

MCC-002

Signature of the Candidate

Enrolment Number

Signature of the Invigilator

Exam Centre Code

Seal & Signature of the
Exam Centre Superintendent

POST GRADUATE DIPLOMA IN CLINICAL CARDIOLOGY (PGDCC)

Term-End Examination

June, 2009

MCC-002 : FUNDAMENTALS OF CARDIO-VASCULAR SYSTEM - II

Time : 2 hours

Maximum Marks : 60

Note :

- (i) There will be multiple choice type of questions in this examination.
- (ii) All questions are compulsory.
- (iii) Each question will have four options (1, 2, 3 and 4) which are true or false in nature.
- (iv) Candidates have to tick either true or false in the boxes given against each option.
- (v) If any candidate ticks both the options (true and false), then it will be taken as the wrong answer and no marks will be awarded for this.
- (vi) Overwriting will not be allowed and it will be taken as if the candidate has ticked both the options.
- (vii) There will be 60 questions in this paper and each question carries equal marks.
- (viii) There will be no negative marking for wrong answers.
- (ix) Candidates should deposit the question paper after the completion of the examination. If any candidate does not return the question paper; it will be treated as a punishable offence and action will be taken accordingly.
- (x) No candidate shall leave the examination hall at least for one hour after the commencement of the examination.

1. Regarding contrast ECHO :

- (1) Same as colour Doppler ECHO TRUE FALSE
- (2) Needs Distilled water to perform the study TRUE FALSE
- (3) Most useful in Heart failure TRUE FALSE
- (4) Agitated saline needs to inject rapidly TRUE FALSE

2. Principle of Doppler :

- (1) TDI can detect RWMA accurately TRUE FALSE
- (2) A flow above base line indicates velocity away from sample area TRUE FALSE
- (3) More intense the Doppler flow, lesser number of RBC moves in than velocity TRUE FALSE
- (4) Maximum velocity without aliasing is usually < 4 m/s TRUE FALSE

3. Measurement of Cardiac Output :

- (1) $CO \times HR = SV$ (stroke volume) TRUE FALSE
- (2) SV measurement needs P-W-Doppler at aortic valve only TRUE FALSE
- (3) Aortic forward velocity is 1.0 - 1.7 m/s TRUE FALSE
- (4) Cannot be measured in bed side TRUE FALSE

4. Aortic Stenosis evaluation :

- (1) Bicuspid AV may be associated with coweta worn of aorta and mild MR TRUE FALSE
- (2) PAH is common in severe AS TRUE FALSE
- (3) Peak Gradient of 50 mn Hg across AV is mild AS TRUE FALSE
- (4) AV area of 1.2 cm^2 signifies severe AS TRUE FALSE

5. Diastolic filling pattern :

- (1) IVRT < 150 msec and EIA = 1 means restrictive filling pattern
- (2) Mitral A wave's duration is less than Pulm Vein A duration
- (3) In Restrictive filling pattern RA and LA is usually dilated
- (4) Palmonary vein has single systolic and double diastolic wave

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

6. In Diagnosis of CAD :

- (1) AP 2 chamber images LV posterior, wall
- (2) Normal range of Fractional shortening between 28-44 percent
- (3) Wall motion score index of 1.9 is normal
- (4) Apical portion of LV in SAX views anterior septum

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

7. Thrombus following AMI :

- (1) Common in dyskinetic and akinetic segments
- (2) Mostly seen in first 48 hrs after MI
- (3) A low frequency transducer detects thrombus
- (4) Commonest in Hypokinetic segments

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

8. Constrictive Pericarditis has following feature :

- (1) Septal bounce extremely rare
- (2) Respiratory variation of > 50% in Mitral E velocity
- (3) Increased diastolic flow reversal with expiration in hepatic vein is sensitive criteria
- (4) Respiratory variation of Tricuspid velocity is rare

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

9. In Mitral stenosis :

- (1) Sharp EF slope in M-Mode signifies severe MS
- (2) PHT of 220 msec means MVA of 1.0 cm²
- (3) In APC paradoxical PML is seen
- (4) Subvalvular apparatus best viewed in SAX view

