QUANT TEST PAPER 3

1. "A game of 50" means a game in which the player scoring 50 points first is the winner. In a game of 50, A can give B 10 points. This means that when A scores 50, B scores 40 points. In a game of 50, A can give B 10 points, but B can give C 20 points. With the same efficiency how many points can A give C?

(•) 1] 30 ( ) 2] 25 ( ) 3] 40 ( ) 4] 50

2. 2 pipes X and Y fill a tub in 10 min and 15 min resp. Both are opened and at the end of 5 minutes X is turned off. How much time will the tub take to fill?

(•) 1] 3/2 min ( ) 2] 1/2 min ( ) 3] 4/3 min ( ) 4] 5/2 min

3. Walking at 2/3 of his usual speed a man is 2 hrs.late. Find his actual travel time

(•) 1] 8 hrs ( ) 2] 4hrs ( ) 3] 3hrs ( ) 4] none of these

4. A train after travelling 30 km from X meets with an accident and proceeds at 3/4 of the former speed and reaches by 45 min. late. Had the accident happened 10 kms further one, it would have arrived 15 min sooner. Find the original speed and distance.

(•) 1] 60km ( ) 2] 30 km ( ) 3] 50 km ( ) 4] 20 km

5. A cat sees a rat 50 metres away from her and moves in the opposite direction at a speed of 12 km/hr. A minute later the rat sees her and gives chase at a speed of 15 km/hr. How soon will the rat overtake her?

(•) 1] 5 min ( ) 2] 6 min ( ) 3] 2 min ( ) 4] 12 min

6. 3 pipes can fill a reservoirin 10,15 and 20 hrs. resp. The first was opened at 5 a.m. , the second at 6 a.m., third at 7 a.m. When will the reservoir the filled?

(•) 1] 5:20a.m. ( ) 2] 6:30 a.m. ( ) 3] 10:20 a.m. ( ) 4] 4 p.m.

7. Rowing at a steady rate, a man travels downstream for an hour and covers 5 km. If he takes 1hr.20min. For the return journey. Find the speed of the current?

(•) 1] 0.625 km/hr ( ) 2] 0.325 km/hr ( ) 3] 0.75 km/hr ( ) 4] none of these

8. If 15 men and 10 boys can do in 1 day as much work as 12 men and 20 boys. How much should a man be paid a day if a boy is to get Rs.10 a day?

(•) 1] Rs.30 ( ) 2] Rs.33.33 ( ) 3] Rs.40 ( ) 4] Rs.45

9. A cop after a robber who has 100m start. The cop runs 2 km in 8mins. And the thief 2 km in 12 mins. How far the thief has gone before he overtaken?

(•) 1] 200 ( ) 2] 210 ( ) 3] 250 ( ) 4] 300

10. 1The sides of a triangle are 5:6:7 and its area is 800 sqft. Find its sides?

(•) 1] ( ) 2] ( ) 3] ( ) 4

Sqrt[800/sqrt(225)] sqrt[800/sqrt(216)] sqrt[800/sqrt(210)]]sqrt[760/sqrt(220)]

11. Find the area of the cyclic quadrilateral whose sides are 15,12,10 and 13 cms.

1] 30*sqrt(26) 2] 30*sqrt(20) 3] 10*sqrt(6) 4] 10*sqrt(2)

12. Cost of painting the 4 walls of a room 40ft.*15ft. At Rs.5 per square feet is Rs.7500. Find the height of the room?

1] 14 ft. 2]13.63 ft. 3]15.72 ft. 4]21.2 ft.

13. The areas of a trapezium of height 20 cm. Is 800 cm^2. One parallel side is 10 cm. Longer than the other. Find the parallel side?

1] 35,45 2] 30,40 3] 45,35 4] 60,70

14. Volume of a right circular cylinder is 450 $cm^3$and its curved surfaces area is 200 cm^2. Find its radius?

1] 2.5 cm 2] 1.5 cm 3] 5cm 4] 4.5 cm

15. Iron weighs 8 times the weight of steel . Find the diameter of an iron ball whose weight is equal to that of a ball of steel 16 inches diameter?

1] 6 2] 7.5 3] 9 4] 8

16. A rectangle 5cm*3cm is rotated about its smaller edge as axis. Find the curved surface area and volume of solid generated?

1] 85,60 2] 35,40 3] 75,30 4] 30,75

17. A well 20m in diameter is dug 15m deep and earth is spread all around a width of 5m to form an embankment. Find the height of the embankment.

