EVERWIN MATRIC. HR. SEC. SCHOOL

30.10.19 TT Physics Time: 45 Mins

STD: XII-A Marks: 30

I. Choose the correct answer: 5x1=5

1. An object is placed at a distance of 20.0 cm from a concave mirror of focal length 15.0 cm. What distance from the mirror a screen should be placed to get a sharp image?

   a) V=60cm b) V=-60cm c) V=6cm d) V=-6cm

2. One type of transparent glass has refractive index 1.5. What is the speed of light through this glass?

   a) $2x10^{-8}$ ms^{-1} b) $2x10^{8}$ ms^{-1} c) $3x10^{8}$ ms^{-1}

   d) $3x10^{-8}$ ms^{-1}

3. The speed of light in an isotropic medium depends on _____.

   a) its intensity b) its wavelength

   c) the nature of propagation

   d) the motion of the source with respect to medium

4. For light incident from air on a slab of refractive index 2, the maximum possible angle of refraction is _____.

   a) 30^0 b) 45^0 c) 60^0 d) 90^0

5. An object is placed infront of a convex mirror of focal length of f and the maximum and minimum distance of an object from the mirror such that the image formed is real and magnified.

   a) 2f and c b) c and α c) f and o d) None

II. Answer any 4 of the following: 4x2=8

6. What are the characteristics of the image formed by plane mirror?
7. Define optical path.
8. State the conditions for total internal reflection.
9. Define critical angle.
10. A coin is at the bottom of a trough containing three immiscible liquids of refractive indices 1.3, 1.4 and 1.5 poured one above the other of heights 30cm, 16cm and 20cm respectively. What is the apparent depth at which the coin appears to be when seen from air medium outside? In which medium the coin will be seen?

III. Answer any 4 of the following: 4x3=12

11. Write a short note on cartesian sign convention for spherical mirror.
12. Explain the relation between f and R.
13. Mention the characteristics of refraction.
14. Light travelling through transparent oil enters into glass of refractive index 1.5. If the refractive index of glass with respect to the oil is 1.25, what is the refractive index of the oil?
15. Derive an expression for mirror equation.

IV. Answer any 1 of the following: 1x5=5

16. Obtain the equation for radius of illumination (or) snell's window.
17. Derive the equation for acceptance angle in optical fibre.

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30.10.19 TT Physics Time: 45 Mins

STD: XII (B,C) Marks: 30

I. Choose the correct answer: 5x1=5

1. Light transmitted by nicol prism is _____.

a) partially polarised b) unpolarised

c) plane polarised d) elliptically polarised

2. A plane glass is placed over a various coloured letters (violet, green, yellow, red). The letter which appears to be raised more is _____. a) red b) yellow c) green d) violet

3. The transverse nature of light is shown is _____.

a) interference b) diffraction c) scattering

d) polarisation

4. First diffraction minimum due to a single slit of width 1.0×10^{-5}cm is at 30^0. Then wavelength of light used is _____.

a) 400 A^0 b) 500 A^0 c) 600 A^0 d) 700 A^0

5. Two light sources have intensity of light I_o. What is the resultant intensity at a point where the two light waves have a phase difference of $\frac{\pi}{3}$?

a) $4I_o$ b) I_o c) $3I_o$ d) $\frac{I_o}{2}$

II. Answer any 3 of the following: 3x2=6

6. Define coherent source.
7. Calculate the distance for which ray optics is good approximation for an aperture of 5mm and wavelength 500nm.
8. Difference between Interference and diffraction.
9. What is constructive interference?

III. Answer the following: 3x3=9

10. A diffraction gratting consisting of 4000 slits per centimeter is illuminated with a monochromatic light that produces the second order diffraction at an angle of 30^0. What is the wavelength of the light used?
11. What is fresnel's distance? Obtain the equation for fresnel's distance.
12. Find the minimum thickness of a film of refractive index 1.25, which will strongly reflect the light of wavelength 589 nm. Also find the minimum thickness of the film to be anti reflection.

