

# Unit 7 - Week 5:

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## Assignment 5

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2019-10-02, 23:59 IST.

1) The net positive suction head which represents the suction head at the impeller eye is given by

1 point

(a)  $\frac{P_A - P_v}{\rho g} - h_s + h_{fs}$ ,

(b)  $\frac{P_A - P_v}{\rho g} + h_s - h_{fs}$ ,

(c)  $\frac{P_A + P_v}{\rho g} - h_s - h_{fs}$ ,

(d)  $\frac{P_A - P_v}{\rho g} - h_s - h_{fs}$ ,

where  $P_A$  is the pressure at the liquid surface in the sump which is usually the atmospheric pressure,  $h_s$  is the vertical height of the impeller inlet from the liquid surface in the sump and  $h_{fs}$  is the loss of head in the suction pipe.

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d

2) The minimum value of NPSH recommended by the pump manufacturer is 6.5 m. Water is being pumped at a rate of  $0.3 \text{ m}^3 / \text{s}$ . The water level at the sump is 1.25 m below the pump. Atmospheric pressure is  $98.70 \text{ kN} / \text{m}^2$  and the water temperature is  $20^\circ \text{C}$ . If the total head loss in the suction pipe is 1.20 m, what among the below statements is true? (Take vapour pressure of water as  $2.34 \text{ kN} / \text{m}^2$  and specific weight of water at  $20^\circ \text{C}$  as  $9.78 \text{ kN} / \text{m}^3$ )

1 point

(a) The pump is affected by cavitation effects since NPSH is greater than the minimum recommended value.

(b) The pump is safe from cavitation effects since NPSH is greater than the minimum recommended value.

(c) The pump is affected by cavitation effects since NPSH is lesser than the minimum recommended value.

(d) The pump is safe from cavitation effects since NPSH is lesser than the minimum recommended value.

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

3) A centrifugal pump running at 500 rpm and at its maximum efficiency is delivering a head of 30 m at a flow rate of 60 litres per minute. If the rpm is changed to 1000, then the head H in metres and flow rate Q in litres per minute at maximum efficiency are estimated to be:

1 point

(a)  $H = 120 \text{ m}$  and  $Q = 120 \text{ lit} / \text{min}$

(b)  $H = 50 \text{ m}$  and  $Q = 50 \text{ lit} / \text{min}$

(c)  $H = 120 \text{ m}$  and  $Q = 50 \text{ lit} / \text{min}$

(d)  $H = 10 \text{ m}$  and  $Q = 120 \text{ lit} / \text{min}$

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a

4) Assertion (A): The efficiency of a pump is generally less than that of a turbine.

1 point

Reason (R): Although the losses in the two types of machines are of the same kind, the losses in pumps are more due to flow separation and formation of eddies.

(a) Both A and R are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

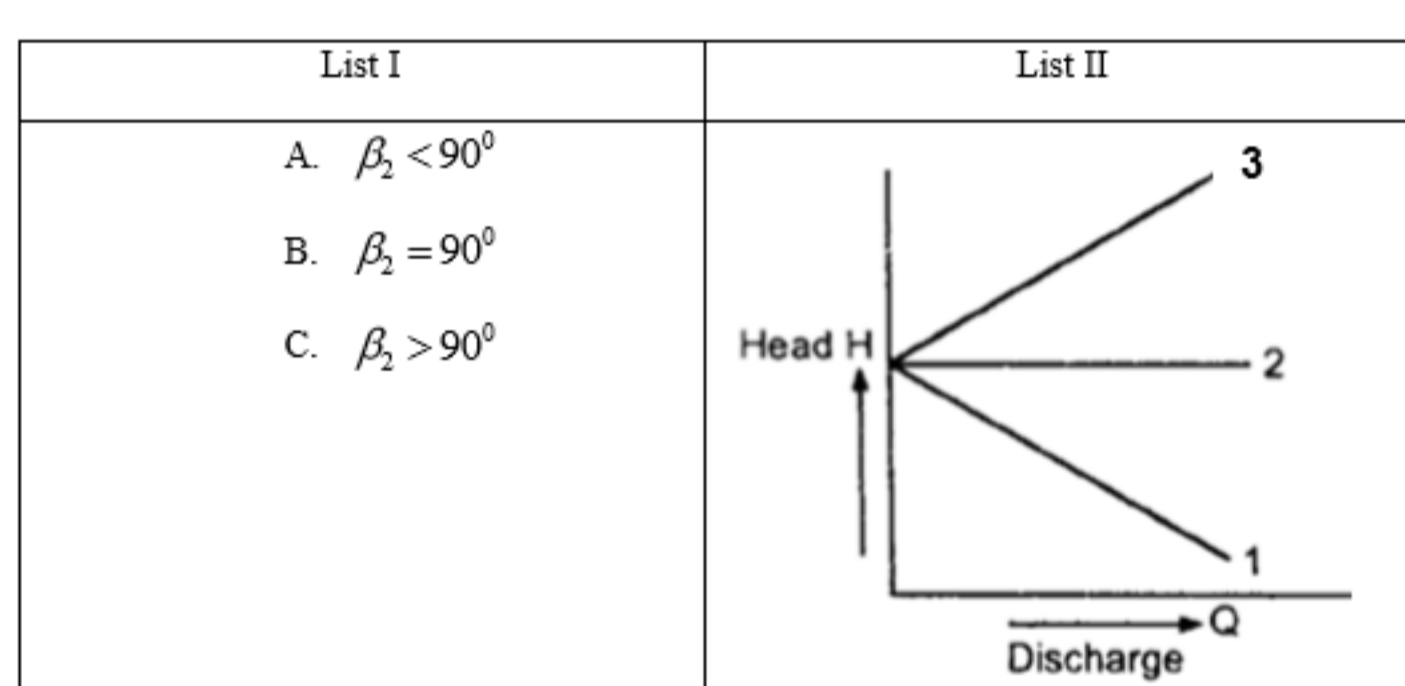
- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a

