST-2017

AE	COURSE	DAY : SUNDAY DATE : 02-07-2017
	AERONAUTICAL	TIME : 10.00 a.m. to 1.00 p.m.

MAXIMUM MARKS	TOTAL DURATION	MAXIMUM TIME FOR ANSWERING
180	200 MINUTES	180 MINUTES

MENTION YOUR DIPLOMA CET NUMBER					QUESTION BOOKLET DETAILS	
					VERSION CODE	SERIAL NUMBER
					A - 1	231069

DOs :

1. Check whether the Diploma CET No. has been entered and shaded in the respective circles on the OMR answer sheet.
2. This Question Booklet is issued to you by the invigilator after the **2nd Bell i.e., after 09.50 a.m.**
3. The Serial Number of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
4. The Version Code of this question booklet should be entered on the OMR answer sheet and the respective circles should also be shaded completely.
5. Compulsorily sign at the bottom portion of the OMR answer sheet in the space provided.

DON'Ts :

1. **THE TIMING AND MARKS PRINTED ON THE OMR ANSWER SHEET SHOULD NOT BE DAMAGED / MUTILATED / SPOILED.**
2. The **3rd Bell rings at 10.00 a.m., till then;**
   - Do not remove the paper seal / polythene bag of this question booklet.
   - Do not look inside this question booklet.
   - Do not start answering on the OMR answer sheet.

CONFIDENTIAL

IMPORTANT INSTRUCTIONS TO CANDIDATES

1. This question booklet contains 180 (items) questions and each question will have one statement and four answers. (Four different options / responses.)
2. After the **3rd Bell is rung at 10.00 a.m.,** remove the paper seal / polythene bag of this question booklet and check that this booklet does not have any unprinted or torn or missing pages or items etc., if so, get it replaced by a complete test booklet. Read each item and start answering on the OMR answer sheet.
3. During the subsequent 180 minutes:
   - Read each question (item) carefully.
   - Choose one correct answer from out of the four available responses (options / choices) given under each question / item. In case you feel that there is more than one correct response, mark the response which you consider the best. In any case, choose **only one response** for each item.
   - **Completely darken / shade the relevant circle with a BLUE OR BLACK INK BALL POINT PEN against the question number on the OMR answer sheet.**

Correct Method of shading the circle on the OMR answer sheet is as shown below :

(A) (●) (C) (D)

4. Use the space provided on each page of the question booklet for Rough Work. Do not use the OMR answer sheet for the same.
5. After the **last Bell is rung at 1.00 p.m.,** stop marking on the OMR answer sheet and affix your **left hand thumb impression** on the OMR answer sheet as per the instructions.
6. Handover the **OMR ANSWER SHEET** to the room invigilator as it is.
7. After separating the top sheet (KEA copy), the invigilator will return the bottom sheet replica (Candidate's copy) to you to carry home for self-evaluation.
8. Preserve the replica of the OMR answer sheet for a minimum period of **ONE year.**

PART – A

APPLIED SCIENCE

1. The S.I. unit of Coefficient of Viscosity is

   (A) Poise (B) NSm^{-2}

   (C) $NS^{-1}m^2$ (D) $NS^{-1}m^{-2}$

2. The prefix used for 10^{+9} is

   (A) Mega (B) Tera

   (C) Giga (D) Hecta

3. The physical quantity which has the dimensional formula $[ML^0T^{-2}]$ is

   (A) Force (B) Surface tension

   (C) Viscosity (D) Work

4. The least count of slide callipers is given by

   (A) 1 MSD + 1 VSD (B) 1 MSD × 1 VSD

   (C) 1 MSD – 1 VSD (D) $\frac{1\text{ MSD}}{1\text{ VSD}}$

5. The product of force and time is

   (A) Momentum (B) Moment

   (C) Impulse (D) Acceleration

6. The change in position of a particle in a particular direction is referred to as

   (A) Speed (B) Displacement

   (C) Velocity (D) Acceleration

Space For Rough Work

7. The equation of motion of a body for distance travelled 'S_n' in the 'n^{th}' second is given by

(A) $S_n = u + \frac{a}{2}(2n-1)$ (B) $S_n = u - \frac{a}{2}(2n-1)$

(C) $S_n = u + \frac{a}{2}(2n+1)$ (D) $S_n = u - \frac{a}{2}(2n+1)$

8. A bullet of mass 0.01 kg is fired with a velocity of 960 ms^{-1} from a rifle of mass 3 kg, the velocity of recoil of rifle is

(A) $-320\,ms^{-1}$ (B) $-0.32\,ms^{-1}$

(C) $-3.2\,ms^{-1}$ (D) $-32\,ms^{-1}$

9. One of the following is not a scalar quantity :

(A) Mass (B) Density

(C) Force (D) Speed

10. If a body fixed about a point rotates in clockwise direction, the moment of force is measured as

(A) Positive (B) Negative

(C) Zero (D) Equal

11. The resultant magnitude of two forces P and Q acting in same line and in same direction is

(A) $P - Q$ (B) $P + Q$

(C) $Q - P$ (D) $\frac{P}{Q}$

Space For Rough Work

12. The resultant magnitude of two forces 6 N and 8 N acting at right angles to each other is

(A) 100 N (B) 10 N

(C) 48 N (D) 14 N

13. The value of resultant magnitude of two forces acting at a point is maximum, when the angle between the two forces is

