

# NEET (UG) GRAND TEST

No. of Questions: 180

Max. Marks: 720

Time: 3 Hours

[Each Question carries 4 marks. For each incorrect response, one mark will be deducted]

## నిన్నటి 'విద్య' తరువాయి

90. Select the correct matching of the type of joint with the example/location in human skeletal system :

- 1) fibrous joint - joint between adjacent vertebrae in vertebral column.
- 2) Cartilaginous joint - between the flat bones of skull
- 3) Gliding joint - between humerus and pectoral girdle
- 4) Saddle joint - between carpal and metacarpal of thumb

## PHYSICS

91. A body is projected horizontally from the top of 80m height of tower with certain velocity. If its equation of projectile is  $80y = x^2$  and  $g = 10\text{ms}^{-2}$ . Then the angle made by its direction of motion with the horizontal after two seconds of motion is

- 1)  $\frac{\pi}{2}$
- 2)  $\frac{\pi}{3}$
- 3)  $\frac{\pi}{4}$
- 4)  $\frac{\pi}{6}$

92. The square of the resultant of two equal forces is  $(2 + \sqrt{3})$  times of their product, then the angle between the forces is

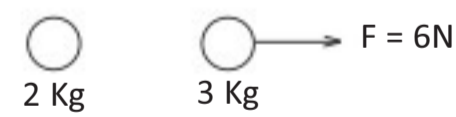
- 1)  $\frac{5\pi}{6}$
- 2)  $\frac{2\pi}{3}$
- 3)  $\frac{\pi}{6}$
- 4)  $\frac{\pi}{3}$

93. The velocity 'V' reached by a car of mass 'm' at certain distance from the starting point driven with constant power 'P' is such that

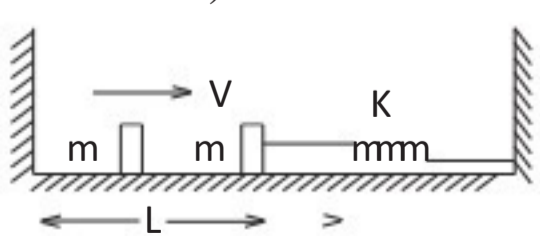
- 1)  $V \propto \frac{3P}{m}$
- 2)  $V^2 \propto \frac{3P}{m}$

- 3)  $V^3 \propto \frac{3P}{m}$
- 4)  $V \propto \left(\frac{3P}{m}\right)^2$

94. Two particles are shown in figure at time  $t = 0$ , constant force  $F = 6\text{N}$  starts acting on the 3kg particle. The velocity of the centre of mass of these particles at  $t = 5\text{s}$  is

- 
- 1)  $5\text{ms}^{-1}$
  - 2)  $4\text{ms}^{-1}$
  - 3)  $6\text{ms}^{-1}$
  - 4)  $3\text{ms}^{-1}$

95. The left block as shown in the figure moves at speed V towards the right block placed in equilibrium. All collisions to take place are elastic and the surfaces are frictionless. The time period of the motion is (Neglect widths of the blocks)

- 
- 1)  $2\pi\sqrt{\frac{m}{k}}$
  - 2)  $\frac{2L}{V}$

- 3)  $2\pi\sqrt{\frac{m}{k} + \frac{2L}{V}}$
- 4)  $\pi\sqrt{\frac{m}{k} + \frac{2L}{V}}$

96. A mass of 2kg oscillates on a spring with force constant 50

$\text{Nm}^{-1}$ . By what percentage the frequency of oscillation decreases when a damping force with a constant  $b = 16$  is introduced

- 1) 10%
- 2) 20%
- 3) 30%
- 4) 40%

97. A thin hollow sphere of mass 'm' is completely filled with a liquid of mass 'm'. When the sphere rolls with a velocity 'V' at center of mass, then kinetic energy of the system is (Neglect friction)

- 1)  $\frac{7}{10}mV^2$
- 2)  $\frac{5}{3}mV^2$

- 3)  $\frac{1}{3}mV^2$
- 4)  $\frac{4}{3}mV^2$

98. The energy density  $\frac{U}{V}$  of an ideal monoatomic gas is related to its pressure P as

- 1)  $\frac{U}{V} = 2P$
- 2)  $\frac{U}{V} = \frac{3P}{2}$

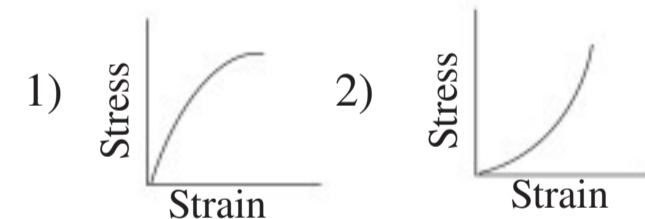
- 3)  $\frac{U}{V} = \frac{P}{3}$
- 4)  $\frac{U}{V} = \frac{5P}{2}$