1] 69 2] 82 3] 80 4] 75

18. The radius of a circular cylinder is increased 40%. Find the % increase in volume?

1] 95 2] 96 3] 72 4] 48

19. A river 10m deep 200m wide flows at the rate of 6km/hr. Find the metric tones of water running into the sea per minute?

1] 30000 2] 10000 3] $2*10^5$ 4] $2*10^4$

20. If the diameter of a cylinder is 14cm. And height is 10cm, then total surface area (in cm^2) is:

1] 748 2] 896 3] 558 4] 468

21. The radius of a cylinder is 2m. And its length is 20m. The area of an iron sheet constructed from the cylinder is:

1] 88*22/7 2] 80*22/7 3] 36*22/7 4] 54*22/7

22. The sum of the radius of the base and height of a solid cylinder is 40m. If the total surface area of the cylinder is 1760 m^2 its volume is:

(•) 5700^3 ( ) $5420m^3$ ( ) 5082^3 ( ) 5600^3

23. the radii of 2 cylinders are in the ratio 3:4. Their heights are in the ration 2:3. The ratio of their volumes is

(•) 1] 1:2 ( ) 2] 2:1 ( ) 3] 3:4 ( ) 4] 2:3

24. Two cylinders of equal volume have their heights in the ratio 2:3. Ratio of their radii is

(•) 1] 1:4 ( ) 2] 1:sqrt(2) ( ) 3] sqrt(2):1 ( ) 4] 2:1

25. If a train runs at 20 km/hr, it reaches its destination late by 10 min. But if it runs at 30 km/hr, it is late by 2 min. only. The correct time for the train to complete its journey is:

(•) 1] 12 min ( ) 2] 8 min ( ) 3] 14 min ( ) 4] 15 min

26. Two busess travel to a place 20 kmph and 40 kmhr. If the second bus takes 6 hrs. less than the fixed for the journey the length of the journey is:

(•) 1] 262 km ( ) 2] 240km ( ) 3] 200km ( ) 4] 271.5km

27. A car travels a distance of 360km at a uniform speed. If speed of the car is 20km/hr more then time is 3 hrs. less.The original speed of car was:

(•) 1] 40 ( ) 2] 45 ( ) 3] 32 ( ) 4] 37

28. A man covers 30km partly at 4km/hr and 6km/hr. If he covers former distance 6km/hr and later at 4 km/hr,he could cover 2km more in the some time. Time taken to cover the whole distance in the original time is:

(•) 1] 3.75 ( ) 2] 6.2 ( ) 3] 5.5 ( ) 4] 4.7

29. A theif steals a car at 1p.m. and drives it at 20km/hr. The theft is discovered at 2p.m. The owners sets of another car at 30 km/hr, he will overtake the thief at:

(•) 1] 3:06p.m ( ) 2] 2:52p.m. ( ) 3] 4:00p.m. ( ) 4] 2:20p.m.

30. 1The ratio between the rate of walking of x and y is 2:3. If the time taken by B to cover a certain distance is 24min, to cover the same distance A will take:

(•) 1] 32 ( ) 2] 48 ( ) 3] 16 ( ) 4] 36

31. 125, 106, 89, 76, 65, _____

(•) 1] 56 ( ) 2] 53 ( ) 3] 58 ( ) 4] 59

32. 5, 6, 3, 4, 1, _____

(•) 1] 2 ( ) 2] 4 ( ) 3] -2 ( ) 4] 6

33. 12, 30, 105, 473, 2599, _____

1] 15913 2] 16892 3] 3654 4] 3564

34. 13,20,140,147,1029, ____

1] 1056 2] 7203 3] 1033 4] 1036

35. The area of a triangle with base 36 cms is equal to the area of a circle of radius 21 cms. Determine the approximate height of the triangle.

1] 77cm 2] 75cm 3] 52 cm 4] 46 cm

36. Pens at 20 Rs each and books at 40 Rs each were purchased. In all these were 6, at a total cost of Rs.180. If the number of Pens and books were interchanged, how much less would have been spent ?

1] 0 2] same amount 3] Rs.2.50 4] Rs.6

37. 123, 211,299,156,244,____

1] 325 2] 250 3] 332 4] none of these

38. 855,7695,69255,623295,_____

1] 5629653 2] 5609655 3] 6609655 4] 1608652

39. An empty jar weighs w_1 gm. The jar half filled with a liquid weights w_2 gm. Find the weight of the jar. Completely filled with the same liquid.