(A) 0° (B) 90°

(C) 180° (D) 45°

14. Rise of liquid in a capillary tube is due to

(A) Energy (B) Viscosity

(C) Surface tension (D) Pressure

15. The ratio of volume stress to volume strain is called

(A) Bulk modulus (B) Young's modulus

(C) Rigidity modulus (D) Poisson's ratio

16. The reciprocal of bulk modulus of elasticity is called

(A) Compressibility (B) Rigidity

(C) Plasticity (D) Modulus of elasticity

17. The force of cohesion is maximum in

(A) Solids (B) Gases

(C) Liquids (D) Plasma

Space For Rough Work

18. The value of surface tension is 80 dyne/cm. What will be its value in Nm^{-1} ?

(A) $8\times10^{2}\ Nm^{-1}$ (B) $80\ Nm^{-1}$

(C) $8\times10^{-2}\ Nm^{-1}$ (D) $8\times10^{3}\ Nm^{-1}$

19. Pressure at the bottom of a container having base area of $10\ m^2$ filled with water to a height of 10 m is

(A) 9.8×10^{4} Pa (B) 980×10^{4} Pa

(C) 9.8×10^{-4} Pa (D) 980×10^{-4} Pa

20. 100 °C when expressed in absolute scale is

(A) 100 K (B) 0 K

(C) 273 K (D) 373 K

21. Gas law which gives the relation between pressure and volume changes is

(A) Boyle's law (B) Charles' law

(C) Gay-Lussac's law (D) Hooke's law

22. Amount of heat required to raise the temperature of one gram of water through 1 °C is

(A) Heat capacity (B) Conductivity

(C) Calorie (D) Joule

23. An example of longitudinal wave is

(A) Sound waves (B) Waves on the surface of water

(C) Light waves (D) Electromagnetic waves

Space For Rough Work

24. The relation between velocity of sound v, and absolute temperature T is

(A) $v \propto T$ (B) $v \propto \frac{1}{T}$

(C) $v \propto \sqrt{T}$ (D) $v \propto T^2$

25. The distance between a node and the next antinode in a stationary wave is equal to

(A) one wavelength (B) half wavelength

(C) twice wavelength (D) one fourth wavelength

26. Damage caused by marching military columns to the suspension bridge is due to

(A) Echo (B) Resonance

(C) Beats (D) Interference

27. During forced vibrations, if the forced frequency is F_1 and natural frequency is F_2, the body resonates if

(A) $F_1 > F_2$ (B) $F_2 > F_1$

(C) $F_1 = 2.5\, F_2$ (D) $F_1 = F_2$

28. The fundamental frequency of transverse vibrations of the stretched string is inversely proportional to

(A) tension (B) length of string

(C) square root of tension (D) square root of length of string

29. Minimum length of a hall to produce an echo is

(A) 50 m (B) 34 m

(C) 25 m (D) 17 m

Space For Rough Work

30. The property of light that Huygen's wave theory could explain is

(A) Polarisation (B) Photoelectric effect

(C) Interference (D) Compton effect

31. The spectrum of black body radiation is successfully explained by

(A) Newton's corpuscular theory of light

(B) Huygen's wave theory of light

(C) Maxwell's electromagnetic theory of light

(D) Planck's quantum theory of light

32. For constructive interference of light, the path difference should be

(A) $\frac{2n\lambda}{2}$ (B) $(2n+1)\frac{\lambda}{2}$

(C) $(2n+1)\frac{\lambda}{3}$ (D) $(2n+1)\frac{\lambda}{4}$

33. Two very close objects are just resolved if the central maximum of one object is on

(A) central maximum of another

(B) first minimum of another

(C) beyond second minimum of another

(D) between central maximum and first minimum of another

34. The light is incident at polarising angle θ_p and the angle of refraction is r, then

(A) $\theta_p + r = 0°$ (B) $\theta_p + r = 90°$

(C) $\theta_p + r = 180°$ (D) $\theta_p + r = 360°$

Space For Rough Work

35. Minimum energy required to remove an electron from the metal surface is called

(A) Kinetic energy (B) Potential energy

(C) Work function (D) Energy function

36. When the size of the scattering particle is small, the intensity of scattered light is inversely proportional to

(A) fourth power of wavelength (B) square of wavelength

(C) square root of wavelength (D) cube of wavelength

37. Time for which an atom stays in metastable state is of the order of

(A) Seconds (B) Milli-seconds

(C) Micro-seconds (D) Nano-seconds

38. If an element emits β-ray then its atomic number

(A) increases by one (B) decreases by one

(C) remains same (D) decreases by two

39. If the concentration of H^+ ions is more than 10^{-7} gm ion per litre, the solution is

(A) Base (B) Acid

(C) Neutral (D) Both Acid and Base

40. A galvanic cell is one in which

(A) chemical energy produce electric energy

(B) electric energy produce chemical energy

(C) chemical energy will not produce electric energy

(D) electric energy will not produce chemical energy

Space For Rough Work

PART – B

APPLIED MATHEMATICS

41. The value of x if $\begin{vmatrix} 1 & 2 & 3 \\ 2 & x & 3 \\ 3 & 4 & 3 \end{vmatrix} = 0$ is

(A) 0 (B) –3

(C) 3 (D) 18

42. The value of x, if $4x + y = 7$, $3y + 4z = 5$ and $3z + 5x = 2$ is

(A) 0 (B) 1

(C) 3 (D) –1

43. If $A = \begin{bmatrix} 2 & -1 \\ 3 & -4 \end{bmatrix}$, then A^{-1} is

(A) $-\frac{1}{5}\begin{bmatrix} -4 & -3 \\ 1 & 2 \end{bmatrix}$ (B) $-\frac{1}{5}\begin{bmatrix} -4 & 1 \\ -3 & 2 \end{bmatrix}$

