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120216/030216

1st Sem / Branch : Architecture

Subject:- Applied Science and Mathematics

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 The area of a square with sides of length 4cm is

a) $8cm^2$ b) $16cm^2$

c) $12cm^2$ d) $4cm^2$

Q.2 The value of sin 90° is

a) 1 b) 0

c) -1 d) None of these

Q.3 The value of $\int sinx\,dx$ is

a) $\cos x + c$ b) $cosec\,x + c$

c) $-\cos x + c$ d) None of these

Q.4 The value of $\frac{d}{dx}(\cos x)$ is

a) $\sin x$ b) $cosec\,x + c$

c) $-\sin x$ d) None of these

Q.5 Which is an acidic refractory

a) Magnesite b) Dolomite

c) fire clay d) None of these

Q.6 Purest form of Iron is

a) cast iron b) wrought iron

c) Both d) None of these

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 a) Evaluate $\int \frac{2x+1}{x^2+2x+5}\,dx$ by substitution method

b) Evaluate $\int x \sin x\,dx$ by integration by parts

Q.37 Explain general method of manufacture of basic refractories.

Q.38 a) Explain principle of conservation of linear momentum with examples.

b) Explain solar cell in details.

Q.7 Example of saturated hydrocarbon is

a) Methane b) Ethane

c) Both d) None of these

Q.8 The unit of luminous intensity is:

a) lux b) candela

c) lumen d) None of these

Q.9 The dimensional formula of force is:

a) $[M^1L^1T^{-2}]$ b) $[M^1L^2T^{-2}]$

c) $[M^1L^2T^2]$ d) $[M^0L^1T^{-2}]$

Q.10 Newton's first law of motion is also called

a) Law of Inertia

b) Real law of motion

c) Principle of conservation of energy

d) None of these

SECTION-B

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

Q.11 Fill in the blank $\tan 30^o =$ _____

Q.12 Fill in the blank $\frac{d}{dx}(x^3) =$ _____

Q.13 Fill in the blank $\lim_{x \to 0}(x^2+2x+1) =$ _____

Q.14 Fill in the blank $\int \frac{1}{x} dx =$ _____

Q.15 Metal is _____ conductor of heat.

Q.16 Monometer of PVC is _____

Q.17 Define Corrosion.

Q.18 S.I. unit of energy is _____

Q.19 Define amplitude.

Q.20 The S.I. unit of frequency is _____

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Evaluate $\sin 75°$.

Q.22 Solve $\log x + \log(x+3) = 4$

Q.23 Find the volume of cube having sides of length 6m.

Q.24 Write properties and uses of copper. (any five)

Q.25 What are Epoxy resins? Explain with example.

Q.26 Explain the general method of manufacture of aluminium.

Q.27 Differentiate between thermoset and thermoplastic polymers.

Q.28 Evaluate $\cos 70° \cos 10° + \sin 70° \sin 10°$.

Q.29 Expand $(2x+y)^3$ by using binomial theorem.

Q.30 From a point 20m away from the foot of a tower, the angle of elevation of the top of the tower is 30°. Find the height of the tower.

Q.31 Explain first and second law of thermodynamics.

Q.32 An auditorium has volume of $3000m^3$ and the total surface absorption is 160 O.W.U. Calculate the reverberation time.

Q.33 Explain platinum resistance thermometer.

Q.34 Explain cohesive and adhesive forces with two examples in each case.

Q.35 Define resonance and explain resonant vibration with example.