5) Match List-I (Outlet vane angle  $\beta_2$ ) with List-II (Curves labelled 1, 2 and 3 in the given figure) for a pump and select the correct answer using the codes given below the Lists:

1 point

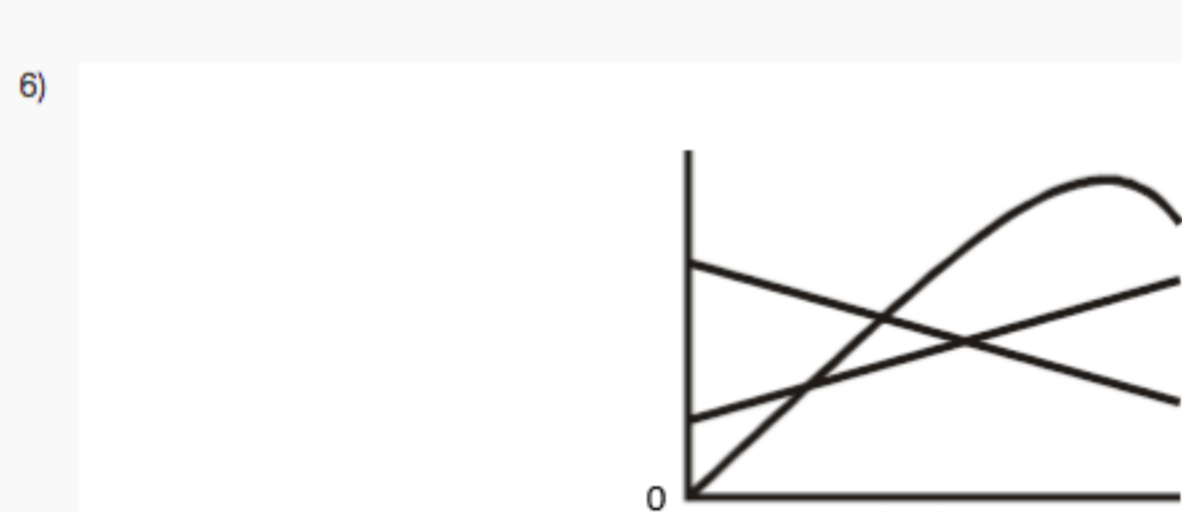


<b>Codes:</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>C</b>
(a)	1	2	3	(b)	1	3
(c)	2	1	3	(d)	3	2

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a



0 points

Typical characteristics of a pump are as shown in the given figure. Based on this figure, match List-I with List-II and choose the correct answer using the codes given below the lists:

List I	List II
<p>A. Curve A</p> <p>B. Curve B</p> <p>C. Curve C</p>	<p>1. Discharge versus head</p> <p>2. Head versus discharge</p> <p>3. Input power versus Discharge</p> <p>4. Efficiency versus discharge</p>

<b>Codes:</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>A</b>	<b>B</b>	<b>C</b>
(a)	2	4	3	(b)	1	3
(b)	1	4	3	(d)	4	3

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d

7) Consider the following statements regarding the pump and system characteristics for a centrifugal pump:

1 point

(i) The point of intersection between the system characteristics and the pump characteristic on head-discharge plane is the operating point.

(ii) The point of intersection between the system characteristics and the pump characteristic on efficiency-discharge plane is the operating point.

(iii) The operating point may or may not lie at the design point.

Out of the above statements:

(a) (i) and (iii) are correct

(b) (ii) and (iii) are correct

(c) only (i) is correct

(d) (i), (ii) and (iii) are correct

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
a

8) The correct sequence of the centrifugal pump components through which the fluid flows is:

1 point

(a) Impeller, Suction pipe, Foot valve and strainer, Delivery pipe

(b) Foot valve and strainer, Suction pipe, Impeller, Delivery pipe

(c) Impeller, Suction pipe, Delivery pipe, Foot valve strainer

(d) Suction pipe, Delivery pipe, Impeller, Foot valve and strainer

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
b

9) Assertion (A): The volute casing of a centrifugal pump helps in creating the high velocity head necessary for enabling water flow upwards to a higher level.

1 point

Reason (R): The water flows through a diverging passage in the volute chamber.

(a) Both A and R are individually true and R is the correct explanation of A

(b) Both A and R are individually true but R is not the correct explanation of A

(c) A is true but R is false

(d) A is false but R is true

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
d

10) Consider the following statements pertaining to a centrifugal pump:

1 point

1. The manometric head is the head imparted by the impeller to the water.

2. The suction pipe is provided with a foot valve and a strainer.

3. The delivery pipe is provided with a foot valve and a strainer.

Of these statements:

(a) 1, 2 and 3 are correct

(b) 1 and 2 are correct

(c) 2 is correct

(d) 1 and 3 are correct

- a
- b
- c
- d

No, the answer is incorrect.  
Score: 0

Accepted Answers:  
c