1] $2(w_2-w_1)$ 2] $2w+w_1$ 3] $2w_2-w_1$ 4] $2(w_2+w_1)$

40. A person travels the first 1/3 of distance to be covered at a speed of x km/hr, the 2nd 1/3rd at 2x km/hr and the final 1/3rd at 3x km/hr. What is the average speed for the entire journey?

x km/hr 1/2*x km/hr 2/3*x km/hr 18/11*x km/hr

41. Triangle PQR is an isosceles triangle in which the sides in which the sides xy and xz are 15 each and the base yz is 18. ABCD is a squar, the side AB being on yz and cd in xz and xy resp. Find the area of ABCD?

1] 53 2] 52.65 3] 51.84 4] 60.09

42. Mohan deposits Rs.150 on the first of every month starting from 1st Jan1985, in the recurring deposit scheme of a bank which allows simple interest @ 6% p.a.on the sum standing to his credit at the end of each month. What is the amount, Mohan is entitled to on 31st Dec, 1985

1] Rs.1818 2] Rs.1800 3] Rs.1450 4] Rs.1400.80

43. A strip of paper 100m long, 4cm wide and 0.1mm thick is wound round a cylindrical Core of diameter 10 cm and height 4cm. What is the diameter of the cylinder now?

1] $41.2cm^2$ 2] $40cm^3$ 3] 43.5cm 4] 63cm

44. A rhombus has sides 10cm each and the circle that is inscribed in it has radius 1.5cm. What is the area of the rhombus in cm^2

1] $30cm^2$ 2] $15cm^2$ 3] $4cm^2$ 4] $10cm^2$

45. To comfortably sit in a room, every girl must be allowed a floor space of 2 sq.m. and air space of 5.5 cubic metres. Fifty girls are to be seated comfortably in a room 10m. long. What should be its height?

1] 5.5m 2] 6.6m 3] 6.5m 4] 5m

46. Simplify $\sqrt{(64+64x^2)} = \sqrt{(25+25x^2)}$

1] $3\sqrt{(1+x^2)}$ 2] $\sqrt{(1+x^2)}$ 3] $\sqrt{(1-x^2)}$ 4] $4\sqrt{(x^2)}$

47. O is the centre of a circle. XP is a tangent at X.Angel YXP = 50^o. Find the measure of the arc XYZ

1] 100^o 2] 50^o 3] 180^o 4] 90^o

48. Two positive numbers are such that the ratio of the square of the first to the cube of the second is to the ratio of the cube of the first to the square of the second as 1/20. Find the ratio of the 2 numbers.

1] 3:4 2] 2:1 3] 1:2 4] cannot be determind.

49. Company A pays 5.5% on shares of Rs.100, and another pays at the rate of 3.5% On shares of Rs.10 each. If the price of the former be Rs.150.00 and of the later Rs.15.00, compare the rates of interest which the shares return to a purchaser.

1] 36.67% and 86.37% 2] 37.66% and 86.66%
3] 67.36% and 87.36% 4] None of these.

50. Factorise $(x-y)^3+(y-z)^3-(x-z)^3$
1] $3(x-y)(y-z)(x-z)$ 2] $3(xyz)$
3] $3x-3y-3z$ 4] cannot be found.

Explanation to Paper III

1. A = 50pts., B = 40pts.
B = 50pts., C = 30pts.
l.c.m. of 50 and 40 is 200
If B gets 200, A gets 250, C gets 150pts.
If A gets 50, C gets 50*150/250 = 30pts.
Hence[1]

2. Work done by x and y in 5 min = 5(10+15/150) = 5/6
Remaining work = 1/6
for doing 1/15 work, q takes 1 min.
for doing 1/6 work,?
1/6*1*15 = 5/2 min
Hence [4]

3. Let time be t and speed be s.
Distance travelled = st = 2/3 s*(t+2)
t = 2/3 (t+2)
t = 4hrs.

Hence [2]

4. Let the speed be x.
When speed becomes 3/4th of the usual time, time becomes 4/3 i.e. 1/3rd more of the usual time.
1/3rd of usual time = 45min.
1/3rd of usual time taken to travel by = 45-15
1/3rd of usual time taken to travel AB = 10kms = 15min.
Usual time taken to travel 10km = 45 min
usual speed = 10*60/45 = 40/3 km/hr
Usual time taken to travel Ay = 45*3 =135 min = 2 hrs.15min.
Distance = 40/3*135/60 = 90/3 = 30 km
Total distance = 30+30 = 60km
Hence[1]