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

10. In Mitral Regurgitation :

- (1) In MVP severe MR is uncommon

TRUE	FALSE
------	-------
- (2) MR Jet area /LA area = 18 percent signifies Mild MR

TRUE	FALSE
------	-------
- (3) Vena contractile 4 mm indicates severe MR

TRUE	FALSE
------	-------
- (4) Eccentric MR is Physiological

TRUE	FALSE
------	-------

11. In Aortic Regurgitation :

- (1) LVID (diastole) \geq 7.5 cm suggests severe AR

TRUE	FALSE
------	-------
- (2) PHT < 400 msec suggests severe AR

TRUE	FALSE
------	-------
- (3) In severe AR with LV dysfunction, AR colour flow fills entire LVOT

TRUE	FALSE
------	-------
- (4) ARJH/LVOTH of 42 percent is very severe AR

TRUE	FALSE
------	-------

12. Regarding Atrial Septal Defect (ASD) :

- (1) Dropout in IAS from A4C (Apical) is best diagnostic criteria

TRUE	FALSE
------	-------
- (2) Like VSD, Doppler gradient across ASD determines PA pressure

TRUE	FALSE
------	-------
- (3) Sinus Venosus ASD can be closed by Device

TRUE	FALSE
------	-------
- (4) In TAPVD, ASD is obligatory

TRUE	FALSE
------	-------

13. Supra Sternal view :

- (1) A pillow should be placed beneath the head

TRUE	FALSE
------	-------
- (2) Index marker of transducer to be kept at 6'O'clock position

TRUE	FALSE
------	-------
- (3) LSVC and coarctation best viewed

TRUE	FALSE
------	-------
- (4) Bicuspid aortic valve most reliably diagnosed

TRUE	FALSE
------	-------

14. Tricuspid stenosis :

- (1) Suspected from dilatation of RA > RV with increased gradient

TRUE	FALSE
------	-------
- (2) Most common cause Rheumatic when Mitral valve is normal

TRUE	FALSE
------	-------
- (3) 3 Leaflets are seen in short axis

TRUE	FALSE
------	-------
- (4) Rarely tricuspid regurgitation is present

TRUE	FALSE
------	-------

15. Mitral valve has following ECHO features :

- (1) More apical annular attachment than TV
- (2) Orifice is triangular in shape
- (3) Commissures are fused in Rheumatics
- (4) Parachute Mitral valve has two papillary muscles

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

16. Aortic valve in ECHO :

- (1) Eccentric closure is a feature of Rheumatic involvement
- (2) Alignment of Doppler signal is not important to assess AS
- (3) Mean gradient of 42 mm Hg signifies severe AS
- (4) Aortic valve area is 4 - 6 cm²

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

17. Mitral regurgitation :

- (1) Vena contractae of > 4 mm indicates severe MR
- (2) Vena contractae is measured at the widest point upstream from MV orifice
- (3) CFM of MR ≥ 6 cm² indicates severe MR
- (4) Eccentric jet of MR is common in Prosthetic valve malfunction

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

18. Mitral valve disease :

- (1) valve area is 2 - 3 cm² in normal individual
- (2) Fish mouth appearance is seen in PLAX view
- (3) In severe MS resting MDG > 10 mm HG
- (4) Commissural calcification is associated with successful BMV

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

19. About VSD :

- (1) In non-restrictive VSD, PA pressure is usually normal
- (2) Doubly committed VSD are either perimembranous or upper muscular
- (3) Small VSD is less likely to develop infective endocarditis
- (4) 2-score is best indicator of magnitude of VSD shunt

TRUE FALSE

TRUE FALSE

TRUE FALSE

TRUE FALSE

20. Assessment of LV function :
- (1) In absence of RWMA, M-Mode at papillary muscle level can accurately measure EF

TRUE	FALSE
------	-------
 - (2) M-Mode PLAX view is taken just beyond tips of MV

TRUE	FALSE
------	-------
 - (3) Modified Simpson's need LV tracing in AP 2 C view.

TRUE	FALSE
------	-------
 - (4) Normal range of FS is 15 - 30 percent.