(C) $-\frac{1}{11}\begin{bmatrix} -4 & -3 \\ 1 & 2 \end{bmatrix}$ (D) $-\frac{1}{11}\begin{bmatrix} -4 & 1 \\ -3 & 2 \end{bmatrix}$

44. The characteristic equation of the matrix $A = \begin{bmatrix} 2 & -1 \\ 5 & -6 \end{bmatrix}$ is

(A) $A^2 + 8A - 7I = 0$ (B) $A^2 + 4A - 17I = 0$

(C) $A^2 + 4A + 7I = 0$ (D) $A^2 + 4A - 7I = 0$

Space For Rough Work

45. If $\begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix} + A = \begin{bmatrix} 5 & 1 \\ 3 & 2 \end{bmatrix}$, then A is

(A) $\begin{bmatrix} 3 & 2 \\ -2 & 0 \end{bmatrix}$ (B) $\begin{bmatrix} 3 & -2 \\ 2 & 0 \end{bmatrix}$

(C) $\begin{bmatrix} -2 & 3 \\ 2 & 0 \end{bmatrix}$ (D) $\begin{bmatrix} 0 & 3 \\ -2 & 2 \end{bmatrix}$

46. The middle term of the expansion of $\left(x^2 - \frac{2}{x}\right)^{24}$ is

(A) ${}^{24}C_{10}2^{10}x^{12}$ (B) ${}^{24}C_{11}2^{12}x^{12}$

(C) ${}^{24}C_{13}2^{10}x^{10}$ (D) ${}^{24}C_{12}2^{12}x^{12}$

47. The term independent of x in $\left(x^2 - \frac{4}{3x}\right)^9$ is

(A) ${}^{9}C_{6}(4)^{6}$ (B) ${}^{9}C_{6}(3)^{-6}$

(C) ${}^{9}C_{6}\left(\frac{4}{3}\right)^{6}$ (D) ${}^{9}C_{6}\left(\frac{3}{4}\right)^{6}$

48. If $3i - 2j + k$, $i - 3j + 5k$, $2i + j - 4k$ are the sides of a triangle, then the triangle is

(A) Right angled triangle (B) Equilateral triangle

(C) Isosceles triangle (D) Isosceles right angled triangle

49. If $\vec{a} = (2, -1, 4)$ and $\vec{b} = (2, -3, 4)$, then projection of $\vec{a}$ on $\vec{b}$ is

(A) $\frac{23}{\sqrt{21}}$ (B) $\frac{23}{\sqrt{29}}$

(C) $\frac{-23}{\sqrt{29}}$ (D) $\frac{-23}{\sqrt{21}}$

Space For Rough Work

50. The sine of the angle between the vectors $(2i - 2j + k)$ and $2i + j + 2k$ is

(A) $\frac{\sqrt{65}}{3}$ (B) $\frac{\sqrt{65}}{\sqrt{3}}$

(C) $\frac{\sqrt{65}}{9}$ (D) $\sqrt{65}$

51. If $x \sin^2 45 = \frac{\tan^2 45 + \cot^2 30}{\sin^2 45 + \cos^2 45}$ then the value of x is

(A) 4 (B) 2

(C) 6 (D) 8

52. The value of $\frac{4}{3}\sec^2\frac{\pi}{3} - \text{cosec}^2\frac{\pi}{6} + \frac{3}{4}\tan^2\frac{\pi}{4} - 2\sin^2\frac{\pi}{3}$ is

(A) $-\frac{11}{12}$ (B) $\frac{53}{12}$

(C) $\frac{7}{12}$ (D) $-\frac{7}{12}$

53. The value of

$$\frac{\sin(90-\theta)}{\cos(360-\theta)} + \frac{\sec\left(\frac{3\pi}{2}+\theta\right)}{\text{cosec}(\pi+\theta)} + \frac{\tan(180-\theta)}{\tan(-\theta)} \text{ is}$$

(A) 1 (B) -1

(C) 3 (D) 2

54. The value of cosec 43 cot 43 cot 47 cos 47

(A) 1 (B) 0

(C) -1 (D) 2

Space For Rough Work

55. The value of $\frac{\tan 69^\circ + \tan 66^\circ}{1 - \tan 69^\circ \tan 66^\circ}$

(A) 1 (B) -1

(C) 0 (D) ∞

56. If $\tan \frac{A}{2} = x$ then sin A + tan A is

(A) $\frac{4x}{1-x^2}$ (B) $\frac{4x}{1+x^2}$

(C) $\frac{4x}{1+x^4}$ (D) $\frac{4x}{1-x^4}$

57. The value of $\sin 70^\circ - \sin 50^\circ - \sin 10^\circ$ is

(A) 1 (B) 0

(C) -1 (D) $\frac{1}{2}$

58. $\sin^{-1} x$ is also equal to

(A) $\text{cosec}^{-1}\left(\frac{1}{x}\right)$ (B) $\text{cosec}\, x$

(C) $\text{cosec}^{-1} x$ (D) $\frac{1}{\sin x}$

59. Centroid divides the median in the ratio

(A) 2 : 1 (B) 1 : 2

(C) 1 : 1 (D) 1 : 4

60. The co-ordinates of a point which divides the line join of the points (a + b, a – b) and (a – b, a + b) in the ratio 2 : 3 is