5. 12km/hr = 12*100/60 = 200metres/min
Distance of the cat from the rat = 50+200 = 250metres
Since both are moving in same direction, the rat gains 15-12 = 3km/hr i.e. 50 metres/min
Time required to overtake = 250/50 = 5 min
Hence [1]

6. Let time be t hrs after 5a.m.
6.5t-5 = 30
6.5t = 35
t = 5 1/3 hrs.
The resoirvoir will fill at 5a.m.+5 hrs20min = 10.20a.m.
Hence[3]

7. speed down the river = 5km/hr
speed up the river = 5/(1 1/3) = 3.75 km/hr
speed of the current = 1/2(5-3.75) = 0.625 km/hr
Hence[1]

8. 15m + 10b = 12m+20b
3m = 10b
money earned by 10 boys = Rs.100
Rs.100 = money earned by 3 men.
1 man should be paid 100/3 = Rs.33.33
Hence[2]

9.The cop gains 1/8-1/12 = 1/24 km/min = 41 2/3 m/min
To gain 100m, time, 100/(41 2/3) = 2.4 min
The thief has gone ahead by 2.4*1/12*1000 = 200m
Hence [1]

10. If the sides are 5x, 6x and 7x
s = 18x/2 = 9x
Area = sqrt[s(s-a)(s-b)(s-c)] = 800
= sqrt[9x(9x-5x)(9x-6x)(9x-7x)] = 800
x = sqrt[800/sqrt(216)]
Hence [2]

11. s = a+b+c+d/2 = 50/2 = 25
Area of the quadrilateral = sqrt(10*13*15*12) = 30*sqrt(26)cm^2
Hence [1]

12. Area of 4 walls = perimeter*height

= 2(40+15)*h
= 110*h
Area = 7500/5 = 1500
1500 = 110h
h = 13.63
Hence[2]

13. Area = 1/2(sum of parallel sides * height)
= 1/2 * sum of sides *20
800 = 10*sum of parallel sides
80 = sum of parallel sides
x + (x+10) = 80
x = 35
other side = 45
Hence[1]

14. 450/200
200r = 900
r = 4.5 cm
Hence[4]

15 . density of steel is 1 i.e. iron is 8
weight of iron ball = weight of steel
volume of iron *8 = volume of steel *1
r^3*8 = 512
r^3= 512/8 = 64
r = 4
diameter = 8
Hence[4]

16. sc = 2*22/7*r*h = 2*22/7*5*3 = 30*22/7 cm^2
volume = 22/7*r*r*h = 75*22/7 cm^2
Hence [4]

17. New volume/old volume = (22/7*49*r*r*h)/(22/7*r*r*25*h) = 49/25
If old is 25, new is 49, then increase is 24
increase% = 24/25*100 = 96%
Hence[2]

18. Length of water column = 6000/60
volume of water = 100*10*200 = 2*$10^5 m^3$
weight of water = 2*10^5*1000kgs
= 2*10^5 tons
Hence[3]

19. Length of water column = 6000/60 = 100m/min
volume of water = 100*10*200 = 2*10 $^5 m^3$
Weight of water = 2*10^5*1000kgs
= 2*10^5 tons
Hence[3]

20. Total surface area of a cylinder = 2*22/7*r*h+2*22/7*r*r
= 2*22/7*7*10+2*22/7*7*7
= 440+308
= 748

Hence[1]

21. 2*22/7*r*h
= 2*22/7*2*20
= 80*22/7
Hence[2]

22. r+h = 40
2*22/7*r*r+2*22/7*r*h = 2*22/7*r(r+h)
2*22/7*r(r+h) = 1760
r = 7
h = 33
volume = 22/7*r*r*h = 22/7*7*7*33 = 5082 m^3
Hence[3]

23. Let 3r,4r be the radii
Let 2h, 3h be the height.
Ratio of volumes = 1/2
Hence [1]

24. Let heights = h,2h
Let radii be r and R
22/7*r*r*h = 2*22/7*R*R*h
r*r = 2(R*R)
r/R = sqrt(2)/1
Hence[3]

25. Let correct time be x.
distance travelled in (x+10) min. at 20km/hr
Distance travelled in (x+2) at 30km/hr
(x+10)*20/60 = (x+2))*30/60
x = 14 min.
Hence [3]

26. x/20-x/40 = 6
2x-x/40 = 6x = 240km
Hence[2]

27. Let speed be x.
360/x - 360/(x+20) = 3
360(x+20)-360x = 3x(x+20)
(x+60)(x-40)
x = 40
Hence [1]

28. Suppose the first distance is covered in x hours and 2nd distance in y hours.
4x+6y = 30
6x+4y = 32
Solving equations,
x = 3.6 hrs.,y = 2.6 hrs.
Total time = 6.2 hrs.
Hence[2]

29. Distance covered by thief in 1hr. is 20km.
Now 10 km will be compensated in 1 hr.,
20 km will be compensated in 2 hrs.
So, he overtakes the thief at 4p.m.