TRUE	FALSE
------	-------
21. In coronary Angioplasty :
- (1) Guide wire is not always used

TRUE	FALSE
------	-------
 - (2) Guide wire frequently produces coronary artery perforation

TRUE	FALSE
------	-------
 - (3) Drug eluting stents are not useful in diabetics

TRUE	FALSE
------	-------
 - (4) Drug coated stents reduces restenosis

TRUE	FALSE
------	-------
22. Coronary Angiography :
- (1) Should be avoided in patients who denies revascularization

TRUE	FALSE
------	-------
 - (2) Not indicated in 45 yrs female who survived SCD

TRUE	FALSE
------	-------
 - (3) To be avoided in suspected stent thrombosis

TRUE	FALSE
------	-------
 - (4) Should be performed in all cases of chronic stable angina

TRUE	FALSE
------	-------
23. Coronary angiography :
- (1) All patients with acute M1 should have angiography in first 24 hrs to confirm diagnosis

TRUE	FALSE
------	-------
 - (2) Through radial artery needs 24 hrs hospitalization

TRUE	FALSE
------	-------
 - (3) Angiography and angioplasty should never be done in same sitting

TRUE	FALSE
------	-------
 - (4) Life threatening complications is seen in not more than 1 percent case

TRUE	FALSE
------	-------
24. Regarding Balloon Mitral Valvotomy (BMV) :
- (1) Less traumatic than closed mitral valvotomy

TRUE	FALSE
------	-------
 - (2) MR is never severe after BMV

TRUE	FALSE
------	-------
 - (3) Not indicated in severe MS and severe PAH with mild symptoms

TRUE	FALSE
------	-------
 - (4) Commissural calcification is associated with non Rheumatic MS

TRUE	FALSE
------	-------

25. About Pulmonary Angiography :

- (1) It is safe to perform in unstable haemodynamic status TRUE FALSE
- (2) Pulmonary, AV fistula can be diagnosed TRUE FALSE
- (3) Contrast injection rarely produces anaphylaxis TRUE FALSE
- (4) In thrombo embolism, PA pressure is usually low TRUE FALSE

26. LV pressure :

- (1) Following VPC the next beat shows (truncated) diastolic pressure TRUE FALSE
- (2) A gradient of systolic pressure across LVOT by catheter pull back signifies AS TRUE FALSE
- (3) High LVEDP is defined as more than 8 mm Hg TRUE FALSE
- (4) LV and RV end diastolic pressure is same TRUE FALSE

27. In intracardiac shunt :

- (1) Arterial desaturation means $SaO_2 < 95$ percent TRUE FALSE
- (2) Arterial desaturation in ASD is never due to mixing cause TRUE FALSE
- (3) Cardiac output by Fick's principle is obsolete TRUE FALSE
- (4) In Perimembranous VSD Oxygen stepup is seen in PA TRUE FALSE

28. About coronary artery anatomy :

- (1) Conus branch is from Lt circumflex TRUE FALSE
- (2) Septal artery is a branch of LAD TRUE FALSE
- (3) Bridging collaterals are seen in total occlusion in all cases TRUE FALSE
- (4) Left Main stenosis of 60 percent is in significant TRUE FALSE

29. Myocardial perfusion imaging :

- (1) It has limited value in assessing prognosis TRUE FALSE
- (2) ^{99m}Tc Technitium uptake in myocardium is proportional to blood flow TRUE FALSE
- (3) The tracer is taken by post infarct fibrotic tissue TRUE FALSE
- (4) Primary route of excretion of Technitium is lung TRUE FALSE

30. Myocardial perfusion imaging :

- (1) Cannot detect arterial territory involvement TRUE FALSE
- (2) Dolutamine and adenosine both increase myocardial contractility TRUE FALSE
- (3) Sensitivity to detect CAD is 70% TRUE FALSE
- (4) Diaphragmatic attenuation of tracer uptake interior wall detect in obese patients TRUE FALSE

31. In Echocardiography :

- (1) Probe of 2 - 5 MHz is used in children TRUE FALSE
- (2) Adequate CFM does not need good 2D image TRUE FALSE
- (3) Probe of 2 - 5 Mhz is used in Adult TRUE FALSE
- (4) Prosthetic valve function is best seen in TTE TRUE FALSE