IV. Answer any 2 in detail: 2x5=10

13. Obtain the equation for bandwidth in young's double slit experiment.
14. Discuss diffraction of single slit and obtain the condition for n^{th} minimum.
15. Discuss the diffraction at a grating and obtain the condition for the m^{th} maximum.

EVERWIN MATRIC. HR. SEC. SCHOOL

30.10.19 TT Mathematics Time: 45 Mins

STD: XII (D,E) Marks: 30

I. Choose the correct answer: 5x1=5

1. If the length of the perpendicular from the origin to the plane $2x+3y+\lambda z=1$ is $\frac{1}{5}$ then the value of λ is _____.

   a) $2\sqrt{3}$ b) $3\sqrt{2}$ c) 0 d) 1

2. The distance between the planes $x+2y+3z+7=0$ and $2x+4y+6z+7=0$ is _____.

   a) $\frac{\sqrt{7}}{2\sqrt{2}}$ b) $\frac{7}{2}$ c) $\frac{\sqrt{7}}{2}$ d) $\frac{7}{2\sqrt{2}}$

3. Distance from the origin to the plane $3x-6y+2z+7=0$ is _____.

   a) 0 b) 1 c) 2 d) 3

4. If the line $\frac{x-2}{3}=\frac{y-1}{-5}=\frac{z+2}{2}$ lies in the plane $x+3y-\alpha z+\beta=0$ then (α,β) is _____. a) (-5, 5) b) (-6, 7) c) (5, -5) d) (6, -7)

5. If the direction cosines of a line are $\frac{1}{c}, \frac{1}{c}, \frac{1}{c}$ then _____.

   a) $c=\pm 3$ b) $c=\pm\sqrt{3}$ c) $c>0$ d) $0<c<1$

II. Answer the following: 5x3=15

6. Show that the points (2, 3, 4), (-1, 4, 5) and (8, 1, 2) are collinear.

7. Find the angle between the lines $\frac{x+4}{3}=\frac{y-7}{4}=\frac{z+5}{5}$, $\vec{r}=4\hat{k}+t(2\hat{i}+\hat{j}+\hat{k})$

8. Show that the lines $\frac{x-1}{4}=\frac{2-y}{6}=\frac{z-4}{12}$ and $\frac{x-3}{-2}=\frac{y-3}{3}=\frac{5-z}{6}$ are parallel.

9. If the straight lines $\frac{x-5}{5m+2}=\frac{2-y}{5}=\frac{1-z}{-1}$ and $x=\frac{2y+1}{4m}=\frac{1-z}{-3}$ are perpendicular to each other, find the value of m.

10. The vertices of ΔABC are A(7, 2, 1), B(6, 0, 3) and C(4, 2, 4). Find $\angle ABC$.

III. Answer the following: 2x5=10

11. Find the non-parametric form of vector equation and cartesian equations of the straight line passing through the point with position vector $4\hat{i}+3\hat{j}-7\hat{k}$ and parallel to the vector $2\hat{i}-6\hat{j}+7\hat{k}$.

12. Find the direction cosines of the straight line passing through the points (5, 6, 7) and (7, 9, 13). Also find the cartesian equations of the straight line.

EVERWIN MATRIC. HR. SEC. SCHOOL

30.10.19 TT Business Mathematics Time: 45 Mins

STD: XII (I,J) Marks: 30

I. Answer any 5 of the following: 5x3=15

1. Define Poisson distribution with 2 examples.
2. The mortality rate for a certain disease is 7 in 1000. What is the probability for just 2 deaths on account of this disease in a group of 400?
3. In a book of 520 pages, 390 typo-graphical errors occur. Assuming Poisson law for the number of errors per page, find the probability that a random sample of 5 pages will contain no error.
4. Write down the conditions in which the Normal distribution in a limiting case of binomial distribution.
5. X is normally distributed with mean 12 and S.D 4. Find $P(X\leq 20)$ and $P(0\leq X\leq 12)$.
6. A sample of 125 dry battery cells tested to find the length of life produced the following resulted with mean 12 and SD 3 hours. Assuming that the data to be normal distributed, what percentage of battery cells are expected to have life?
   a) More than 13 hours $P(Z>0.333)=0.1293$
   b) Less than 5 hours $P(Z>2.339)=0.4901$

III. Answer the following: 3x5=15

7. Derive the mean and variance of Poisson distribution.
8. Write any 7 properties of Normal distribution.
9. A car hiring firm has two cars. The demand for cars on each day is distributed as a Poisson variate, with mean 1.5. Calculate the proportion of days on which
   i) Neither car is used ii) Some demand is refused.