Hence[3]

30. 1/2:1/3 = 3:2
If y takes 2 min., x takes 3 mins.
If y takes 24 min, x takes 24*3/2 = 36 min.
Hence[4]

31. -19,-17, -13,-11,-7

32. +1,-3

33. *2.5, *3.5, *4.5, *5.5, *6.5

34. +7,*7

35. Area of circle = 22/7*r*r = 22/7*21*21 = 1386
Area of triangle = 1/2 b*h

36. no exp

37.+88, -143

38. 7695/855=9, 69255/7695=9, ...5609655/623295=9

39. Weight of jar = w_1g
Weight of liquid = w_2-w
Weight of liquid(half filled with liquid) = w_2-w_1
Weight of liquid filled = 2(w_2-w_1)
Weight of jar + weight of liquid = w_1+2(w_2-w_1)
= 2w_2-w_1
Hence [3]

40. In finding average speed, we use Harmonic mean.
H.M.= 1/{1/3[1/x+1/2x+1/3x]}= 18x/11 km/hr.
Hence[4]

41. Draw XE to YZ
By pythagoras theorem,
$(XE)^2 = (XY)^2-(YE)^2 = (15)^2-(9)^2 = 144$
Let AB = CD = x.
AD/XE = AY/EY
x = 71/5
$x^2 = 51.84$
Hence [3]

42. Total money deposited = Rs.12*150 = Rs.1800
Interest on Rs.150 for 12 months = 150*12/12*6*1/100 = 9
Interest on Rs.150 for 11 months = 150*11/12*6*1/100 = 33/4
Interest on Rs.150 for 1 month = 150*1/12*6*1/100 = 3/4
Total interest = 9/1+33/4+3/4 = Rs.18
Total amount due = 1800+18 = Rs.1818
Hence [3]

43. Volume of core = 22/7*10/4*10/4*4cm^3
Volume of core with paper = 22/7*d/4*d/4*4cm^3

Volume of paper alone = $22/7[d^2/16-10^2/16]*4cm^2$
$= 22/7*[d^2-100/4]cm^3$
Also, volume of paper = $22/7*100*100*4*0.1/10cm^3$
$= 100*22/7*400*0.1/10cm^3$
$= 400cm^3$
$400*22/7 = 22/7(d^2-100)/4$
$d^2 = sqrt(1700) = 41.2(approx)$
Hence[1]

44. Total are = 4 area(triangleOAB)
$= 4*1/2*10*1.5 = 30cm^2$
Hence[1]

45. floor space required = $100m^2$
Air space required = $100*5.5m^3 = 550m^3$
Height = 550/100 = 5.5m
Hence[1]

46. $64+64x^2 = 64(1+x^2)$
$25+25x^2 = 25(1+x^2)$
$sqrt(64+64x^2)-sqrt(25+25x^2) = 8sqrt(1+x^2)-5sqrt(1+x^2)$
$= 3sqrt(1.x^2)$
Hence [1]

47. Measure of arc XYZ = XOY
= 2(XDY)
=2(XYP)
$=2*50^o = 100^o$
Hence [1]

48. Let the two no.s be x and y.
$(x^2/y^3)/(x^3/y^2) = 1/20$
$x^2/y^3*y^2/x^3 = 1/20$
1/xy = 1/20
We cannot find x:y
Hence[4]

49. 1^{st} investment = An investment of Rs.150 fetches a dividend of Rs.5.50
Rate = 5.50/150*100 = 36.67%(approx)
2^{nd} investment = An investment of Rs.15 fetches a dividend of Rs.0.35
Rate = 0.35/15*100 = 86.37%(approx)
Hence[1]

50. If a+b+c = 0, then $a^3+b^3+c^3 = 3abc$
Putting x-y = a,y-z = b, x-z = c
Then a+b+c = 0
The factors are 3(x-y)(y-z)(x-z)
Hence[1]