32. Difference of PW (Pulse Wave) and CW (Continuous Wave) Doppler is :

- (1) Hepatic vein flow best seen with CW TRUE FALSE
- (2) PW can measure velocity without aliasing < 4 m/s TRUE FALSE
- (3) CW selectivity picks up velocity at area of interest TRUE FALSE
- (4) CW Doppler can qualify a VSD shunt but PW cannot qualify TRUE FALSE

33. Diagnosis of Aortic stenosis by ECHO :

- (1) CW Dop. velocity across Aortic valve is $4 \text{ m}^2/\text{s}$, PW at LVOT is $1 \text{ m}^2/\text{s}$, LVOT dia 2.2 cm^2 . Aortic valve area is 0.7 cm^2 by continuity equation TRUE FALSE
- (2) C-W Dopp. Aortic valve 3 m/s . ΔP is 48 mm Hg TRUE FALSE
- (3) Aortic annulus is measured in diastole TRUE FALSE
- (4) Eccentric closure of Aortic valve is seen in RHD TRUE FALSE

34. Diastolic filling abnormality :

- (1) Impaired relaxation always indicates diastolic heart failure TRUE FALSE
- (2) Four types of diastolic filling abnormality is seen TRUE FALSE
- (3) 2D evidence of structural heart disease always associated with restrictive filling pattern TRUE FALSE
- (4) In fibrillation, impaired relaxation is easily diagnosed TRUE FALSE

35. Doppler evidence of Pulmonary artery Hypertension :

- (1) In absence of TR, PAH cannot be diagnosed TRUE FALSE
- (2) Pulmonary artery thrombus best seen in PLAX view TRUE FALSE
- (3) In primary PAH structural heart disease common TRUE FALSE
- (4) Jet of TR of $4 \text{ m}^2/\text{s}$ and IVC of 25 mm with 30% respiratory variation. PA systolic pressure is 75 mm Hg TRUE FALSE

36. Pseudoaneurysm following AMI :

- (1) Pseudoaneurysm is outpouching of intact ventricular muscle TRUE FALSE
- (2) Pseudoaneurysm is common in Posterior MI TRUE FALSE
- (3) Surgery is indicated when heart failure is refractory TRUE FALSE
- (4) 2D ECHO can definitely diagnose the entity TRUE FALSE

37. Assessment of LV systolic function :

- (1) In the absence of RWMA, M-Mode tracing at papillary muscle level can accurately measure EF

TRUE	FALSE
------	-------
- (2) M-Mode in PAX is taken just beyond tips of mitral valve

TRUE	FALSE
------	-------
- (3) Modified Simpsons' heed LV tracing in AP 2 chamber view

TRUE	FALSE
------	-------
- (4) Normal Range of Fractional Shortening 52 - 70 percent

TRUE	FALSE
------	-------

38. Assessment of Regional Wall Motion Abnormality (RWMA) :

- (1) Dyskinesin is earliest when artery is occluded

TRUE	FALSE
------	-------
- (2) Systolic thickness < 2 times diastolic thickness is hypokinesia

TRUE	FALSE
------	-------
- (3) Inadequate endocardial border visualization is seen in 15 percent cases

TRUE	FALSE
------	-------
- (4) SAX at mitral valve level lacs anterior septum

TRUE	FALSE
------	-------

39. LV anerysin after MI :

- (1) LV anerysin has narrow neck

TRUE	FALSE
------	-------
- (2) End result of infarct expansion

TRUE	FALSE
------	-------
- (3) There is breach of continuity in myocardium

TRUE	FALSE
------	-------
- (4) Urgent surgery is the treatment of choice

TRUE	FALSE
------	-------

40. Pericardial effusion :

- (1) Large effusion and tamponade are synonymous

TRUE	FALSE
------	-------
- (2) Large effusion is more than 10 mm

TRUE	FALSE
------	-------
- (3) Right sided pleural effusion is posterior to descendency aorta

TRUE	FALSE
------	-------
- (4) Cannot be detected with US4 probe

TRUE	FALSE
------	-------

41. Constrictive pericarditis has following feature :

- (1) Atrial enlargement is uncommon TRUE FALSE
- (2) IVC is usually of normal size TRUE FALSE
- (3) Premature opening of Pulmonary valve is seen TRUE FALSE
- (4) Calcification of Pericardium frequently seen in ECHO TRUE FALSE

