No. of Printed Pages : 4
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180212

Arch.

Subject : Applied Science and Mathematics

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Objective type questions. All questions are compulsory (10x1=10)

Q.1 A system that converts heat energy to mechanical energy that can then be used to do mechanical work is called .....

Q.2 Absorption of sound ..... (increases, decreases) reverberation time.

Q.3 A solar cell is a device that converts the energy of light directly into ..... by the photovoltaic effect.

Q.4 SI unit of Luminous intensity is .....

Q.5 The attractive forces between molecules of different substances are called ..... (Intermolecular, Adhesive, Cohesive)

SECTION-D

Note: Long answer type questions. Attempt any two questions . 2x8=16

Q.26 (a) State any two methods to control humidity.

(b) Find reverberation time for a hall of dimensions $3000m^3$ and 1850 m^2 area having average absorption coefficient of 0.2 O.W.U.

Q.27 (a) Explain illumination and efficiency of light.

(b) Give any four methods of water proofing.

Q.28 Evaluate $\int x^2 e^x dx$

Q.6 Absorption of open window is .....

Q.7 Cos 45°= .....

Q.8 In ..... quadrant, the point (-4,-3) lies.

Q.9 $\frac{d}{dx}e^x$ = ...

Q.10 $\int \text{cosec}^2 x\, dx$ = ... (cotx,-cotx)

SECTION-B

Note: Very short answer type questions. Attempt any five questions 5x2=10

Q.11 Define heat capacity.

Q.12 Define intermolecular forces?

Q.13 Define acoustics of building?

Q.14 Find the degree measure of the angle whose radian measure is 3p/2.

Q.15 Differentiate x logx w.r.t.x.

Q.16 Write the product formula of differentiation.

Q.17 Evaluate $\int x^2-3x+4\, dx$

SECTION-C

Note: Short answer type questions. Attempt any six questions. 6x4=24

Q.18 Explain basic principle of working of ac's and refrigerators.

Q.19 Define reverberation? State any two methods to control reverberation.

Q.20 State basic principle of working of social cell?

Q.21 Prove that $\frac{\text{Cos } 17° + \text{Sin } 17°}{\text{Cos } 17° - \text{Sin } 17°}$ = tan 62°

Q.22 Prove that $\frac{\text{Cos } 2B - \text{Cos } 2A}{\text{Sin } 2B + \text{Sin } 2A}$ = tan(A-B)

Q.23 (I) Evaluate cos 50° cos 10° - Sin 50° Sin 10°

(ii) In triangle ABC, A=30° and side AB=12 c.m. Find BC.

Q.24 Differentiate $\frac{x^3+1}{x+1}$ w.r.t.x

Q.25 Differentiate sin2x-x w.r.t.x