(A) $\frac{5a+5b}{5}, \frac{5a-5b}{5}$ (B) $\frac{a+b}{5}, \frac{a-b}{5}$

(C) $\frac{5a+b}{5}, \frac{5a-b}{5}$ (D) $\frac{5a-b}{5}, \frac{a+5b}{5}$

Space For Rough Work

61. The equation of straight line whose intercepts are 3 and 5 on the axes is

(A) $5x - 3y = 15$ (B) $5x + 3y = 15$

(C) $5x + 3y = 1$ (D) $15x + 15y = 1$

62. The angle between the lines whose slopes are $\sqrt{3}$ and $\frac{1}{\sqrt{3}}$ respectively is

(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$

(C) $\frac{\pi}{4}$ (D) $\frac{\pi}{2}$

63. The equation of the straight line passing through (2, 3) and x intercept is twice its y intercept is

(A) $x + 2y = 8$ (B) $x - 2y = 8$

(C) $x + y = 4$ (D) $2x + 2y = 8$

64. The equation to the line passing through the point (–6, 7) and parallel to the line joining (3, 4) and (6, –8) is

(A) $4x + y + 31 = 0$ (B) $x + 4y - 1 = 0$

(C) $x - 4y + 1 = 0$ (D) $4x + y + 17 = 0$

65. $\lim_{\theta \to \pi/2} (\sec\theta - \tan\theta)$ is equal to

(A) 0 (B) 1

(C) $\frac{\pi}{2}$ (D) π

66. $\lim_{x \to 4} \frac{x-4}{3-\sqrt{13-x}}$ is equal to

(A) 3 (B) 9

(C) 6 (D) 0

Space For Rough Work

67. If $y = (1 + \log x)^5$, then $\frac{dy}{dx}$ is

(A) $5(\log x)^4$ (B) $\frac{5}{x}(1 + \log x)^4$

(C) $5(1 + \log x)^4$ (D) $5x^4 \log x$

68. If $x = \cos^{-1} t$ and $y = \sin^{-1} t$, then $\frac{dy}{dx}$ is

(A) -1 (B) 1

(C) $\frac{1}{2\sqrt{1-t^2}}$ (D) $\frac{2}{\sqrt{1-t^2}}$

69. If $y = x \log y$, then $\frac{dy}{dx}$ is

(A) $\frac{\log x^x}{x - y}$ (B) $\frac{\log y^x}{x - y}$

(C) $\frac{\log y^y}{x - y}$ (D) $\frac{\log y^y}{y - x}$

70. If $y = \frac{x+1}{x+2}$, then $\frac{dy}{dx}$ is

(A) $\frac{1}{(x+2)^2}$ (B) $\frac{2x+3}{(x+2)^2}$

(C) $-\frac{1}{(x+2)^2}$ (D) $\frac{2x-3}{(x+2)^2}$

71. The equation of tangent to the curve $y^2 = 4x$ at (1, 2) is

(A) $x + y - 3 = 0$ (B) $x - y + 1 = 0$

(C) $2x - y = 0$ (D) $2x + y - 4 = 0$

Space For Rough Work

72. The maximum value of $7 - 8x - 2x^2$ is

(A) 15 (B) -4

(C) -2 (D) 31

73. The value of $\int \log 2x \, dx$ is

(A) $x \log 2x + x + C$ (B) $x \log 2x - x + C$

(C) $\frac{1}{2x} + C$ (D) $\frac{1}{x} + C$

74. The value of $\int \sec^4 x \cdot \tan x \, dx$

(A) $\frac{\sec^4 x}{4} + C$ (B) $4 \sec^4 x + C$

(C) $3 \sec^2 x + C$ (D) $\frac{\tan^4 x}{4} + C$

75. The value of $\int x \log x \, dx$ is

(A) $\frac{x^2}{2} \log x - \frac{x^2}{2} + C$ (B) $\frac{x^2}{2} \log x + \frac{x^2}{2} + C$

(C) $\frac{x^2}{2} \log x - \frac{x^2}{4} + C$ (D) $\frac{x^2}{2} \log x + \frac{x^2}{4} + C$

76. $\int_0^{\pi/4} \tan^2 x \, dx$ is equal to

(A) $\frac{\pi}{4} - 1$ (B) $1 - \frac{\pi}{4}$

(C) $\frac{\pi^2}{16}$ (D) $\frac{\pi^2}{16} - 1$

Space For Rough Work

77. The value of $\int_0^1 x\sqrt{1-x^2}\,dx$ is

(A) $-\frac{1}{3}$ (B) 0

(C) ∞ (D) $\frac{1}{3}$

78. The volume generated by revolving the line $y = x + 1$ about the x-axis between the ordinates $x = 0$ and $x = 2$

(A) $\frac{26\pi}{3}$ units (B) $\frac{10\pi}{3}$ units

(C) $\frac{26}{3}$ units (D) 4 units

79. The degree and order of the differential equation $\frac{d^2y}{dx^2} = \left[1+\left(\frac{dy}{dx}\right)^2\right]^{1/3}$ are