42. In mitral stenosis :

- (1) Clot in LA appendage is only seen in permanent AF TRUE FALSE
- (2) MV score of 10 with commissural calcification is quite suitable for BMV TRUE FALSE
- (3) MVA of 1.2 cm^2 and gradient of 12 mm Hg is seen with fast ventricular rate TRUE FALSE
- (4) PHT is always measured in PW Doppler TRUE FALSE

43. In mitral regurgitation :

- (1) Leaflet thickening indicates functional MR TRUE FALSE
- (2) Vena contractae of 7.2 mm indicates moderate MR TRUE FALSE
- (3) Pulmonary vein diastolic flow reversal is seen in severe MR TRUE FALSE
- (4) Eccentric, wall hugging jet usually indicate significant MR TRUE FALSE

44. Aortic valve in ECHO :

- (1) Normal opening is $> 4 \text{ cm}^2$ TRUE FALSE
- (2) Aortic V-Max 2.5 - 3.0 m/s signifies moderate AS TRUE FALSE
- (3) Aortic valve area calculation needs LVOT diameter, P-W Doppler at LVOT, C-W Dop. at AV TRUE FALSE
- (4) Bicuspid AV is always associated with severe AR TRUE FALSE

45. LV has following feature in ECHO :

- (1) Posterior mitral leaflet is continuous with aortic valve

TRUE	FALSE
------	-------
- (2) It has a moderator band, best seen from AP 4 chamber

TRUE	FALSE
------	-------
- (3) LV has coarse apical trabeculation

TRUE	FALSE
------	-------
- (4) It has no (intandibulam)

TRUE	FALSE
------	-------

46. TAPVD is diagnosed if :

- (1) Absence of pulmonary veins draining into LA

TRUE	FALSE
------	-------
- (2) RA is dilated and RV normal size

TRUE	FALSE
------	-------
- (3) No interatrial communication is seen

TRUE	FALSE
------	-------
- (4) Persistence LSVC is rarely seen

TRUE	FALSE
------	-------

47. Tricuspid valve :

- (1) Mean gradient above 8 mm Hg is must to diagnose TS

TRUE	FALSE
------	-------
- (2) Dilatation of RV is common in Tricuspid stenosis than dilatation of RA

TRUE	FALSE
------	-------
- (3) Tricuspid annular dilatation ≥ 4 cm is diagnostic of severe TR

TRUE	FALSE
------	-------
- (4) Tricuspid valve stenosis is common with Aortic valve disease

TRUE	FALSE
------	-------

48. About VSD :

- (1) Inlet VSD may be observed in Down's Syndrome

TRUE	FALSE
------	-------
- (2) Abnormal chordal attachment of Mitral Valve is known as straddling

TRUE	FALSE
------	-------
- (3) Dobly committed VSD rarely leads to AR

TRUE	FALSE
------	-------
- (4) L to R shunt of 20 mmHg across VSD signifies absence of PAH

TRUE	FALSE
------	-------

49. About PDA :

- (1) AP 4 chamber visualizes the ductus best

TRUE	FALSE
------	-------
- (2) In Hypoplastic Left heart syndrome, presence of PDA has unfavourable prognosis

TRUE	FALSE
------	-------
- (3) PDA is rarely associated with Coarctation or Bicuspid Aortic valve

TRUE	FALSE
------	-------
- (4) Large LV and small gradient across PDA indicates significant shunt

TRUE	FALSE
------	-------

50. About ASD :

- (1) RA and RV dilatation signifies a shunt $< 1.5:1$

TRUE	FALSE
------	-------
- (2) Sinus Venosus ASD is associated with PAPVD

TRUE	FALSE
------	-------
- (3) RA and RV dilatation indicates severe PAH

TRUE	FALSE
------	-------
- (4) Primum ASD is commonly associated with muscular VSD

TRUE	FALSE
------	-------

51. About Aortogram :

- (1) Coarctation is seen in ascending aorta

TRUE	FALSE
------	-------
- (2) Aortoarteritis can be diagnosed

TRUE	FALSE
------	-------
- (3) Can safely be done in patient with creatinine 1.8 mg/dl