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30.10.19 TT Accountancy Time: 45 Mins

STD: XII (F-H) Marks: 25

I. Choose the correct answer: 5x1=5

1. That part of share capital which can be called up only on the winding up of a company is called _____.
   a) Authorised capital b) Called up capital
   c) Reserve capital
2. At the time of forfeiture, share capital account is debited with
   a) Face value b) Nominal value c) Called up amount
3. The amount received over and above the per value is credited to _____.
   a) Vendor's account b) Sundry assets account
   c) Share capital account
4. If a share of ₹10 on which ₹8 has been paid up is forfeited. Minimum reissue price is _____.
   a) ₹ 2 per share b) ₹ 10 per share c) ₹8 per share
5. The amount received over and above the par value is credited to _____.
   a) securities premium account b) call in advance account
   c) share capital account

II. Answer the following question: 4x5=20

6. Gemini Ltd., forfeited 20 equity shares of ₹10 each, ₹7 called up, on which Mahesh had paid application and allotment money of ₹5 per share. Of these 15 shares were reissued to Naresh by receiving ₹ 6 per share paid up as ₹7 per share. Pass Journal entries for forfeiture and reissue.
7. Jenifer Ltd., issued 10,000 equity shares of ₹10 each at par payable on application ₹3 per share, on allotment ₹3 per share, on first call ₹ 2 per share and on second and final call ₹ 2 per share. The issue was fully subscribed and all the amounts were duly received with the exception of 100 shares held by Subbu who failed to pay the second and final call. His shares were forfeited and reissued to Hema at ₹ 7 per share. Journalise the above transactions.
8. Hero Health Care Ltd invited application for 3,00,000 equity shares of ₹10 each at premium of ₹2 per share payable as follows: ₹3 on application, ₹ 5 (including premium) on allotment, ₹4 on first and final call. There was over subscription and applications were received for 4,00,000 shares and the excess applications were rejected by the directors. All the money due were received. Pass Journal entries.
9. Rajan Ltd., purchased machinery of ₹6,00,000 from Jagan Traders. It issued equity shares of ₹10 each fully paid in satisfaction of their calim. What entries will be made if such issue is made: a) at par and b) at premium of 50%

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30.10.19 TT Computer Application Time: 45 Mins

STD: XII (I,J) Marks: 30

I. Choose the correct answer: 5x1=5

1. National Science Foundation opened the Internet in _____.
   a) 1991 b) 1970 c) 1979 d) 2010
2. In Aug 11, 1994 by noon of the day, phil bought music CD paid Rs. _____
   a) $14.28 b) $24.18 c) $12.48 d) $15.5
3. The term disruptive innovation was first coined by _____.
   a) Clayton b) Clington c) Phil d) a or b
4. LLP stands for _____.
   a) Lower labour payment b) Lagging license policy
   c) Limited liability partnership d) all
5. Web of content version is _____.
   a) web 3.0 b) web 2.0 c) web 1.0 d) web 4.0

II. Answer the following: 4x2=8

6. Distinguish between E-Business and E-Commerce.
7. What is dotcom bubble and dotcom burst?
8. Write the limitations of E-Commerce.
9. Write a note on Teleputer.

III. Answer the following: 4x3=12

10. Write a short note on the third wave of commerce.
11. Explain B2B module in E-Commerce.
12. Write a note on Augmented reality.
13. Write the steps to start E-Business.

IV. Answer any 1 in detail: 1x5=5

14. Explain any five E-Commerce revenue models.
15. How would you differentiate a traditional commerce and E-Commerce?