(A) 2 and 1 (B) 1 and 2

(C) 3 and 2 (D) 2 and 3

80. The solution of differential equation $\frac{dy}{dx} + y \tan x = \sec x$ is

(A) $y \sec x = \tan x + C$

(B) $y \sin x = \sec x + C$

(C) $\log(\sec x) = \tan x + C$

(D) $y \sec x = -\cot x + C$

Space For Rough Work

PART-C

AERONAUTICAL ENGINEERING

81. Radio waves transmission takes place through which layer of atmosphere ?

(A) Troposphere (B) Stratosphere

(C) Mesosphere (D) Thermosphere

82. The phenomena like rainfall, fog or hailstorm occurs in which layer of the atmosphere.

(A) Troposphere only (B) Stratosphere only

(C) Troposphere and stratosphere (D) Mesosphere

83. With respect to air speed terminologies, which of the following statement is incorrect :

(1) True air speed accounts for standard sea level density for any altitude.

(2) True air speed accounts for relative density for a particular altitude.

(3) Equivalent air speed accounts for standard sea level density for any altitude.

(A) (1) only (B) (2) only

(C) (2) and (3) (D) (1) and (2) only

84. Person studying in living room experiences which type of pressure ?

(A) Static pressure

(B) Dynamic pressure

(C) Static and total pressure, and also they are equal

(D) Total pressure

85. The difference in pressure distribution over top surface and bottom surface of cylinder is created by

(A) only rotating cylinder

(B) relative air flow and by rotating cylinder

(C) relative air flow without rotating cylinder

(D) relative air flow only

Space For Rough Work

86. The occurrence of lift and drag on any aerodynamic body is due to
(A) pressure distribution only
(B) shear stress distribution only
(C) both pressure distribution and shear stress distribution
(D) camber length only

87. The symmetric airfoil produce lift only
(A) at zero degree angle of attack
(B) at zero degree as well as at higher angle of attack
(C) when angle of attack is given
(D) none of these

88. The function of flap is to
(A) get additional lift
(B) get additional drag
(C) get additional lift but drag increases slightly depending on flap inclination
(D) none of these

89. Slats are deployed mainly to
(A) keep flow attached to surface of body
(B) to delay the stall
(C) both keep flow attached to surface of body and to delay the stall
(D) none of these

90. Increasing wing span area leads to
(A) increase in lift
(B) increase in drag
(C) both increase in lift and increase in drag
(D) decrease in lift and increase in drag

91. Mach number (M) range of supersonic flow is
(A) $M < 1$ (B) $M > 1$
(C) $M = 1$ (D) $M > 5$

Space For Rough Work

92. Why does all supersonic airplane has sharp edged nose ?
(A) To keep shockwave attached to body
(B) To keep shockwave oblique to body
(C) To keep shockwave normal to body
(D) Both to keep shockwave attached to body and to keep shockwave oblique to body

93. For selection of aircraft material standardisation is a _____ factor.
(A) Engineering (B) Economic
(C) Mechanical property (D) Aesthetic

94. Steel containing carbon percentage from 0.10 to 0.30% is termed as
(A) Low Carbon Steel (B) Medium Carbon Steel
(C) High Carbon Steel (D) Cast Iron

95. Corrosion is accelerated by _____ temperature.
(A) warm (B) cold
(C) very cold (D) all

96. Composites are engineered materials made from reinforcement and _____.
(A) alloy (B) wood
(C) matrix (D) chemical

97. Aluminium alloys are _____ and ductile.
(A) malleable (B) hard
(C) brittle (D) heavy

98. The lapse rate in temperature is
(A) 3 °C/1000 ft (B) 5 °C/1000 ft
(C) 1.98 °C/1000 ft (D) 0.5 °C/1000 ft

99. Static pressure is used by these cockpit instruments.
(A) Altimeter (B) Air Speed Indicator
(C) Rate of climb indicator (D) All the three

Space For Rough Work

100. Machmeter is not used in the following type of aircraft:

(A) High speed jet fighter planes

(B) Transport/Civil passenger planes

(C) Helicopter

(D) Both Transport/Civil passenger planes and Helicopter

101. The basic six instruments of an aircraft cockpit are

(A) ASI, GH, VSI, Altimeter, Direction indicator, TSI

(B) ASI, VHI, ALTI, DI, TSI, ROCI

(C) ASI, MACH METER, VSI, TSI, DI, GH

(D) ASI, DI, ROCH, TSI, GH, ALTI

102. Basic T instruments of an aircraft are

(A) ASI, GH, ALTI, VSI, MACH meter, DI, RMI, TSI

(B) ASI, GH, ALTI, DI

(C) ASI, GH, ALTI, VSI, TSI

(D) None of these

103. Elastic pressure sensing elements are those

(A) which become elastic under pressure.

(B) which change their shape or dimension when pressure is applied.

(C) which become liquid when high pressure is applied.