99. The radius of the bore of a capillary tube is r and the angle of contact of the liquid is  $\theta$ . when the tube is dipped in the liquid, the radius of curvature of the meniscus of liquid rising in the tube is

- 1)  $r \sin \theta$
- 2)  $\frac{r}{\sin \theta}$

- 3)  $r \cos \theta$
- 4)  $\frac{r}{\cos \theta}$

100. Stress - strain curve for the elastic tissue of Aorta is

- 
- 1) Stress vs Strain (concave up)
  - 2) Stress vs Strain (concave down)

- 3) Stress vs Strain (linear)
- 4) Stress vs Strain (concave down)

101. Doppler shift in frequency does not depend upon

- 1) The frequency of the wave produced
- 2) The velocity of the source
- 3) The velocity of the observer
- 4) Distance from the source to the listener

102. If at any place, the angle of dip is  $\theta$  and magnetic latitude is  $\lambda$ , then

- 1)  $2 \tan \theta = \tan \lambda$
- 2)  $\tan \theta = 2 \tan \lambda$
- 3)  $\sqrt{3} \tan \theta = \tan \lambda$
- 4)  $\tan \theta = \sqrt{3} \tan \lambda$

103. Representing the stopping potential V along y-axis and  $\left(\frac{1}{\lambda}\right)$

- along x-axis for a given photo cathode, the curve is a straight line, the slope of which is equal to
- 1)  $\frac{e}{hc}$
  - 2)  $\frac{hc}{e}$
  - 3)  $\frac{ec}{h}$
  - 4)  $\frac{he}{c}$

104. The polarizing angle for one type of glass of refractive index  $\mu_1$  is found equal to the critical

angle for another type of glass of refractive index  $\mu_2$  with respect to air, the relation between the refractive indices  $\mu_1$  &  $\mu_2$  of the two glasses is

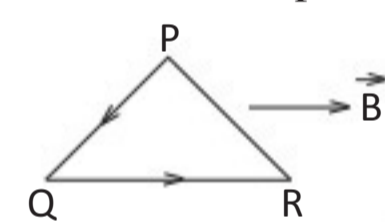
- 1)  $\mu_1 = \frac{\mu_2}{2}$
- 2)  $\mu_2 = \frac{\sqrt{1-\mu_1^2}}{2}$

- 3)  $\mu_2 = \frac{\sqrt{1+\mu_1^2}}{1}$
- 4)  $\mu_1 = \frac{\sqrt{1+\mu_2^2}}{2}$

105. When a long straight uniform rod is connected across an ideal cell, the drift velocity of electrons in it is V. If a uniform hole is made along the axis of the rod and the same battery is used, then the drift velocity of electrons becomes?

- 1) V
- 2)  $> V$
- 3)  $< V$
- 4) Zero

106. An equilateral triangular loop PQR of side 'l' carries a current in the directions shown in figure. The loop is kept in a uniform horizontal magnetic field  $\vec{B}$  as shown in figure. Net force on the loop is



- 1) Zero
- 2)  $\frac{\sqrt{3}}{2} Bil$

- 3)  $\sqrt{3} Bil$  perpendicular to paper inwards
- 4)  $\sqrt{3} Bil$  perpendicular to paper outwards

107. **Statement (A):** In a stepup transformer primary is made of thick insulated copper wire and the secondary is made of thin wire  
**Statement (B):** A stepup transformer converts large current at low voltage to a low current at high voltage

- 1) A is true, B is false
- 2) Both A & B are true
- 3) A is false, B is true
- 4) Both A & B are false

108. A red LED emits light at 0.1 watt uniformly around it. The amplitude of the electric field of the light at a distance of 1m from the diode is

- 1)  $2.45\text{Vm}^{-1}$
- 2)  $5.48\text{Vm}^{-1}$
- 3)  $7.75\text{Vm}^{-1}$
- 4)  $1.73\text{Vm}^{-1}$

109. In a potentiometer of 10 wires, the balance point is obtained on the sixth wire. To shift the balance point to eight wire, we should

- 1) Increase resistance in the primary circuit
- 2) Decrease resistance in the primary circuit
- 3) Decrease resistance in series with the cell whose emf is to be measured