TRUE	FALSE
------	-------
- (4) Renal artery is not visualized usually

TRUE	FALSE
------	-------

52. Pulmonary Capillary Wedge Pressure (PCWP) :

- (1) Cannot be measured in bed side through jugular vein

TRUE	FALSE
------	-------
- (2) Mean LA pressure and Mean PCWP is different by 3 - 5 mm Hg

TRUE	FALSE
------	-------
- (3) A mean PCWP of 8 mm Hg indicates hypovolemia

TRUE	FALSE
------	-------
- (4) In AMI with cardiogenic shock, PCWP > 18 mm Hg is rare

TRUE	FALSE
------	-------

53. In Intracardiac shunt :

- (1) Arterial desaturation means $SaO_2 < 90$ percent

TRUE	FALSE
------	-------
- (2) Arterial desaturation is a feature of TOF

TRUE	FALSE
------	-------
- (3) $Q_p : Q_s \leq 1 : 5$ signifies surgical intervention is necessary

TRUE	FALSE
------	-------
- (4) In VSD oxygen step up is seen in Mid RA

TRUE	FALSE
------	-------

54. About coronary artery :

- (1) Left main is about 2.5 mm diameter

TRUE	FALSE
------	-------
- (2) Right dominant circulation is seen in 15 percent

TRUE	FALSE
------	-------
- (3) AV nodal artery is a branch of Mid LAD

TRUE	FALSE
------	-------
- (4) SA nodal artery arises from Right Coronary artery

TRUE	FALSE
------	-------

55. Coronary Angioplasty :

- (1) Treatment of choice in AMI of 6 hrs duration

TRUE	FALSE
------	-------
- (2) Mortality during procedure is 5 percent

TRUE	FALSE
------	-------
- (3) Radial route is never used

TRUE	FALSE
------	-------
- (4) Brachial route is best in obese patients

TRUE	FALSE
------	-------

56. Coronary angiography :

- (1) Indicated in AMI when revascularization is not available

TRUE	FALSE
------	-------
- (2) Indicated if calcium is seen in MDCT

TRUE	FALSE
------	-------
- (3) Not indicated before surgical closure of acquired VSD

TRUE	FALSE
------	-------
- (4) Class IIb indication in asymptomatic post MI patient and no inducible ischaemia

TRUE	FALSE
------	-------

57. Coronary angiography :

- (1) Contraindicated in patients with end stage renal disease

TRUE	FALSE
------	-------
- (2) Radial approach is unsuitable in obese patients

TRUE	FALSE
------	-------
- (3) Radial approach does not require heparin

TRUE	FALSE
------	-------
- (4) Correct manual compression is best to prevent local complication

TRUE	FALSE
------	-------

58. Percutaneous Balloon Mitral Valvuloplasty (PBMV) :

- (1) Indicated in asymptomatic patients and MVA $< 1.6 \text{ cm}^2$

TRUE	FALSE
------	-------
- (2) Indicated in 2nd trimester of pregnancy with MVA of 0.8 cm^2 and history of pulmonary edema in previous pregnancy

TRUE	FALSE
------	-------
- (3) Contraindicated in refractory pulmonary edema solely due to MS

TRUE	FALSE
------	-------
- (4) Indicated in minimum symptom with MVA 1.1 cm^2

TRUE	FALSE
------	-------

59. Myocardial perfusion imaging :

(1) Thallium is preferred over Technitium

TRUE FALSE

(2) Can detect obstructive CAD

TRUE FALSE

(3) ^{99m}Tc Technitium has a half life of 73 hrs

TRUE FALSE

(4) Thallium has a shorter half life

TRUE FALSE

60. Nuclear Imaging :

(1) Can detect probable pulmonary embolism

TRUE FALSE

(2) Cannot assess LVEF correctly

TRUE FALSE

(3) Mismatch in ventilation/perfusion is non-diagnostic of PTE

TRUE FALSE

(4) Increased pulmonary uptake during myocardial perfusion imaging has favourable prognosis

TRUE FALSE

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