(D) which change their dimension when high temperature is applied.

104. The normal gyroscope has

(A) three axes of movement

(B) two axes of freedom

(C) only one axes of freedom

(D) both three axes of movement and only one axes of freedom

105. The gyro horizon or GH indicates the following altitudes of an aircraft:

(A) Pitch & Bank (B) Pitch & Slip

(C) Pitch & direction (D) None of these

Space For Rough Work

106. Turn & Bank Indicator (TBI) is a rate gyroscope and it has

(A) two gyroscope (B) two gimbal ring

(C) only one gimbal ring (D) no gimbal ring

107. Mach meter does not indicate the speed of sound or speed of aircraft. It displays the ratio of

(A) local speed of sound to aircraft speed

(B) local air speed to speed of aircraft at an altitude

(C) aircraft speed to local speed of sound

(D) none of these

108. In airframe construction Longeron is a _____ member.

(A) Vertical (B) Longitudinal

(C) Circular (D) Slant

109. There are _____ major structural stresses acting on an aircraft.

(A) 5 (B) 7

(C) 3 (D) 4

110. When structure follows equation $M = 2f - 3$, it is

(A) statically unstable structure (B) statically indeterminate structure

(C) statically determinate structure (D) none of these

111. _____ supports the aircraft when it is parked, on tarmac.

(A) Jack (B) Wing

(C) Landing gear (D) Tail section

112. Generally _____ configuration use rectangular plane form.

(A) High wing (B) Medium wing

(C) Low wing (D) Diehedral

113. Nacells are aerodynamically designed enclosures to house _____.

(A) wings (B) landing gear

(C) engines (D) propellers

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114. Flops are lift _____ surfaces.

(A) decreasing (B) augmenting

(C) reducing (D) none of these

115. Main gearbox is a major component of transmission system of

(A) Aircraft (B) Helicopter

(C) Spacecraft (D) Hovercraft

116. The roll movement of an aircraft is also movement

(A) around longitudinal axis (B) around lateral axis

(C) around vertical axis (D) none of these

117. Rudder is a _____ control surface.

(A) tertiary (B) secondary

(C) primary (D) auxiliary

118. A _____ on the primary control surface enables pilot to move more easily and hold control surface in position.

(A) Trim Tab (B) Flap

(C) Balance Tab (D) Spring Tab

119. Fuel system based upon its function is classified in _____ groups.

(A) 3 (B) 4

(C) 2 (D) 6

120. The purpose of tank baffles is to stop _____ of fuel during rapid changes of speed and direction.

(A) surge (B) pressure

(C) leakage (D) bulge

121. Bell crank, levers, gears and screw jack form part of _____ media.

(A) Hydraulic (B) Pneumatic

(C) Mechanical (D) Fly by wire

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122. Engine oil temperature gauge indicate the temperature of the oil
(A) entering the oil cooler (B) entering the engine
(C) in the oil tank (D) after passing oil cooler

123. _____ forms part of aircraft environment control.
(A) Ice protection system (B) Landing gear
(C) Cabin pressurisation (D) Fuel system

124. Anti-icing system _____ the formation of ice on the protected surfaces.
(A) aids (B) removes
(C) prevents (D) facilitates

125. In four stroke engine crankshaft completes how many revolutions for each thermodynamic cycle ?
(A) One (B) Two
(C) Three (D) Four

126. Work output is produced in a four stroke engine during following stroke :
(A) Intake (B) Compression
(C) Expansion (D) Exhaust

127. Otto cycle consist of
(A) one isentropic process, one constant volume process
(B) two isentropic process, two constant volume process
(C) three isentropic process, one constant volume process
(D) four constant volume processes

128. Fins are provided in a piston engine to _____ the temperature of engine.
(A) increase (B) decrease
(C) does not have any effect (D) none of these

129. Gas turbine engine works on following cycle:
(A) Otto cycle (B) Diesel cycle
(C) Brayton cycle (D) ATKINSON cycle

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130. In a turbojet engine high velocity air first flows through

(A) Diffuser (B) Compressor

(C) Combustion chamber (D) Turbine

131. A typical subsonic air inlet of Jet engine consist of duct whose diameter _____ from front to back.

(A) decreases (B) increases

(C) remains constant (D) either decreases or remains constant

132. In axial flow compressor the flow of air is _____ to the rotor shaft.

(A) radially outward (B) radially inward

(C) parallel (D) tangential

133. The parts of the gas turbine engine are arranged in the order.

(A) Diffuser → Compressor → Combustion Chamber → Nozzle → Turbine

(B) Compressor → Diffuser → Combustion Chamber → Turbine → Nozzle

(C) Diffuser → Compressor → Combustion Chamber → Turbine → Nozzle

(D) Diffuser → Turbine → Combustion Chamber → Compressor → Nozzle

134. Which one of the following is not a function of compressor?

(A) To compress the air. (B) To supply Bleed air.

(C) To supply heated air for anti-icing. (D) To expand the air.