4) Increase resistance in series with the cell whose emf is to be measured

110. A car of mass 1250 kg is moving at a speed of  $30\text{ms}^{-1}$ . Its engine delivers power of 30kw while resistive force due to surface is 750N. The maximum acceleration can be given to the car is

- 1)  $\frac{1}{3}\text{ms}^{-2}$
- 2)  $\frac{1}{4}\text{ms}^{-2}$

- 3)  $\frac{1}{5}\text{ms}^{-2}$
- 4)  $\frac{1}{6}\text{ms}^{-2}$

111. An electron of a stationary hydrogen atom passes from the fifth energy level to the ground level. The velocity that the photon acquired as a result of photon emission will be (R = Rydberg constant, M = mass of atom, h = plancks constant)

- 1)  $\frac{25m}{24hR}$
- 2)  $\frac{24m}{25hR}$

- 3)  $\frac{24hR}{25m}$
- 4)  $\frac{25hR}{24m}$

112. A mixture consists of two radioactive materials  $A_1$  and  $A_2$  with half lives of 20s and 10s respectively. Initially the mixture has 40g of  $A_1$  and 160g of  $A_2$ . The amount of the two in the mixture will become equal after

- 1) 20s
- 2) 40s
- 3) 60s
- 4) 80s

113. Three identical uniform thin metal rods form the three sides of an equilateral triangle. If the moment of inertia of the system of these rods about an axis passing through the centroid of the triangle and perpendicular to the plane of the triangle is 'n' times. The moment of inertia of one rod separately about an axis passing through the centre of the rod and perpendicular to its length, the value of 'n' is

- 1) 3
- 2) 6
- 3) 9
- 4) 12

114. A parallel plate capacitor is connected to a battery. The plates are pulled apart with a uniform speed V. If x is the separation between the plates, then the time rate of change of the electrostatic energy of the condenser is proportional to

- 1)  $x^2$
- 2) x
- 3)  $\frac{1}{x}$
- 4)  $\frac{1}{x^2}$

115. The average velocity of a body

moving with uniform acceleration after travelling a distance of 3.06m is  $0.34\text{ms}^{-1}$ . If the change in velocity of the body is  $0.18\text{ms}^{-1}$  during this time, its uniform acceleration is

- 1)  $0.01\text{ms}^{-2}$
- 2)  $0.02\text{ms}^{-2}$
- 3)  $0.03\text{ms}^{-2}$
- 4)  $0.04\text{ms}^{-2}$

116. Youngs double slit experiment is made in a liquid. The 10th bright fringe in liquid lies where 6th dark fringe lies in vacuum. The refractive index of liquid is

- 1) 1.8
- 2) 1.54
- 3) 1.67
- 4) 1.2

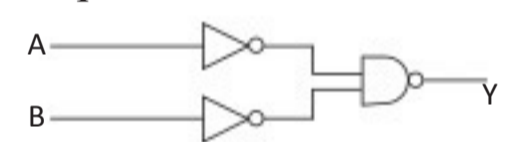
117. In communications with the help of antenna, if height is doubled, then the range covered which was initially 'r' would become

- 1)  $\sqrt{2}r$
- 2) 3r
- 3) 4r
- 4) 5r

118. The electromagnetic waves of frequency 2MHz to 30 MHz are used

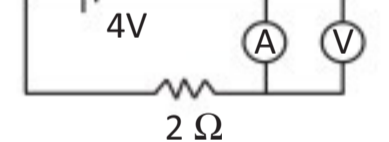
- 1) In ground wave propagation
- 2) In sky wave propagation
- 3) In microwave propagation
- 4) In satellite communication

119. The combination of gates shown is equivalent to



- 1) OR gate
- 2) AND gate
- 3) NOR gate
- 4) NAND gate

120. In the circuit shown, if devices are ideal which of the following are true?



- 1) Ammeter reading is zero
- 2) Voltmeter reading is zero
- 3) Ammeter reading is 2A
- 4) Voltmeter reading is 2V

## KEY

- |        |        |        |        |
|--------|--------|--------|--------|
| 90) 4  | 91) 3  | 92) 3  | 93) 2  |
| 94) 3  | 95) 4  | 96) 4  | 97) 4  |
| 98) 2  | 99) 4  | 100) 2 | 101) 1 |
| 102) 1 | 103) 2 | 104) 3 | 105) 2 |
| 106) 4 | 107) 2 | 108) 1 | 109) 1 |
| 110) 3 | 111) 3 | 112) 2 | 113) 2 |
| 114) 4 | 115) 2 | 116) 1 | 117) 1 |
| 118) 2 | 119) 1 | 120) 3 |        |

మిగతా రోపటి 'విద్య' లో...

# NEET -2019

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