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180212

1st Year / Arch. Engg.

Subject : Applied Science and Mathematics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 S.I unit of Luminous intensity is

a) Watt b) candela

c) Joule d) none of these

Q.2 Specific heat is directly proportional to

a) Stress b) Temperature

c) Mass of the object d) Energy

Q.3 Which of the following are components of solar cells?

a) Nickel plating

b) PN-silicon

c) Anti reflecting coating

d) All of the above

Q.4 The value of $\sin 90^{o}$ is

a) 0 b) 1

c) 1/2 d) -1

Q.5 The value of ${}^{4}C_{2}$ is

a) 10 b) 15

c) 12 d) 5

Q.6 If $y = \cos x$, then $\frac{dy}{dx}$ is

a) -sinx b) sec2x

c) sinx d) tanx

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 A thermometer works on_____law of thermodynamics

Q.8 Audible sound has frequency between _____ hz to _____ hz

Q.9 What are the forces of attraction and repulsion between interacting molecules known as _____.

Q.10 Sin (A-B) =_____

Q.11 180^{o} = _____ Grades

Q.12 The angle -1125^{o} lies in _____ quadrants.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

Q.13 Define specific heat and heat capacity?

Q.14 Write a short note on solar cells.

Q.15 Define work and energy and give their S.I units.

Q.16 What are primary, secondary and tertiary colors?

Q.17 Expand $(2a+3b)^{3}$

Q.18 Find the value of $\tan 105^{o}$.

Q.19 Differentiate $3x^{6}+2x^{5}+5x^{4}+7x^{2}-5x-7$ w.r.t.x

Q.20 Evaluate $\int 8\sin\theta + 7\tan\theta + 2x^{4} + 3x + 4\ dx$ with respect to x

Q.21 Express $\cos 8\theta \cos 3\theta$ as sum or difference

Q.22 Differentiate $Y = \sin x - x^{3} - x^{2}\cos x$ w.r.t.x

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 What are applications of waterproofing and wetting and what are waterproofing methods and techniques?

Q.24 i) Explain three laws of conservation of momentum?

ii) What are intermolecular forces? Also explain adhesive and cohesive forces.

Q.25 Evaluate $\int \cos^{3} x \sin^{2} x\ dx$