135. Brayton cycle consists of

(A) two reversible isobaric processes and two reversible adiabatic processes

(B) one reversible isobaric process and one reversible adiabatic process

(C) four reversible isobaric processes

(D) four reversible adiabatic processes

136. By pass ratio of a turbofan engine is defined as the ratio of

(A) $\frac{\text{cold thrust}}{\text{hot thrust}}$ (B) $\frac{\text{hot thrust}}{\text{cold thrust}}$

(C) $\frac{\text{total thrust}}{\text{hot thrust}}$ (D) $\frac{\text{total thrust}}{\text{cold thrust}}$

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137. In an Ideal gas turbine engine, air fuel mixture in the combustion chamber is burned at

(A) constant temperature (B) constant volume

(C) constant pressure (D) constant entropy

138. The working of jet propulsion is based on

(A) Impulse principle (B) Centrifugal principle

(C) Reaction principle (D) Centripetal principle

139. The maximum temperature of the combustor of gas turbine engine is limited because

(A) it is difficult to burn the fuel.

(B) the air fuel ratio is too lean.

(C) combustion chamber walls cannot sustain high temperature.

(D) turbine blades cannot accept very high temperatures.

140. Commutators are used to

(A) collect current from rotating armature conductors.

(B) distribute load from stator to rotor.

(C) reduce arcing of rotor current.

(D) to supply constant field current.

141. In a carbon pile regulator, the resistance of the carbon pile

(A) reduces with increase of pressure.

(B) increases with increase of pressure.

(C) increase very gradually with pressure.

(D) does not get affected by pressure change at all.

142. In an aircraft navigation lights, when an aircraft is approaching you

(A) the green light is on right, the red light is on left.

(B) the green is left, the red is on right.

(C) the position of green and red depends on type of aircraft.

(D) none of these

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143. The function of using scan light in an aircraft is

(A) for pilot to see ice formation on leading edge of wings.

(B) to see if control surfaces are moving properly.

(C) to see if there is any damage to leading edge of wings.

(D) all of these

144. In aircraft electrical system 400 C/s frequency is used because

(A) it is most economical to use for high rating.

(B) it reduces the number of terns of winding and hence the total weight of systems.

(C) it is very commonly used in all the countries.

(D) it can give very high rated loads.

145. The conditions to be met for paralleling of alternators are

(A) they should be from same company, should have same construction, frequency, loads.

(B) they should be of similar rating, same phase, frequency and speed.

(C) they should be of smaller size, same frequency, same number of poles, voltage.

(D) none of these

146. The damage caused to landing gear is by following reason:

(A) If particular aircraft weight exceeds.

(B) If vertical descent velocity exceeds.

(C) If vertical descent velocity precedes.

(D) Both if particular aircraft weight exceeds and if vertical descent velocity exceeds.

147. The importance of inspection scheduling is

(A) co-ordination in flying and serving task.

(B) greater serviceability, safety and efficiency

(C) both co-ordination in flying and serving task and greater serviceability, safety and efficiency.

(D) none of these

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148. Air conditioning compartments might results to appropriate increase in weight of aircraft for the following reason :

(A) air conditioning system is heavier due to presence of compressor

(B) warm inside air condenses while impinging on colder areas of structure

(C) thermal acoustic linings presence

(D) warm inside air condenses while impinging on colder areas of structure and thermal acoustic linings presence

149. The process of protecting aircraft from inadvertent movement and against adverse weather conditions is known as

(A) Towing (B) Taxiing

(C) Mooring (D) None of these

150. The correct statement among the following with respect to fire extinguisher is

(A) seal on the neck will weaken causing compressed gas to escape

(B) fire extinguishers are cheaper

(C) fire extinguishers do expire.

(D) all of these

151. The resultant performance of aircraft due to ice accumulation is

(A) increase in drag

(B) decrease in lift

(C) both increase in drag and decrease in lift

(D) none of these

152. The fires due to electric equipment is categorized as

(A) Class-A (B) Class-B

(C) Class-C (D) Class-D

153. The following problems caused for aircraft due to static charges picked up is

(A) noise disturbance in radio communication

(B) disturbance in electronic systems

(C) both noise disturbance in radio communication and disturbance in electronic systems

(D) none of these

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154. S band frequency is from

(A) 2 – 4 GHz (B) 4 – 6 GHz

(C) 8 – 10 GHz (D) 1 – 2 GHz

155. Very low frequency (VLF) is from

(A) 30 – 300 Hz (B) 3 to 30 kHz

(C) 30 – 300 kHz (D) 3000 – 3 GHz

156. The range of HF is

(A) very high / long compared to VHF/UHF

(B) almost range as VHF/UHF

(C) low compared to VHF/UHF

(D) both almost range as VHF/UHF and low compared to VHF/UHF

157. The LOS range is normally (in communication)

(A) 40 – 50 kms (B) 10 – 20 kms

(C) 100 – 200 kms (D) 300 – 400 kms

158. The paths of propagation for Em waves are

(A) ground waves, sky waves, space waves

(B) underground, above ground and sky waves

(C) space waves, sky waves, underground waves

(D) both ground waves, sky waves, space waves and underground, above ground and sky waves

159. Skip distance in space wave communication is

(A) silence zone

(B) maxi radiation zone

(C) where signals are very clear

(D) both maxi radiation zone and where signals are very clear

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160. INS (Inertial Navigation System) is the only navigation system which is

(A) dependent on ground support equipment

(B) not dependent on any ground support equipment

(C) most accurate system at any distance, time

(D) not used any more because of its limitations

161. ILS is a system which is used

(A) when visibility is very poor (B) for long distance

(C) for only small aircrafts (D) none of these

162. The accuracy of INS

(A) degrades with distance and time

(B) improves with distance because of stabilization

(C) does not depend on time or distance

(D) none of these

163. Aircraft Act 1934 empowers _____ to make rules and implement as per Geneva convention.

(A) manufactures (B) operators

(C) central government (D) owners of aircraft

164. CAR section 2 series a airworthiness is issued by airworthiness Dte under provisions of rule _____ of 1937.

(A) 60 (B) 83

(C) 133 A (D) 143 A

165. The written information on defect with complete details shall be forwarded by scheduled operator within _____.

(A) 3 days (B) 30 days

(C) 24 hours (D) 3 hours

166. Sudden and total failure is called as

(A) Quick time failure (B) Catastrophic failure

(C) Breakdown failure (D) Common failure

Space For Rough Work

167. Constituents of RTF are

(A) Rich and total fuel
(B) Emergency and Breakdown
(C) Real term failure
(D) Real time failure

168. BITE stands for

(A) Built in time equipment
(B) Built in tailored equipment
(C) Built in test equipment
(D) Both built in time equipment and built in test equipment

169. TQM stands for

(A) Total Quantity Measured
(B) Total Quality Maintenance
(C) Total Quotient Managed
(D) Total Quality Management

170. Degradation failure is

(A) graded and potential
(B) graded and timed
(C) graded and partial
(D) graded and total

171. DUT stands for

(A) Detained Und Test
(B) Device Under Test
(C) Deviation Under Test
(D) Devices Unplanned Testing

172. Ability of an item to perform a required function under the given operational and environmental conditions for a stated period is called

(A) Resilience
(B) Reliability
(C) Life cycle
(D) Total performance

173. SQC means

(A) Standing Quality Contract
(B) Standing Quality Control
(C) Statistical Quality Control
(D) Both Statistical Quality Control and Standing Quality Control

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174. MTBF means :
(A) Mean test before failure
(B) Mean time before failure
(C) Maintenance time before failure
(D) Mean test before failure and Maintenance time before failure

175. Unscheduled maintenance is required in the case of
(A) Breakdown
(B) VIP equipment servicing
(C) When maintenance is not done for 3 months
(D) both Breakdown and VIP equipment servicing

176. International regulatory arrangement is established by _____ under aegis of U.N.
(A) EASA (B) DGCA
(C) ICAO (D) JAA

177. ATF contamination is divided in _____ categories.
(A) 3 (B) 5
(C) 2 (D) 6

178. To test contamination of fuel with water, we use
(A) Hydrometer (B) Water finding paste
(C) Die penetrant (D) Radiography

179. Aircraft tyres provide necessary _____ for braking and stopping of aircraft on landing.
(A) Surface (B) Traction
(C) Groove (D) Force

180. Hydroplanning is a condition experienced on _____.
(A) long runways (B) high altitude runways
(C) wet runways (D) short runways

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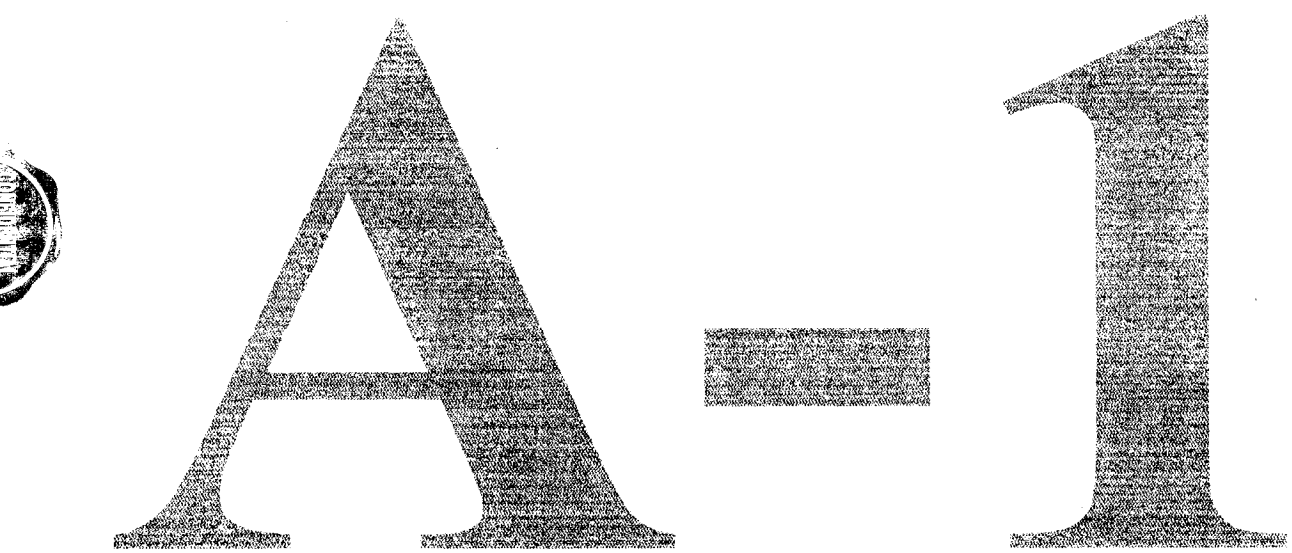
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